USER'S MANUAL

FANHAI SANJIANG

Fire Alarm Control Panel
Agent Releasing Control Panel

JB-QBL-QM200

USER'S MANUAL

SHENZHEN FANHAI SANJIANG ELECTRONICS CO., LTD.
Address : 3F, Guangcai New World Building, Nanshan Road, Nanshan District, Shenzhen, 518054, P. R.China
Tel: +86(755)86226969
Fax: +86(755)86223939
Http://www.fhsjdz.com

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Reading Tips

For content about installation, please refer to Chapter II Installation and Connection; if it is necessary to change the connection mode to meet certain engineering requirements, please refer to Chapter III Jumpers and Chapter IV Terminals.
For users, please refer to Chapter V Panel Display and Chapter VI Key On/Off.

Warning:
It is necessary to dismount all electromagnetic valves (electric detonators) from the devices which are driven by them during system installation, troubleshooting or maintenance to avoid unexpected losses as a result of malfunctions of the fire extinguisher due to miss operation or wrong connection.



Warning: Don’t press the EMERGENCY RELEASE key which is disaposable unless there is an emergency

Chapter I Product Introduction

1.1 Overview

The JB-QBL-QM200 fire alarm control panel/agent releasing control panel is developed and manufactured by Shenzhen Fanhai Sanjiang Electronics Co., Ltd. As a fire alarm controller with a gas fire extinguishing function, JB-QBL-QM200 has some functions and characteristics in full compliance with the requirements of national standards Fire *Alarm Control Units* (GB4717-2005) and *Automatic Control System for Fire Protection* (GB16806-2006). The JB-QBL-QM200 can be used with a local manual/auto control box, an emergency start/stop control box, a horn/strobe, a release indicator, an agent drop display panel, a starting air cylinder, an extinguishant cylinder set and some other necessary items to form a complete alarm and gas fire extinguishing control system.

The JB-QBL-QM200 is mainly applied to the pipe network type or non-pipe network type high/low pressure CO_2 fire extinguishing system, FM-200 (heptafluoropropane) fire extinguishing system, foam fire extinguishing system, gas-aerosol fire extinguishing system, IG541 (INERJEN) gas fire extinguishing system and other fire extinguishing systems using Halon alternatives (haloalkane). It can be mounted with a common switching value detector to realize fire detection and alarm, and its internal relay can control gas fire extinguishers as well as relevant alarm devices and linkages directly. It is extensively applied in places like computer rooms, reference rooms, switchboard rooms, transformer rooms, communication base stations, etc.

1.2 Technical specifications

1. AC input voltage: AC 220V±20%, 50Hz
   AC input power: ≤120W
   DC standby power: DC24V 7.0Ah (consisting of two fully sealed maintenance-free DC12V 7.0Ah storage batteries connected in series)
2. Output current of the DC 24V power supply:
   Long time: 6A
   Transient (shorter than 3s): 8A
3. Operating environment:
   Temperature: -10℃ ~ +55℃
   Humidity: ≤95%RH (40℃, without condensation)
4. Capacity:
   Number of the detector circuits: Two, connected with some common heat fire detectors and smoke fire detectors
   Number of the detectors allowed for each detector circuit: ≤20 (common detectors)
5. Wiring system of the detector circuits: two-wire system
6. Length of detector circuit: ≤1000m
7. Fire alarming threshold voltage of the circuits: ≤9.1V
   Circuit fault threshold: ≥21.3V (mains voltage: 24V)
   Alarming output current of the circuits: ≤8mA (mains voltage: 24V)
8. Capacity of the relay contacts: 7A / 24VDC for each relay
9. Current limits of output circuits:
   Output circuit driven by an electromagnetic valve: ≤3A
   Output circuit driven by another kind of device: ≤1A

1.3 Functions and characteristics

1. Two detector access circuits (two-wire system) are provided to be connected with various common heat fire detectors and smoke fire detectors manufactured by our company. Detecting smoke concentrations and temperatures through perfect code redundancy technology and digital noise attenuation technology, the two detector access circuits can ensure high stability for the system. Besides, they can make quick responses to fire alarms and the maximum alarm delay time is 2s.
2. The product can be mounted with an EMERGENCY START button and an EMERGENCY STOP button or with an emergency start/stop control box to make the system controlled safely during emergencies or field equipment maintenance.
3. There is an access interface for the release confirmation (field pressure feedback) signal.

4. It may be connected with a local manual/auto control box for setting the operating mode of the system (the local manual mode is preferred).
5. It may be connected with an agent drop display panel to give agent drop alarm signals.
6. It provides both single fire alarm output function and compound fire alarm output function. The output form may be either passive node output or ＋24V active node output. It may be used as a closed signal for controlling equipment concerning ventilation, air-conditioning, etc.
7. It provides a drive output function for the RELEASE indicator.
8. It provides a drive output function for the alarm bell and the horn/strobe. Both the alarm bell and the horn/strobe can be muted through the peripheral MUTE button or the HORN/STROBE START/STOP button and the ALARM BELL START/STOP button on the panel.
9. It provides independent drive output ports for the electromagnetic valves and supports a starting current of 3A (24V) for the electromagnetic valves (electric detonators).
10. It can preset an automatic start delay time of 0~30s for the electromagnetic valves (electric detonators) through the jumpers on the display panel and displays the start countdown. The delay manner of the manual start may also be set by the user through the jumpers on the display panel, too.
11. It provides an open circuit fault detection function for the input circuits and a short or open circuit fault detection function for the output circuits (active outputs).
12. It can monitor various kinds of faults. After the faults are eliminated, it can recover automatically and needs no human intervention.
13. It uses WATCHDOG technology to make software run stably and reliably.
14. It uses an adaptive technology for the hardware power supplies to enable the system to operate stably in case of abnormal fluctuations of the external power supply.
15. It can realize AC/DC full electronic switching that is reliable, smooth and seamless.
16. The standby batteries have an over-charge and over-discharge protection function and have their states under intelligent monitoring, thus prolong their service lives.
17. The system has a low-power consumption design, and the DC power supply can operate for more than 48 hours continuously.
18. The key lock is designed with a password protection function to prevent miss operations.
19. It has a historical information recording function and can record 999 instances of fire alarm information, fault information and release information.

Chapter II Installation and Connection

2.1 Installation of case

The JB-QBL-QM200 is installed in a case made of sheet steel. When installing it, hang it firmly on a dry and flat surface with enough load-carrying capacity via the installation holes on its back and reserve enough space around it to make cabling and opening of the controller door convenient. See Fig.2.1 for the installation holes.

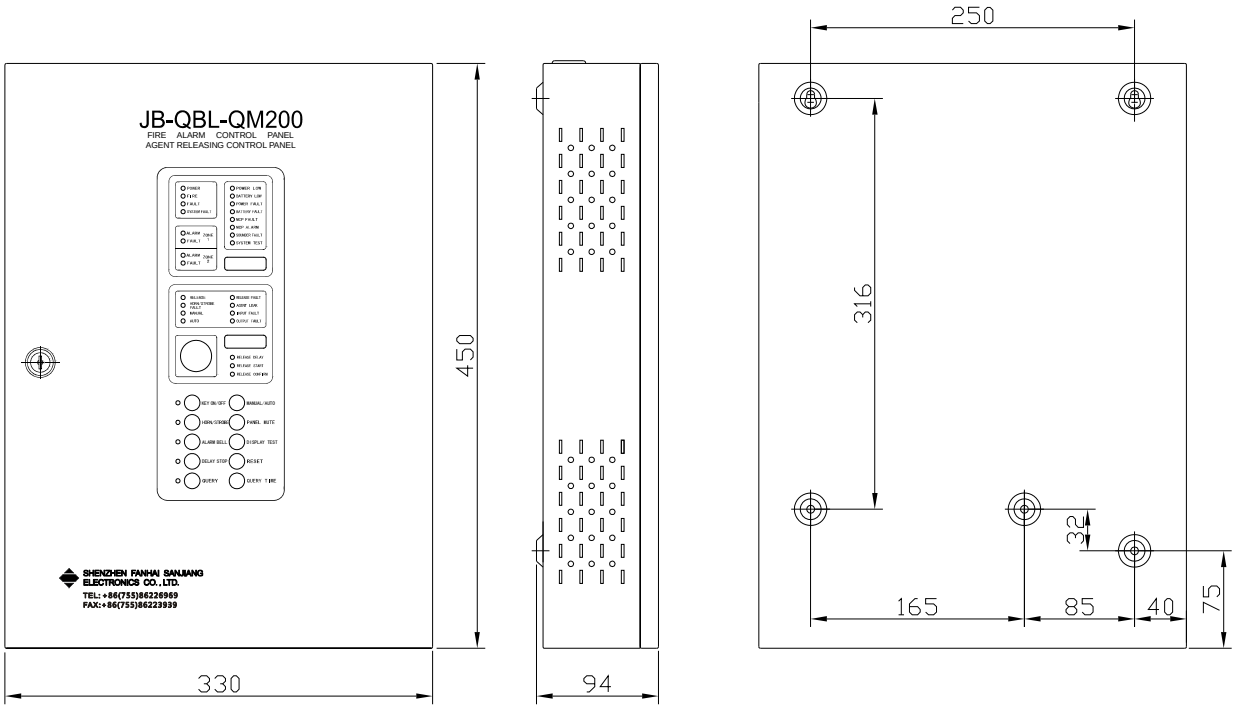


Fig.2.1 Installation Holes of the Case

The following requirements should be met during installation of the case.

- There must be a space of at least 1m reserved in front of the case.
- There are cable entries on the top of the case, so there must be a space of at least 30cm for cabling.
- The bottom of the case should be 1.1～1.3m above the ground.
- The air vents (also serving as sound holes) on the sides of the case must be smooth.
- The system must be securely grounded. If the grounding terminal of the AC input is not securely grounded, make the system securely grounded through the grounding terminal on the baseplate of the case and the resistance to ground equal to or smaller than 5Ω.
- The system can be installed indoors only.

2.2 Internal structure

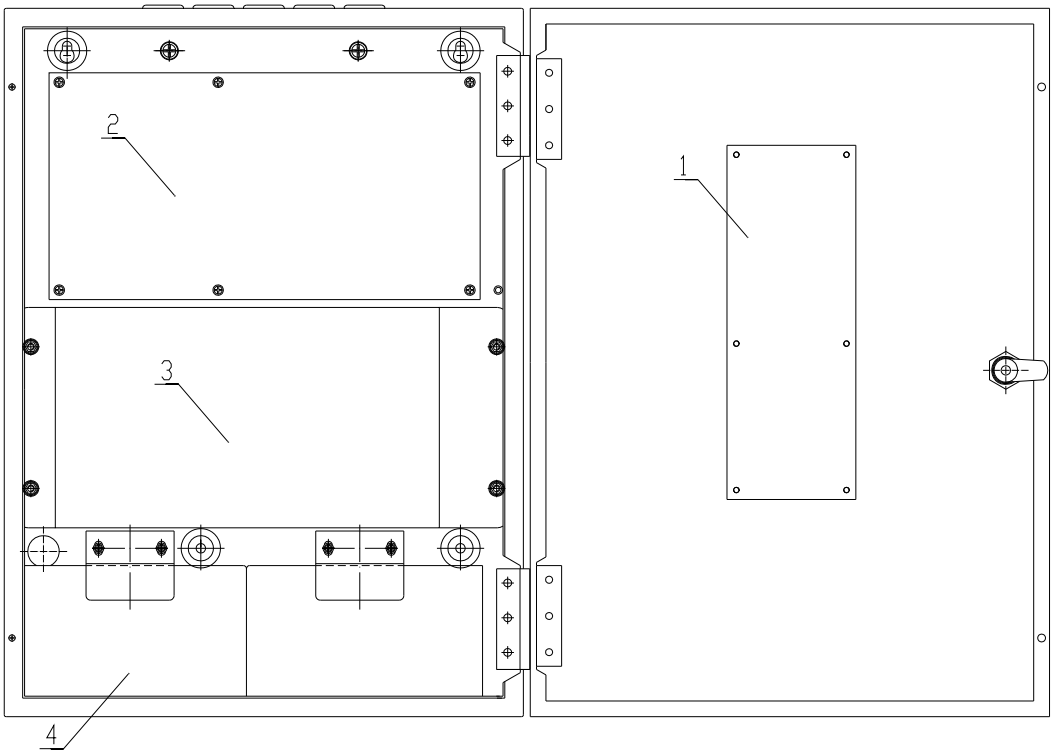


Fig.2.2 Schematic Diagram of Internal Structure

Fig.2.2 is the schematic diagram of the internal structure of JB-QBL-QM200. Hereunder are the names corresponding to the figures in it.

1:Display panel 2: Master control board 3:PS-06 power supply 4:Batteries

2.3 Power connection

JB-QBL-QM200 uses an AC 220V/50HZ single-phase power supply. When the AC supply voltage is 220V±20%, the switching power supply PS-06 will operate normally to power up various parts of the system. If the standby batteries have not yet been fully charged, the switching power supply will charge them. If the AC supply voltage is beyond the range of 220V±20%, the switching power supply will enter the protection status and the system will start to be powered up by the standby batteries until the AC supply voltage becomes normal again. In a region where the AC supply voltage is probably larger than 270V for a long time, it is necessary to have the AC supply voltage accessed with the help of a voltage stabilizer with a power of larger than 300W, or else the switching power supply may be damaged. The standby batteries, if fully charged, can make the system operate normally for 48 hours (under the normal monitoring status). To make the system operate reliably for a long time, it is necessary to make sure the AC supply voltage accessed by the system is always 220V±20% and the duration of power failure is not longer than 48 hours.

Warning: Never make the AC supply voltage larger than 300V, or else the switching power supply may be damaged.

The standby batteries are two 12V/7.0Ah storage batteries and their connection method is given in Fig.2.3. The battery lines are arranged in the case of JB-QBL-QM200 and led out via the BAT interface of the switching power supply PS-06. When installing the storage batteries, fix the batteries in the case before doing wiring with the method given in Fig.2.3, or else a short circuit may happen easily.

Warning: Wrong connection of the storage batteries may damage the storage batteries and the switching power supply PS-06.

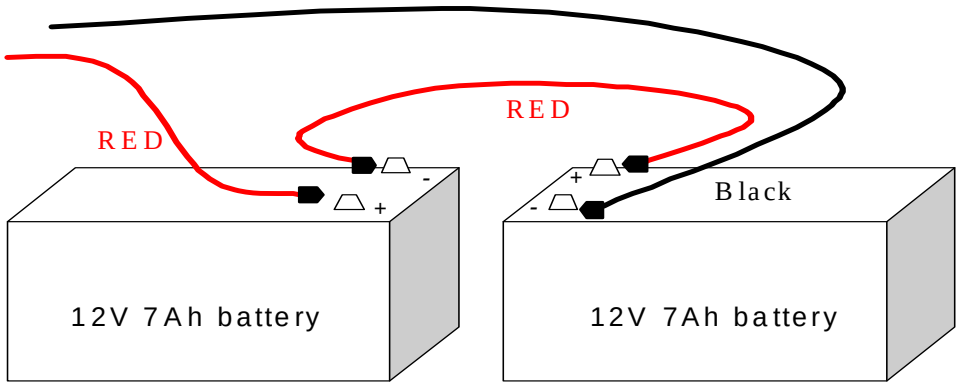


Fig.2.3 Wiring Diagram of the Standby Batteries

2.4 Circuit installation

See Fig.2.7 and Fig.2.8 for the overall wiring diagrams of the JB-QBL-QM200. For the factory defaults and setting methods of the jumpers, please refer to Chapter III; and for the locations, purposes, factory defaults and detailed characteristics of the terminals on the control board, please refer to Chapter IV.

There are five cable entries on the top of the case of JB-QBL-QM200. Please make the connecting wires lead into the case through these cable entries. Fig. 2.6 shows the locations of these cable entries.

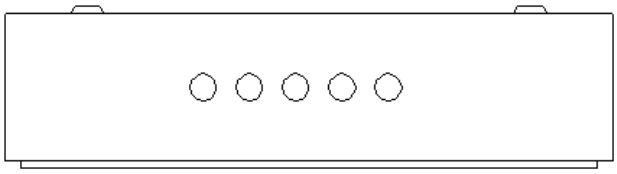


Fig.2.6 cable Entries on the Top of the Case

Precautions:

- Install the electromagnetic valve (electric detonator) circuit carefully. Do install the electromagnetic valves before powering up the system. Make sure all the electromagnetic valves have been dismounted from the components driven by them before the power-on test.
- The output circuits and the input circuits should use separate cable conduits. **The ground wires (GND) of the output circuits and that of the input circuits must not be shared but connected to corresponding terminals respectively.** It would be best if the electromagnetic valve driven circuits have separate ground wires.
- The installation and connection of the system should comply with the requirements of national standard *Code for the Installation and Acceptance of the Fire Alarm System* (GB50166-92).
- **Buildings should be installed with lightning protection devices** and meet relevant requirements of *Design Code for Protection of Structures against Lightning* (GB50057-94), particularly in the South China, **or else the system may be damaged by lightning. Our company shall assume no responsibility for the damage.**
- In the fire control room, there should be a grounding body. A copper core flexible connector with a sectional area of not smaller than 4mm^2 should be used to connect the grounding terminal of the controller with the grounding body to ensure firm and secure grounding of the controller, or else the anti-jamming capability of the controller may be weakened due to poor grounding and the case may be electrified and endanger personal safety. Our company shall assume no responsibilities for the consequences.

Warning:
It is necessary to dismount all electromagnetic valves (electric detonators) from the devices which are driven by them during system installation, troubleshooting or maintenance to avoid unexpected losses as a result of malfunctions of the fire extinguisher due to miss operation or wrong connection.

2.5 Installation of peripheral parts

1. **The QM-MA-01 manual/auto control box**
   The access mode of the QM-MA-01 in JB-QBL-QM200 is given in the table below.

Output terminals of the QM-MA-01 manual/auto control box	Output terminals of the JB-QBL-QM200 fire alarm controller	Terminal name (meaning)
1	Terminal 1 of the master control board	+24V(+24V power supply)
2	Input terminal GND(between 18 and 19)of the master control board	AGND
3	Terminal 20 on the master control board	A/M(manual/auto signal input terminal)
4	Input terminal GND(between 18 and 19)of the master control board	AGND
5	Terminal 7 on the master control board	Fire alarm output terminal
6	Terminal 3 on the master control board	Release output terminal

Note in the access mode above that before the fire alarm controller is delivered, the black short wire connected to terminal 20 on the master control board should be dismounted and terminals 2 and 4 in the manual/auto control box may be first connected to the manual/auto control box through a conductor and then connected to the input terminal GND (between 18 and 19) on the master control board through a conductor.

2. QM-AN-01 emergency start/stop control box

The access mode of the QM-AN-01 in JB-QBL-QM200 is given in the table below.

Output terminals of the QM-AN-01 emergency start/stop control box	Output terminals of the JB-QBL-QM200 fire alarm controller	Terminal name (meaning)
1	Input terminal GND(between 18 and 19)of the master control board	AGND
2	Terminal 1 on the master control board	+24V(+24V power supply)
3	GND(between 18 and 19)	AGND
4	Terminal 19 on the master control board	Input terminal of the emergency stop signal
5	Terminal 1 on the master control board	+24V(+24V power supply)
6	Terminal 17 on the master control board	Input terminal of the emergency start signal
7	Terminal 7 on the master control board	Single fire alarm active output terminal

Note in the access mode above that before the fire alarm controller is delivered, the black short wire connected to terminal 19 on the master control board should be dismounted, terminals 1 and 3 in the emergency start/stop control box may be first connected through a conductor and then connected to the terminal GND (between 18 and 19) on the fire alarm controller through a wire and terminals 2 and 5 in the emergency start/stop control box may be first connected through a conductor and then to the +24V terminal (terminal 1 of the fire alarm controller) through a wire.

2.6 Power-on test

Before its delivery, the system must be tested comprehensively.

Before the power-on test, please check again if all connecting wires (including the battery lines) have been well connected. Then press the AC switch and the DC switch on the switching power supply (PS-06) to power the system on.

See Chapter VI for key on/off operations and Chapter V for panel indications.

Take this User's Manual as a reference and check if all functions of the system are normal. The EMERGENCY START button on the display panel is a disposable and fragile plastic button and it may be tested by having the jumper JP11 on the back of the display panel shorted to the ON position.

If it is found when the system is tested that resetting of the fire alarm controller or other abnormal phenomena occur due to a too large load starting impulse current, the usual measure is to use a 24V external control power supply. Another measure is to have a 10~20 Ω /3W current-limiting resistor connected in series in the driving circuit, or to have freewheel diodes (such as IN4001) connected reversely and in parallel at both ends of the load, or to use a resistance-capacitance network or a TVS transient voltage suppressor (such as P6KE33CA).

2.7 Wiring diagram

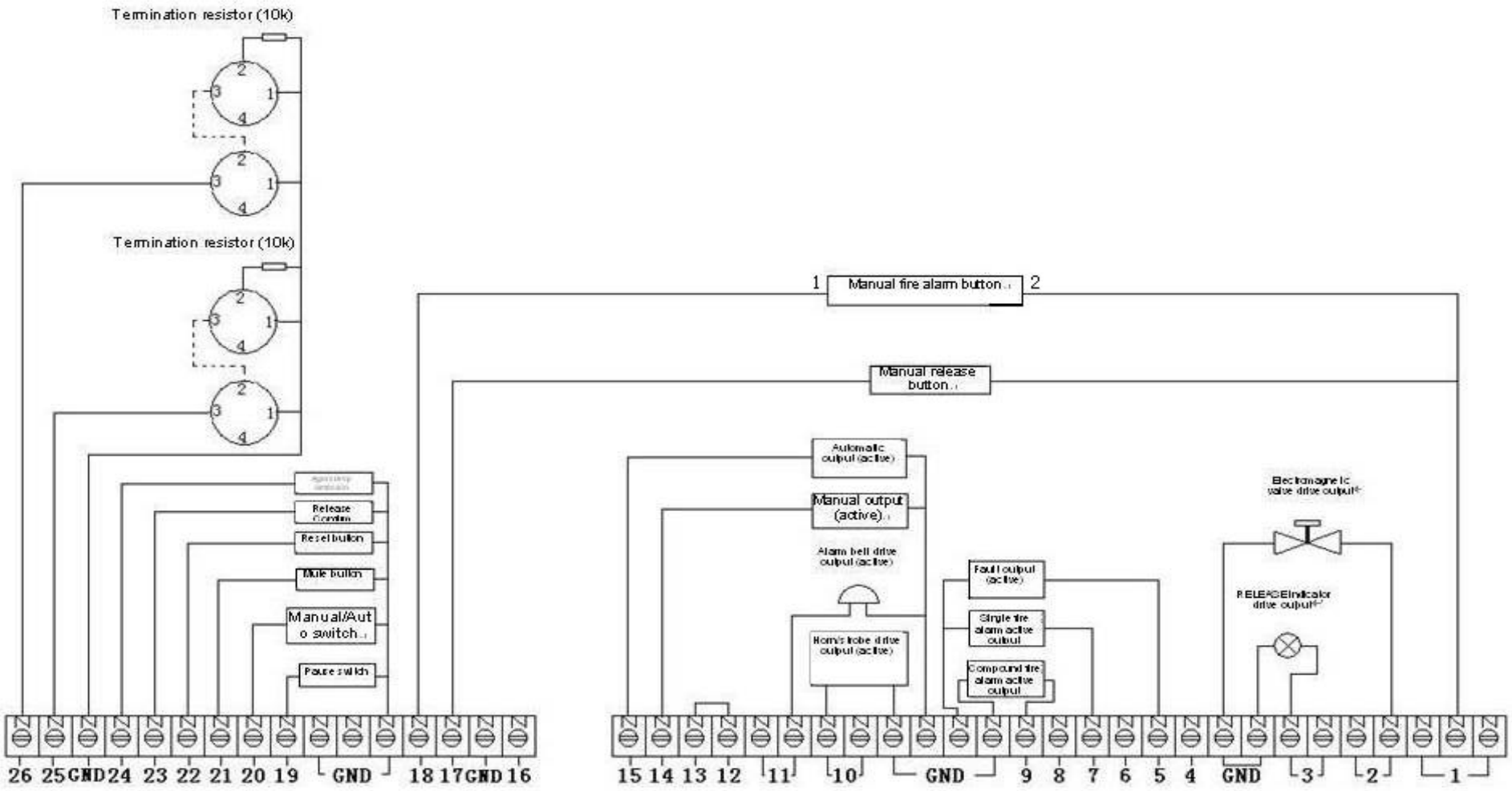


Fig.2.7 Wiring Diagram of the Fire Alarm Controller (Active Output)

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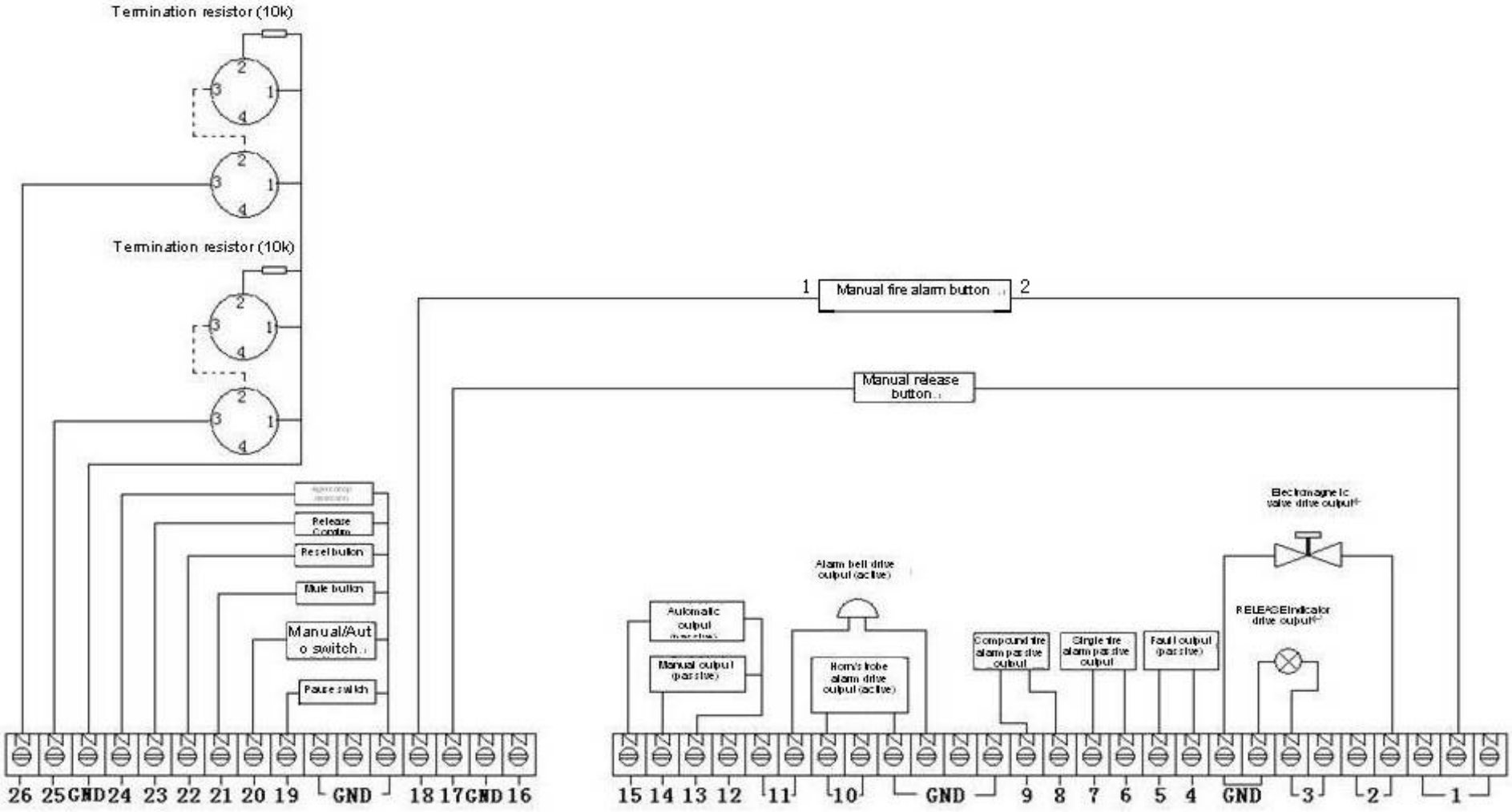


Fig.2.8 Wiring Diagram of the Fire Alarm Controller (Partial Passive Output)

Fig.2.8 Wiring Diagram of the Fire Alarm Controller (Partial Passive Output)

Chapter III Jumpers

3.1 Jumpers on the master control board

There are three kinds of jumpers on the master control board: Jumpers JP1 to JP7 for the short or open circuit fault detection of the output circuits, the jumpers JP12 to JP21 for selecting the built-in termination resistors of the input circuits and the jumpers JP8 to JP9 for terminal active output. See Fig.4.1 for the locations of the jumpers on the master control board and refer to the screen printing description on the master control board for the status setting method of the jumpers.

3.1.1 The factory defaults of the jumpers on the master control board

Type	Mark number	Connection location	Description
Jumpers for the fault detection of the output circuits	JP1		Not detect the short or open fault of the release indication output circuit.
	JP2		Not detect the short or open fault of the horn/strobe output circuit.
	JP3		Not detect the short or open fault of the alarm bell output circuit.
	JP4		Not detect the short or open fault of the fault output circuit.
	JP5		Not detect the short or open fault of the single fire alarm output circuit.
	JP6		Not detect the short or open fault of the compound fire alarm output circuit.
	JP7		Detect the short or open fault of the electromagnetic valve output circuit.
Jumpers for the fault detection of the input circuits	JP12		Not detect the open fault of the agent drop alarm signal input circuit.
	JP13		Detect the open fault of the signal input circuit of the detector circuit 1.
	JP14		Not detect the open fault of the Reset button signal input circuit.
	JP15		Not detect the open fault of the Release Confirm signal input circuit.
	JP16		Not detect the open fault of the Local Manual/Auto signal input circuit.
	JP17		Detect the open fault of the signal input circuit of the detector circuit 2.
	JP18		Not detect the open fault of the Mute button signal input circuit.
	JP19		Not detect the open fault of the signal input circuit of the manual fire alarm.
	JP20		Not detect the open fault of the local stop signal input circuit.
	JP21		Not detect the open fault of the manual release signal input circuit.
Jumpers for active output selection	JP8	Shorting	Compound fire alarm active output
	JP9	Shorting	Single fire alarm active output
	JP10	Shorting	Fault active output
	J1	Shorting of terminals 12 and 13	The manual/auto output is active.

Table 3.1.1 Factory Defaults of the Jumpers on the Master Control Board

All possible settings of the jumpers on the master control board:

Type	Mark number	Connection location	Description
Jumpers for the fault detection of the output circuits	JP1		Not detect the short or open fault of the release indication output circuit.
			Detect the short or open fault of the release indication output circuit.
	JP2		Not detect the short or open fault of the horn/strobe output circuit.
			Detect the short or open fault of the horn/strobe output circuit.
	JP3		Not detect the short or open fault of the alarm bell output circuit.
			Detect the short or open fault of the alarm bell output circuit.
	JP4		Not detect the short or open fault of the fault output circuit.
			Detect the short or open fault of the fault output circuit.
	JP5		Not detect the short or open fault of the single fire alarm output circuit.
			Detect the short or open fault of the single fire alarm output circuit.
	JP6		Not detect the short or open fault of the compound fire alarm output circuit.
			Detect the short or open fault of the compound fire alarm output circuit.

Type	Mark number	Connection location	Description
	JP7		Not detect the short or open fault of the electromagnetic valve output circuit.
			Detect the short or open fault of the electromagnetic valve output circuit.
Jumpers for the fault detection of the input circuits	JP12		Not detect the open fault of the agent drop alarm signal input circuit.
			Detect the open fault of the agent drop alarm signal input circuit.
	JP13		Not detect the open fault of the signal input circuit of the detector circuit 1.
			Detect the open fault of the signal input circuit of the detector circuit 1.
	JP14		Not detect the open fault of the RESET button signal input circuit.
			Detect the open fault of the RESET button signal input circuit.
	JP15		Not detect the open fault of the Release Confirm signal input circuit.
			Detect the open fault of the Release Confirm signal input circuit.
	JP16		Not detect the open fault of the Local Manual/Auto signal input circuit.
			Detect the open fault of the Local Manual/Auto signal input circuit.
	JP17		Not detect the open fault of the signal input circuit of the detector circuit 2.
			Detect the open fault of the signal input circuit of the detector circuit 2.
	JP18		Not detect the open fault of the MUTE button signal input circuit.
			Detect the open fault of the MUTE button signal input circuit.
	JP19		Not detect the open fault of the signal input circuit of the manual fire alarm.
			Detect the open fault of the signal input circuit of the manual fire alarm.
	JP20		Not detect the open fault of the stop signal input circuit.
			Detect the open fault of the stop signal input circuit.
	JP21		Not detect the open fault of the manual release signal input circuit.
			Detect the open fault of the manual release signal input circuit.
Jumpers for active output selection	JP8	Shorting	Set the compound fire alarm output to be active.
		Off	Set the compound fire alarm output to be passive.
	JP9	Shorting	Set the single fire alarm output to be active.
		Off	Set the single fire alarm output to be passive.
	JP10	Shorting	Set the fault output to be active.
		Off	Set the fault output to be passive.
	Output terminal J1	Shorting of terminals 12 and 13	The manual/auto output is active.
		Shorting of terminals 12 and 13	The manual/auto output is passive.

Table 3.1.2 All Possible Settings of the Jumpers on the Master Control Board

Note: When the jumpers are in the ON position, the 10K termination resistors are internally connected and the short or open circuit faults of the external circuits are not detected; when they are in the OFF position, namely when the short or open faults of corresponding output circuits are detected, the detection can be finished by arranging auxiliary circuits at the terminals of corresponding output circuits. For the use of auxiliary circuits, please see the contents on the connection modes of the output circuits with a short or open circuit fault detection function in 4.3.1 and 4.3.2 in Chapter IV.

3.1.2 Setup of the start-up delay time of electromagnetic valves

The automatic start-up delay time of the electromagnetic valves of JB-QBL-QM200 is set through the jumpers JP6, JP7 and JP8 on the display panel as shown in Fig.3.1.2. **And its factory default is 20s.**

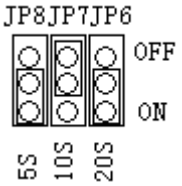


Fig.3.1.2 Schematic Diagram of the Settings of the Automatic Start-up Delay Time of the Electromagnetic Valves

Calculation method of the start-up delay time of the electromagnetic valves:

- When the jumper JP8 is to the ON position, the delay time will increase by 5s; and if it is in the OFF position, the delay time will not increase.
- When the jumper JP7 is to the ON position, the delay time will increase by 10s; and if it is in the OFF position, the delay time will not increase.
- When the jumper JP6 is to the ON position, the delay time will increase by 20s; and if it is in the OFF position, the delay time will not increase.

For example, if the jumpers JP8 and JP6 in Fig.3.1.2 are both in the ON position, the delay time will be the sum of 5s and 20s, i.e. 25s.

The table below shows the all possible settings of the start-up delay time of electromagnetic valves.

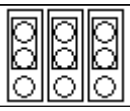
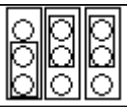
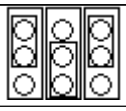
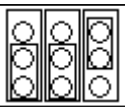
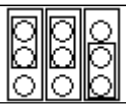
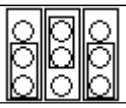
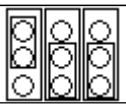
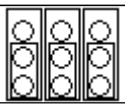
0s	5s	10s	15s
			
20s	**25s**	**30s**	**30s**
			

Table 3.1.3 Settings of the Start-up Delay Time of Electromagnetic Valves

3.1.3 Setup of the mode of emergency release delay

The jumper JP5 on the display panel is for setting the mode of the emergency release delay. **The factory default is OFF, that is to say, the electromagnetic valves will be started after the set delay time is reached.**

All possible settings of the jumper JP5 are given in the table below.

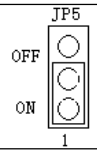
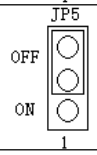
	The electromagnetic valves will be started after the EMERGENCY RELEASE button is pressed and a delay time of 5s is reached.
	The electromagnetic valves will be started after the EMERGENCY RELEASE button is pressed and the set delay time is reached. The delay time depends on JP6-JP8.

Table.3.1.4 Setup of the Manual Start-up Delay Mode

3.1.4 Setup of the delay mode for the EXTERNAL MANUAL RELEASE button

The jumper JP4 on the display panel is for setting the delay mode of the EXTERNAL MANUAL RELEASE button. **The factory default is OFF, that is to say, the electromagnetic valves will be started after the set delay time is reached.**

All possible settings of the jumper JP4 are given in the table below.

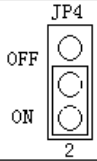
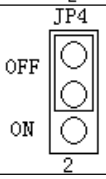
	The electromagnetic valves will be started after the EXTERNAL MANUAL RELEASE button is pressed and a delay time of 5s is reached.
	The electromagnetic valves will be started after the EXTERNAL MANUAL RELEASE button is pressed and the set delay time is reached. The delay time depends on JP6-JP8.

Table 3.1.5 Setup of the Delay Mode for the EXTERNAL MANUAL RELEASE Button

3.1.5 Setup of the control mode of the key lock over the EMERGENCY RELEASE button on the display panel

The jumper JP3 on the master control board is for setting the control mode of the key lock over the EMERGENCY RELEASE button on the display panel. **The factory default is OFF,** which means that the EMERGENCY RELEASE button is not controlled by the key lock.
All possible settings are given in the table below.

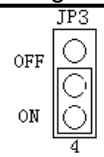
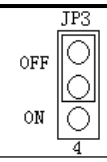
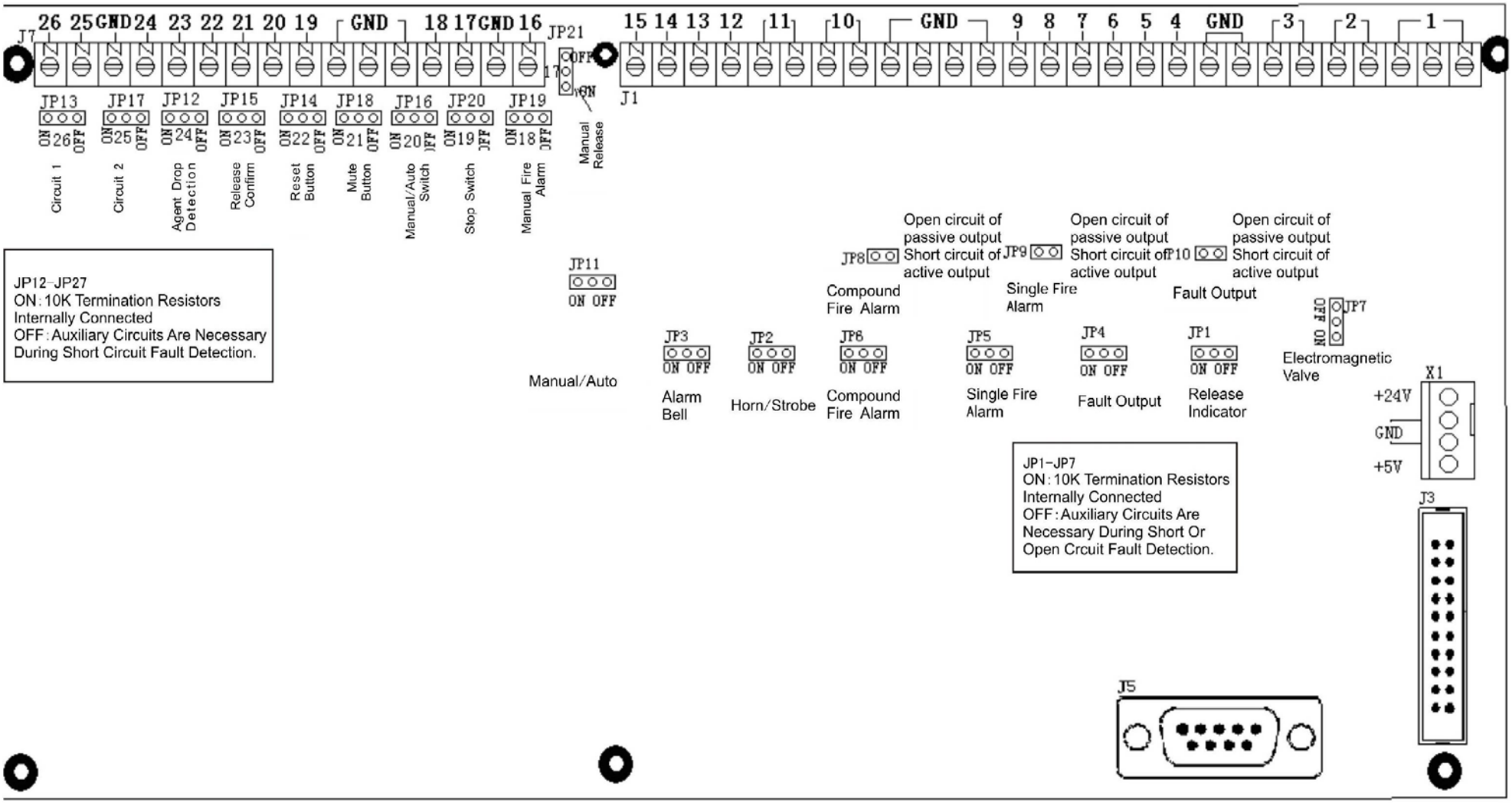
	The EMERGENCY RELEASE button on the display panel is controlled by the key lock.
	The EMERGENCY RELEASE button on the display panel is not controlled by the key lock.

Table 3.1.6 Setup of the Control Mode of the Key lock over the EMERGENCY RELEASE Button on the Display Panel

Chapter IV Terminals

4.1 Terminal positions

The terminal positions are given in Fig.4.1.



X1(4-digit): Power Input Terminal	J3: Connecting Terminal For Keyboard Display	J5: Power Fault Input Terminal	J7: Input terminal	J1: Output Terminal
JP12-JP21: Built-in Termination Resistor Selection Jumpers For Input Circuits		JP1-JP7: Built-in Termination Resistor Selection Jumpers For Output Circuits		
Jp8: Jumper For Selecting Active Or Passive Compound Fire Alarm Output	JP9: Jumper For Selecting Active Or Passive Simple Fire Alarm Output	Jp9: Jumper For Selecting Active Or Passive passive Fault Output		

Fig.4.1 Terminal Positions

4.2 Use of input terminals

4.2.1 Input terminals on the master control board

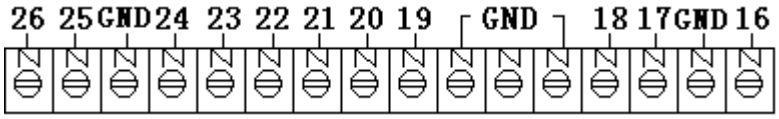


Fig.4.1.1 Input Terminals on the Master Control Board

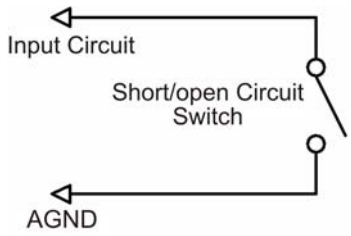
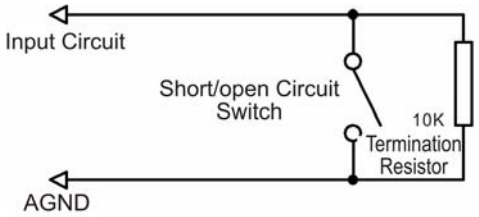
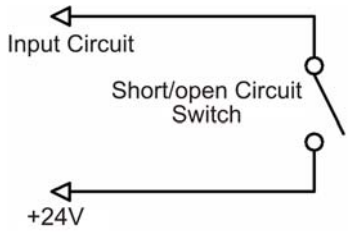
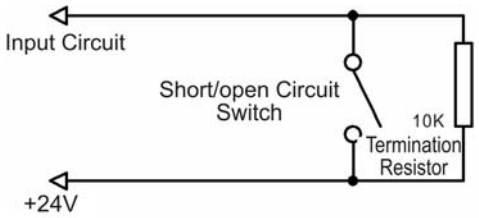
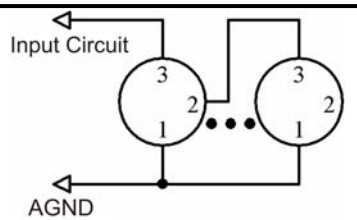
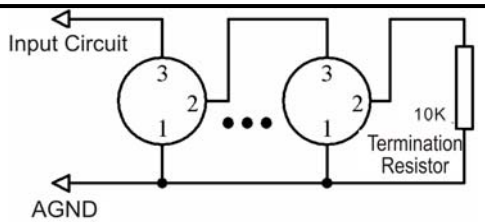
Purposes of the input terminals on the master control board:

No.	Purpose
16	+24VK
17	Input of the MANUAL RELEASE button
18	Input of the MANUAL FIRE ALARM button
19	Input of the PAUSE switch
20	Input of the MANUAL/AUTO switch
21	Input of the MUTE button
22	Input of the RESET button
23	Pressure feedback input terminal for release confirmation
24	Input terminal for agent drop alarm
25	Input terminal of the second detection and alarm circuit
26	Input terminal of the first detection and alarm circuit

Note: It is not allowed to share the input circuit ground and the output circuit ground. The +24V PGND has been connected with the output circuit ground in the control board.

4.2.2 Connection modes of input terminals

The local input signals include three kinds, namely that for the AGND short/open circuit switch, that for the +24V short/open circuit switch and that for the detector circuits. The connection modes of the input signals of different kinds are given in the table below.

<table>
<tr><th>Connection mode</th><th>Signal form of the input circuit</th><th>Connection mode A of the input circuit (without open circuit fault detection)</th><th>Connection mode B of the input circuit (with open circuit fault detection)</th><th>Applicable terminal</th></tr>
<tr><td rowspan="6">1</td><td rowspan="6">For the AGND short/open circuit switch</td><td rowspan="6">
</td><td rowspan="6">
</td><td>Terminal 19</td></tr>
<tr><td>Terminal 20</td></tr>
<tr><td>Terminal 21</td></tr>
<tr><td>Terminal 22</td></tr>
<tr><td>Terminal 23</td></tr>
<tr><td>Terminal 24</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">For the +24V Short/open circuit switch</td><td rowspan="2">
</td><td rowspan="2">
</td><td>Terminal 17</td></tr>
<tr><td>Terminal 18</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Detector circuits</td><td rowspan="2">
</td><td rowspan="2">
</td><td>Terminal 25</td></tr>
<tr><td>Terminal 26</td></tr>
</table>

4.2.3 Description of the input terminals on the master control board

1. Terminal 17 on the master control board: It is for the input of the MANUAL RELEASE button (for the +24V short/open circuit switch and the self-locking switch).

1) Connection mode 2 should be selected for it. When the connection mode A without an open circuit fault detection function is selected, the jumper JP21 on the master control board should be set to the ON position as shown in Table 3.1.2 and Fig.4.1, and the built-in termination resistors in the control board should be used; when connection mode B with an open circuit fault detection function is selected, the jumper JP21 on the master control board should be set to the OFF position, the built-in termination resistors in the control board should not be used and a 10K Ω termination resistor should be arranged at the end of the circuit shown in connection mode B.
2) A short circuit of the switch suggests a manual release signal input and **the necessity of using the self-locking switch**. In order to strengthen the anti-jamming level, it is necessary to maintain a short circuit state from the start of delay to release, or else only horn/strobe output, alarm bell output, single fire alarm output and compound fire alarm output will be available and the electromagnetic valves will not operate.

2. Terminal 18 on the master control board: It is to access the MANUAL FIRE ALARM button (for the +24V short/open circuit switch and the self-locking switch;**To connect the terminal MANUAL FIRE ALARM button 1**).

1) Connection mode 2 should be selected for it. When the connection mode A without an open circuit fault detection function is selected, the jumper JP19 on the master control board should be set to the ON position as shown in Table 3.1.2 and Fig.4.1, and the built-in termination resistors in the control board should be used; when connection mode B with an open circuit fault detection function is selected, the jumper JP19 on the master control board should be set to the OFF position, the built-in termination resistors in the control board should not be used and a 10K Ω termination resistor should be arranged at the end of the circuit shown in connection mode B.
2) A short circuit of the switch suggests a fire alarm signal input.

3. Terminal 19 on the master control board: It is for the accession of the LOCAL EMERGENCY STOP button (for the AGND short/open circuit switch and the self-locking switch).

1) Before the delivery of the fire alarm controller, terminal 19 has been shorted to ground through a black conductor (the factory default). This black conductor should be dismounted when the LOCAL EMERGENCY STOP button is accessed.

2) Connection mode 1 should be selected for it. When connection mode A without an open circuit fault detection function is selected, the jumper JP20 on the master control board should be set to the ON position as shown in Table 3.1.2 and Fig.4.1, and the built-in termination resistors in the control board should be used; when connection mode B with an open circuit fault detection function is selected, the jumper JP20 on the master control board should be set to the OFF position, the built-in termination resistors in the control board should not be used and a 10K Ω termination resistor should be arranged at the end of the circuit shown in connection mode B.
3) A short circuit of the switch suggests a normal status and an open circuit of the switch suggests an emergency stop signal input and the necessity of forbidding the output of an electromagnetic valve driving signal.

4. Terminal 20 on the master control board: It is for the accession of the LOCAL MANUAL/AUTO switch (for the AGND short/open circuit switch and the self-locking switch).

1) Before the delivery of the fire alarm controller, terminal 20 has been shorted to ground through a black conductor (the factory default). This black conductor should be dismounted when the LOCAL MANUAL/AUTO switch is accessed.

2) Connection mode 1 should be selected for it. When the connection mode A without an open circuit fault detection function is selected, the jumper JP16 on the master control board should be set to the ON position as shown in Table 3.1.2 and Fig.4.1, and the built-in termination resistors in the control board should be used; when connection mode B with an open circuit fault detection function is selected, the jumper JP16 on the master control board should be set to the OFF position, the built-in termination resistors in the control board should not be used and a 10K Ω termination resistor should be arranged at the end of the circuit shown in connection mode B.
3) A short circuit of the switch suggests an automatic signal input and the switching between the auto mode and the manual mode can be realized at this time through the MANUAL/AUTO button on the display panel; an open circuit suggests a manual signal input, and the system is in the manual mode at this time, switching through the MANUAL/AUTO button on the display panel cannot be realized and external manual operation is preferred.
4) Generally speaking, only a LOCAL MANUAL/AUTO switch is connected to terminal 20 on the master control board for setting the manual/auto mode of the system. However, on some special occasions where it is necessary to connect multiple LOCAL MANUAL/AUTO switches, either of the following two methods may be used.
   a. Make all LOCAL MANUAL/AUTO switches connected in parallel. When any of the LOCAL MANUAL/AUTO switches are in a short-circuit condition, the system will enter the auto mode; when all of them are in an open-circuit condition, the system will enter the manual mode.
   b. Make all LOCAL MANUAL/AUTO switches connected in series. When any of the LOCAL

MANUAL/AUTO switches is in an open-circuit condition, the system will enter the manual mode; when all of them are in a short-circuit condition, the system will enter the auto mode.

It can be seen that the system will give priority to the auto mode when multiple LOCAL MANUAL/AUTO switches are connected in parallel or to the manual mode when the said switches are connected in series. For better practical application, the serial connection mode is recommended.

Note: After detecting a compound fire alarm in the auto mode, the system will automatically drive the electromagnetic valves, start the fire extinguishing devices; and after detecting a compound fire alarm in the manual mode, the system will not drive the electromagnetic valves.

5. Terminal 21 on the master control board: It is for the muting control of both the horn/strobe and the alarm bell (for the AGND short/open circuit switch).

1) Connection mode 1 should be selected for it. When connection mode A without an open circuit fault detection function is selected, the jumper JP18 on the master control board should be set to the ON position as shown in Table 3.1.2 and Fig.4.1, and the built-in termination resistors in the control board should be used; and when connection mode B with an open circuit fault detection function is selected, the jumper JP18 on the master control board should be set to the OFF position, the built-in termination resistors in the control board should not be used and a 10K Ω termination resistor should be arranged at the end of the circuit shown in connection mode B.
2) A short circuit of the switch suggests a mute signal input and muting of both the horn/strobe and the alarm bell. At this time, the switch is off, the muting is cancelled and the external muting cannot be cancelled through the HORN/STROBE START/STOP button and the ALARM BELL START/STOP button on the display panel. In case of an open circuit of the switch, the muting can be cancelled through the HORN/STROBE START/STOP button and the ALARM BELL START/STOP button on the display panel.

6. Terminal 22 on the master control board: It is for the reset signal input (for the AGND short/open circuit switch).

1) Connection mode 1 should be selected for it. When connection mode A without an open circuit fault detection function is selected, the jumper JP14 on the master control board should be set to the ON position as shown in Table 3.1.2 and Fig.4.1, and the built-in termination resistors in the control board should be used; when connection mode B with an open circuit fault detection function is selected, the jumper JP14 on the master control board should be set to the OFF position, the built-in termination resistors in the control board should not be used, and a 10K Ω termination resistor should be arranged at the end of the circuit shown in connection mode B.
2) A short circuit of the switch suggests a reset status of the system, and an open circuit of the switch means that the system will enter the monitoring status.

7. Terminal 23 on the master control board: It is for the accession of the local pressure feedback signal (for the AGND short/open circuit switch).

1) Connection mode 1 should be selected for it. When connection mode A without an open circuit fault detection function is selected, the jumper JP15 on the master control board should be set to the ON position as shown in Table 3.1.2 and Fig.4.1, and the built-in termination resistors in the control board should be used; when connection mode B with an open circuit fault detection function is selected, the jumper JP15 on the master control board should be set to the OFF position, the built-in termination resistors in the control board should not be used, and a 10K Ω termination resistor should be arranged at the end of the circuit shown in connection mode B.
2) An open circuit of the switch suggests a normal status and a short circuit of the switch suggests a pressure feedback signal input.
3) When there is a pressure feedback signal input, the RELEASE indicator will have a drive output no matter whether the electromagnetic valves have a drive output or not.

8. Terminal 24 on the master control board: It is for the accession of the agent drop alarm signal (for the AGND short/open circuit switch).

1) Connection mode 1 should be selected for it. When connection mode A without an open circuit fault detection function is selected, the jumper JP12 on the master control board should be set to the ON position as shown in Table 3.1.2 and Fig.4.1, and the built-in termination resistors in the control board should be used; when connection mode B with an open circuit fault detection function is selected, the jumper JP12 on the master control board should be set to the OFF position, the built-in termination resistors in the control board should not be used, and a 10K Ω termination resistor should be arranged at the end of the circuit shown in connection mode B.
2) A short circuit of the switch suggests an air cylinder agent drop alarm signal input and an open circuit of the switch suggests a normal weight of the air cylinder.

In case of agent drop input, the electromagnetic valves will make no output regardless of whether there is a fire alarm.

9. Terminals 25 and 26 on the master control board: They are for the accession of the detector circuits.

1) Terminals 25 and 26 are connected with detector circuit 2 and detector circuit 1 respectively. The accessed detectors are common on-off heat detectors or smoke detectors. Generally speaking, the two circuits are connected with a heat detector and a smoke detector respectively.

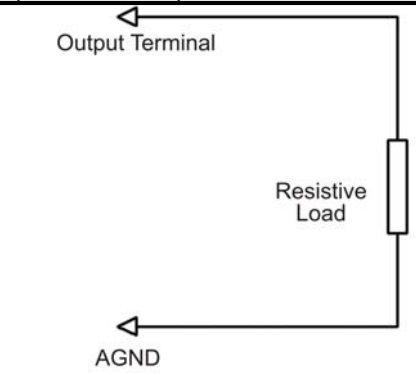
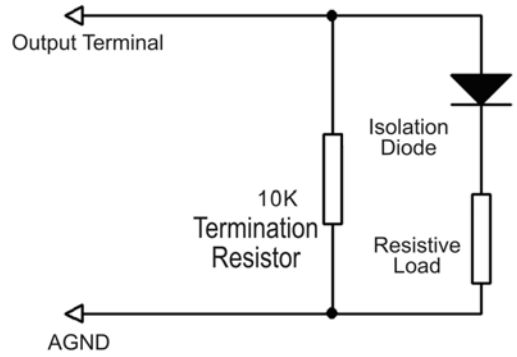
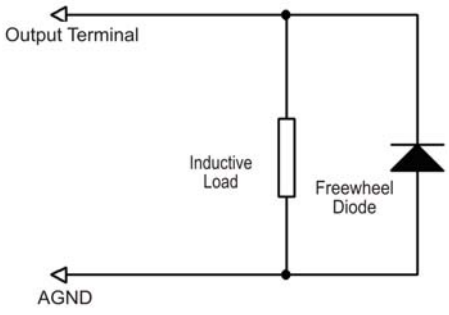
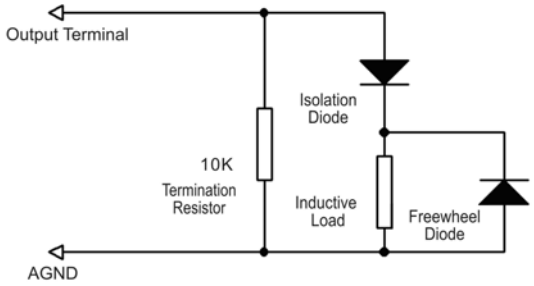
2) Connection mode 3 should be selected for it. When the connection mode A without an open circuit fault detection function is selected, corresponding jumper JP17 (for the detector circuit 2) or JP13 (for the detector circuit 1) on the master control board should be set to the ON position as shown in Table 3.1.2 and Fig.4.1, and the built-in termination resistors in the control board should be used; when connection mode B with an open circuit fault detection function is selected, corresponding jumper JP17 (for the detector circuit 2) or JP13 (for the detector circuit 1) on the master control board should be set to the OFF position, the built-in termination resistors in the control board should not be used, and a 10K Ω termination resistor should be arranged at the end of the circuit shown in connection mode B.
3) In case of a fire alarm of the detector or a short circuit of the circuit, the system will give a fire alarm of the corresponding circuit. When the connection mode with an open circuit fault detection function is selected and the circuit has an open circuit or the detector is removed, the system will report a fault of the corresponding circuit.

4.3 Use of output terminals

4.3.1 Connection modes of output terminals

For the +24V active output mode, the system will provide a short or open circuit fault detection function for the output circuits; for the passive output mode, the system will not provide such a function but a pair of normally open dry contacts only. The connection modes of passive output circuits are related to the actual use and will not be introduced here.

Connection modes of the output circuits:

Connection mode	Type of load	Connection mode A of the output circuit (without short/open circuit fault detection)	Connection mode B of the output circuit (with short/open circuit fault detection)
1	Resistive load		
2	Inductive load		

The loads in the table above refer to the devices to be driven, such as electromagnetic valves, alarm bell, horn/strobe, etc. Resistive loads refer to the loads with resistance characteristics, such as the horn/strobe, the RELEASE indicators, etc.; inductive loads refer to the loads with inductance characteristics, such as the alarm bell, the electromagnetic valves, etc.

When stopping a driving signal output, an inductive load will generate a counter electromotive force that may affect or even damage the driving circuit and pose a threat to the stability of system operation, and it is therefore necessary to mount a freewheel diode on the inductive load to absorb and inhibit the counter electromotive force. **When mounting a freewheel diode at the end of a circuit, do pay attention to the direction of the freewheel diode and the polarity of the circuit as incorrect connection may result in an overcurrent phenomenon of the output circuit.** Generally speaking, the freewheel diode should be IN4007, etc.

The table above gives a connection mode A without a short or open circuit fault detection function and a connection mode B with a short or open circuit fault detection function. In connection mode B, an isolation diode and a 10K Ω termination resistor are mounted, and they should be both mounted on the

loads at the ends of the circuit. The isolation diodes in the diagrams are used for the short or open circuit fault detection voltage, but they will not affect the output of driving signals. The selection of isolation diodes should depend on the load current value. For example, IN5401 isolation diodes should be used for the driving circuits of the electromagnetic valves (load current: 1~3A).

4.3.2 Description of the output terminals on the master control board

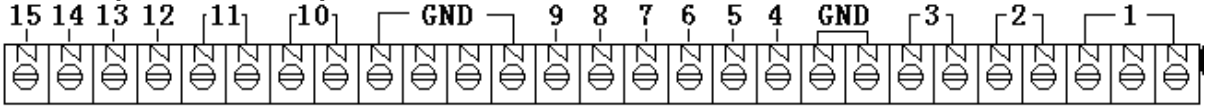


Fig. 4.1 Output Terminals on the Master Control Board

Terminal description:

1. Terminal 1 on the master control board: It is for +24V DC power output.(**To connect the terminal MANUAL FIRE ALARM button 2**)

1) The +24V power supply necessary to the input terminals of the system is led out from terminal 1.
2) It can be connected to external devices as a +24V power supply .

2. Terminal 2 on the master control board: It is for the output of electromagnetic valve driving signals and for the +24V active output.

1) In any of the following three circumstances, the system will start the electromagnetic valves.

No.	State description	Remarks
1	The system is in the auto mode, the detector has detected a compound fire alarm and the set delay time is reached.	
2	The EMERGENCY RELEASE button on the panel is pressed and the set delay time is reached.	
3	The EXTERNAL MANUAL RELEASE button is pressed and the set delay time is reached.	

2) Electromagnetic valves are inductive loads, it is therefore necessary to select between the two connection modes of category 2. Select connection mode A or B according to the judgment on whether the output circuit has a short or open circuit fault detection function.
   - When the output circuit needs no short or open circuit fault detection function, select connection mode A and set the jumper JP7 on the master control board to the ON position. See Table 3.1.2.
   - When the output circuit needs a short or open circuit fault detection function, select connection mode B and set the jumper JP7 on the master control board to the OFF position.
3) When the circuit suffers a fault, the outputs driven by the electromagnetic valves due to a compound fire alarm will be forbidden even if the compound fire alarm is detected by the detectors. The EMERGENCY RELEASE button can still work at this time.

3. Terminal 3 on the master control board: It is for the output of release indication signals and for the +24V active output.

1) The specific connection mode should be selected according to the load characteristics and the judgment on whether the output circuit has a short or open circuit fault detection function.
   - When the connection mode with a short or open circuit fault detection function is selected, the jumper JP1 on the master control board should be set to the OFF position.
   - When connection mode without a short or open circuit fault detection function is selected, the jumper JP1 on the master control board should be set to the ON position. See Table 3.1.2.
   - When the said fault is occurring, the system will report an output fault (the output fault indicator on the display panel will be lit).
2) The maximum output current is 1A.
3) In case of an input of an external pressure feedback signal or an operation of the electromagnetic valves, terminal 3 will output a +24V voltage.

4. Terminal 4 on the master control board: It is used as a passive output terminal of fault output. The jumper JP10 on the master control board is off and terminals 4 and 5 form normally open passive dry contacts as the passive output signals of fault output. The maximum output current is 1A.

5. Terminal 5 on the master control board: It is for the output of faults.

1) The jumper JP10 on the master control board is off and terminals 4 and 5 form normally open passive dry contacts.
2) The jumper JP10 on the master control board has a short circuit and terminal 5 is a +24V active output terminal for faults.
3) The maximum output current is 1A.
4) When it is set as +24V active output terminal, the connection mode should be selected according to the load characteristics and the judgment on whether the output circuit has a short or open circuit fault detection function.
   - When the connection mode with a short or open circuit fault detection function is selected, the jumper JP4 on the master control board should be set to the OFF position. See Table 3.1.2.
   - When the connection mode without a short or open circuit fault detection function is selected, the jumper JP4 should be set to the ON position.

6. Terminal 6 on the master control board: It is used as a passive output terminal for the single fire alarm output.

1) The jumper JP9 on the master control board is off and terminals 6 and 7 form normally open passive dry contacts as the passive output signals of the single fire alarms.
2) The maximum output current is 1A.

7. Terminal 7 on the master control board: It is for single fire alarm output.

1) The jumper JP9 on the master control board is off and terminals 6 and 7 form normally open passive dry contacts.
2) The jumper JP9 on the master control board has a short circuit, and terminal 7 is a +24V active output terminal for the single fire alarms.
3) The maximum output current is 1A.
4) When it is set as +24V active output terminal, the connection mode should be selected according to the load characteristics and the judgment on whether the output circuit has a short or open circuit fault detection function.
   - When the connection mode with a short or open circuit fault detection function is selected, the jumper JP5 on the master control board should be set to the OFF position. See Table 3.1.2.
   - When the connection mode without a short or open circuit fault detection function is selected, the jumper JP5 should be set to the ON position.

   As long as a detector circuit has successfully detected a fire alarm signal, there will be a single fire alarm output.

8. Terminal 8 on the master control board: It is used as a passive output terminal for the compound fire alarm output.

1) The jumper JP8 on the master control board is off and terminal 8 and 9 form normally open passive dry contacts.
2) The maximum output current is 1A.

9. Terminal 9 on the master control board: It is for compound fire alarm output.

1) The jumper JP8 on the master control board is off and terminals 8 and 9 form normally open passive dry contacts as the compound fire alarm signal output.
2) The jumper JP8 on the master control board has a short circuit and terminal 9 is a +24V active output terminal for compound fire alarms. The maximum output current is 1A.
3) When it is set as +24V active output terminal, the connection mode should be selected according to the load characteristics and the judgment on whether the output circuit has a short or open circuit fault detection function.
   - When the connection mode with a short or open circuit fault detection function is selected, the jumper JP6 on the master control board should be set to the OFF position. See Table 3.1.2.
   - When the connection mode without a short or open circuit fault detection function is selected, the jumper JP6 should be set to the ON position.
4) There will be a compound fire alarm output only when both of the two detector circuits have detected a fire alarm signal.

10. Terminal 10 on the master control board: It is for the driving output of the horn/strobe and for the +24V power active output.

The horn/strobe is a resistive load, it is therefore necessary to select between the two connection modes of category 1. Select connection mode A or B according to the judgment on whether the output circuit has a short or open circuit fault detection function.

- When the output circuit needs no short or open circuit fault detection function, select connection mode A and set the jumper JP2 on the master control board to the ON position. See Table 3.1.2.
- When the output circuit needs a short or open circuit fault detection function, select connection mode B and set the jumper JP2 on the master control board to the OFF position.

When the detected circuit suffers a fault, the system will report a sounder fault and the SOUNDER FAULT indicator will be lit.

11. Terminal 11 on the master control board: It is for the output of the alarm bell driving signal.

1) The alarm bell is an inductive load, it is therefore necessary to select between the two connection modes of category 2. Select connection mode A or B according to the judgment on whether the output circuit has a short or open circuit fault detection function.
   - When the output circuit needs no short or open circuit fault detection function, select connection mode A and set the jumper JP3 on the master control board to the ON position. See Table 3.1.2.
   - When the output circuit needs a short or open circuit fault detection function, select connection mode B and set the jumper JP3 on the master control board to the OFF position.

   When the detected circuit suffers a fault, the system will report an output fault and the OUTPUT FAULT indicator will be lit.
2) Node capacity of the relay: 7A 24VDC (resistive load)

12. Terminal 12 on the master control board: +24V output

13. Terminals 13, 14 and 15 on the master control board: Terminals for manual/auto output

1) Terminals 13, 14 and 15 form a single-pole double-throw switch.
2) When terminal 13 is not connected to terminal 12, the manual/auto output is passive; when the two terminals are connected through a conductor, the manual/auto output is active.
3) Terminals 14 and 15 are for manual output and automatic output respectively.

Chapter V Panel display

5.1 Display panel

Fig. 5.1 is the schematic diagram of the display panel of JB-QBL-QM200.

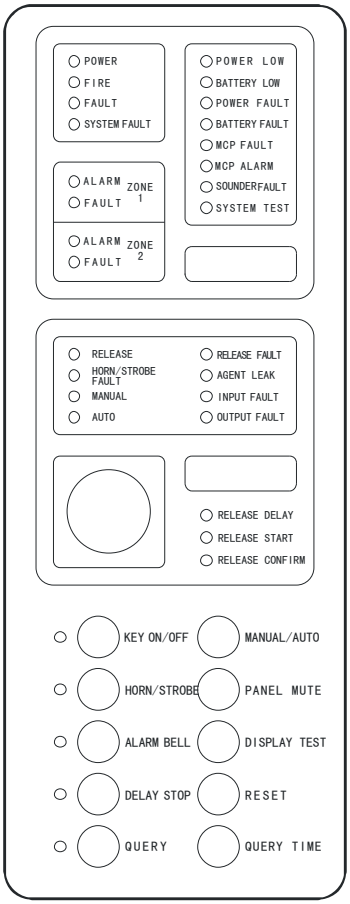


Fig.5.1 Schematic Diagram of the Display Panel of JB-QBL-QM200

There are 33 indicator lights on the display panel of the JB-QBL-QM200, and their meanings are as follows:

◎ **POWER**
After the system is connected with a power supply (AC or standby batteries), this indicator light will be lit.

◎ **FIRE**
In case of a fire alarm, this indicator light will be lit.

◎ **FAULT**
After the system has detected any abnormalities (such as AC/DC open circuit, agent drop, release, input fault, output fault, detector circuit fault and so on), this indicator light will be lit.

◎ **SYSTEM FAULT**
After the SCM program is damaged or it fails to run normally if the SCM RESET button on the master control board is pressed, this indicator light will be lit.

◎ **POWER LOW**
When the power supply voltage is smaller than 180±5VAC, this indicator light will be lit.

◎ **BATTERY LOW**
When the battery voltage is smaller than 22V (regardless of whether AC or DC is used), this indicator light will be lit.

◎ **POWER FAULT**
When one or more of the circumstances below occur, this indicator light will be lit.
1) Open circuit of the AC external input;
2) AC undervoltage or overvoltage (in other words, the AC voltage is beyond the range of 220V± 20%);
3) An internal fault of the power module of the system

◎ **BATTERY FAULT**
When the battery line suffers an open circuit or the battery voltage is smaller than 21V, this indicator light will be lit.

◎ **MCP FAULT**
When a connection fault of the Manual fire alarm call point is detected, this indicator light will be lit.

◎ **MCP ALARM**
When the Manual fire alarm call point is pressed, or the key lock is unlocked, or the MANUAL ALARM button on the panel is pressed, this indicator light will be lit.

◎ **SOUNDER FAULT**
When a sounder short or open circuit fault is detected, this indicator light will be lit (such as an alarm bell).

◎ **SYSTEM TEST**
After the key lock is unlocked and the SYSTEM TEST button is pressed, the system will enter the test status and this indicator light will be lit.

◎ **ZONE X Alarm ("X" refers to figure "1" or "2")**
After the system has detected a fire alarm of detector circuit X, this indicator light will be lit.

◎ **ZONE X Fault ("X" refers to figure "1" or "2")**
After the system has detected a fault of detector circuit X, this indicator light will be lit.

◎ **RELEASE**
After the system has entered the release status and the electromagnetic valves have been started, this indicator light will be lit.

◎ **HORN/STROBE FAULT**
After a short or open circuit fault of the horn/strobe is detected, this indicator light will be lit.

◎ **MANUAL**
When the system is operating in the manual mode, this indicator light will be lit.

◎ **AUTO**
When the system is operating in the auto mode, this indicator light will be lit.

◎ **RELEASE FAULT**
After a short or open circuit fault of the driving output of the release electromagnetic valves is detected, this indicator light will be lit.

◎ **AGENT LEAK**
When an agent leak signal is input via the agent leak monitoring port on the master control board, this indicator light will be lit.

◎ **INPUT FAULT**
After it is detected that one or more of the RELEASE CONFIRM buttons, the RESET button, the MUTE button, the MANUAL/AUTO switch, the PAUSE switch and the MANUAL RELEASE button have faults, this indicator light will be lit.

◎ **OUTPUT FAULT**
After it is detected that one or more of the RELEASE indicators, the fault drive outputs, the single fire alarm drive outputs and the compound fire alarm drive outputs have faults, this indicator light will be lit.

◎ **RELEASE DELAY**
When a compound fire alarm is found, the MANUAL RELEASE button is operated or the EMERGENCY RELEASE button is pressed or when the system is operating in the auto mode, the system will enter the countdown for release and this indicator light will be lit.

◎ **RELEASE START**
When the system is entering the status of release start, this indicator light will be lit.

◎ **RELEASE CONFIRM**
When an external pressure feedback signal is input, this indicator light will be lit and the system will give a release alarm.

◎ **KEY ON/OFF**
When the key lock is unlocked, this indicator light will be lit (see Chapter VI Key On/Off).

◎ **HORN/STROBE(Note: Single fire, only to start the alarm, do not start the sound and light, therefore light does not shine)**
After the horn/strobe is started, this indicator light will be lit.

◎ **ALARM BELL**
After the alarm bell is started, this indicator light will be lit.

◎ **DELAY STOP**
After the DELAY STOP button is pressed when the system is in the countdown for release, the delay process will be stopped and the delay indicator will be lit; when a new release signal is input, this indicator light will go out.

◎ **QUERY**
When the system is entering the query status, this indicator will be lit. This indicator will always be on during a historical record query, or flash during a current alarm information query.

◎ **QUERY TIME**
After button S12 is pressed, the system will enter the timing status and this indicator on the back of the panel will be lit.

Chapter VI Key On/Off

6.1 Keys on the display panel

There are 10 function keys on the display panel of the JB-QBL-QM200 (see Fig.5.1) and their functions are as follows.

KEY ON/OFF The system is designed with a key lock to avoid miss operation. After the **KEY ON/OFF** key and **QUERY TIME** key are pressed in order, the key lock will be unlocked and the KEY ON/OFF indicator will be lit. After the **KEY ON/OFF** key is pressed again, the keyboard will be locked and the KEY ON/OFF indicator will go out. If no operations are performed within a period longer than 4 minutes after the key lock is unlocked, the keyboard will lock again automatically and the KEY ON/OFF indicator will go out. After the keyboard is locked, the **PANEL MUTE** key and the **TIMING** key can function normally; the **DELAY STOP** key can function normally during the countdown; other keys cannot function normally.

HORN/STROBE If this key is pressed after the key lock is unlocked, the horn/strobe may be started or stopped. After the horn/strobe is started, the HORN/STROBE START indicator close to this key will be lit.

ALARM BELL If this key is pressed after the key lock is unlocked, the alarm bell may be started or stopped. After the alarm bell is started, the ALARM BELL START indicator close to this key will be lit.

DELAY STOP After this key is pressed when the system is in the countdown for release, the system will stop the release, the DELAY STOP indicator will be lit and the system will stop the countdown immediately. When another release start signal is input, the delay stop will be cancelled and the countdown will start again. At this time, the user may stop the delay stop by pressing the **DELAY STOP** key.

QUERY After the key lock is unlocked, the user may press the **QUERY** key and **QUERY TIME** key to query both current and historical alarm information, including the time and types of fire alarms, faults and release. When in the monitoring status without fire alarms and fault alarms, historical records may be queried following the flow in Fig.6.1; and when in the monitoring status with an alarm, the time of the current alarm may be queried following the flow in Fig.6.2.

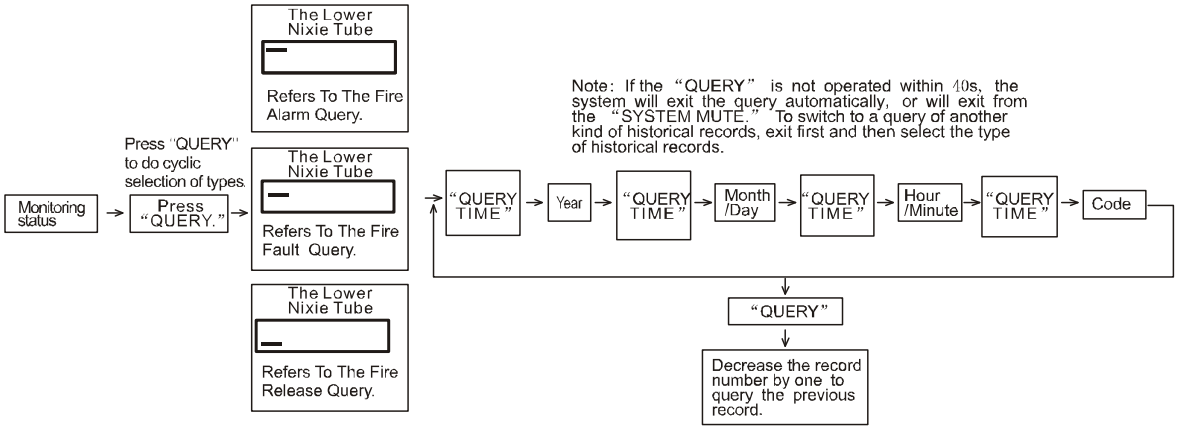


Fig.6.1 Flow of Query of Historical Records

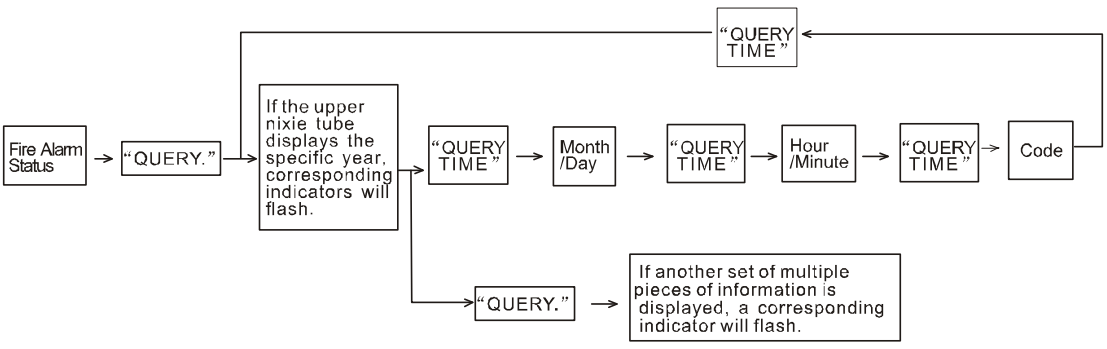


Fig.6.2 Flow of Query of Current Alarm

If **QUERY** is pressed in the monitoring status, the system will enter the selection of types of historical records for query (including fire alarm, fault and release) and the “Query” indicator will be lit. The first digit of the lower nixie tube on the display panel (close to the EMERGENCY RELEASE button) refers to the type. If it displays as -, it means it will query the fire alarm information; if **QUERY** is pressed again and - is displayed, it means it will query the fault information; if **QUERY** is pressed for the third time and - is displayed, it means it will query the release information. If **QUERY** is pressed after that, the system will return to the fire alarm query status and - will be displayed. Press **QUERY TIME** to enter the information display interface of the corresponding type. The lower nixie tube displays the fault No. (0-999). The content initially displayed refers to the latest information which is the amount of the information as well. The LED on the display panel indicates corresponding information (air release, fire alarm or fault). The upper nixie tube displays the time. The content initially displayed is the specific year in the format of ? ?. If **QUERY TIME** is pressed, month/day information in the format of ? ? .? ? will be displayed. If **QUERY TIME** is pressed again, the hour/minute information in the format of ? ? :? ? will be displayed. If it is pressed for the third time, the code information in the format of -? ? - will be displayed. If it is pressed for the fourth time, the specific year will be displayed again. At this time, if **QUERY** is pressed and the number displayed by the lower nixie tube is decreased by 1, the information recorded at earlier time will be displayed.
If **QUERY** is pressed under the alarm status, the system will query the current information and both the QUERY indicator and the indicator of the queried content will flash. If **QUERY TIME** is pressed, the upper nixie tube will display the year, month, day and code of the information. If **QUERY** is pressed again, another piece of information will be displayed.

The meanings of the information codes:
Valve operations: 1. Standby 2. Delay release through the EXTERNAL button 3. Release through the EMERGENCY RELEASE button on the display panel 4. Release through the probe
Alarms: 5. Manual alarm 6. Standby 7. Alarm of circuit 1. 8. Alarm of circuit 2
Faults: 9. Release fault 10. Input fault 11. Output fault 12. AC fault 13. DC fault 14. agent drop 15. Fault of circuit 1 16. Fault of circuit 2 17. DC lack 18. AC lack 19. MCP fault 20. Audible/visual alarm fault 21. Sounder fault
Release: 22. Start time of the EMERGENCY RELEASE button on the display panel
23. Start time of compound fire alarm 24. Start time of external manual release 25. Release confirmation time
Note: The system will record information by type. It can record 2997 items in all, including 999 items of fire alarm information, fault information and release information. If the number of each type of information is more than 999, the earliest information will be covered.
QUERY TIME and **KEY ON/OFF** form the key lock. Besides, if used with the **QUERY** key, it can finish the information query.
Reset It is a reset key for system software. After it is pressed, the system will cancel all alarm and fault indications and initialize all outputs.
SYSTEM TEST It is for system test. During the system test process, the indicators will be lit one by one; the figure on the clock nixie tube will change from 1 to 9 and the audible alarm will change from fault sound to fire alarm sound, release the countdown sound and release alarm sounds in order. See Fig.6.1 for the conditions of various alarm sounds.

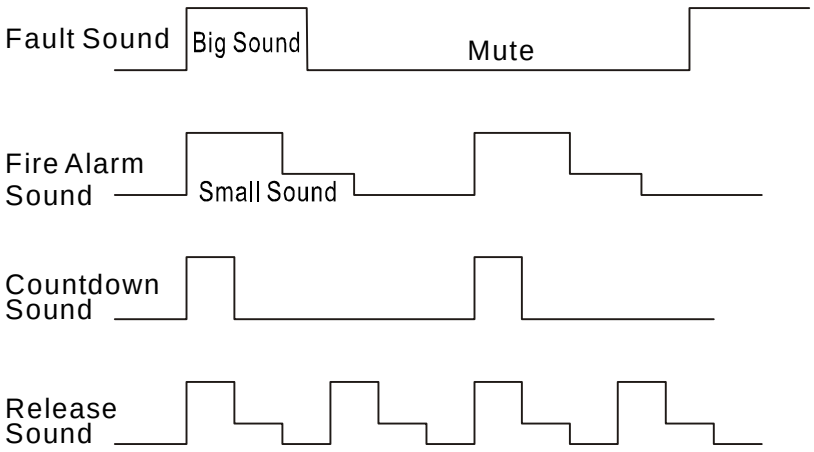


Fig.6.1 Schematic Diagram of the Modes of Alarm Sounds

SYSTEM MUTE After it is pressed, the current audible alarm of the system (the buzzer sound signal given by the system) will be canceled. After a new audible alarm is given, the SYSTEM MUTE function will be disabled and muting can be realized at this time by pressing the **SYSTEM MUTE** key.

Manual/Auto It is for switching between the manual mode and the auto mode. When the signal input circuit of the local manual/auto control box is in the manual mode, this key is disabled.

EMERGENCY RELEASE To press this key, the plastic break button on the display panel must be damaged first. Press it for 1s to 2s. After being pressed, this key will contact the protected microswitch. After this key is pressed, the system will start the release procedure, give relevant audible and visual alarms and start corresponding output signals. After the case is opened, three keys and one LED may be found on the back of the display panel. The three keys include **Switching** key S12, **FWD +** key S11 and **BWD +** key S10, which are used for timing. The **FWD +** key means to add 1 to the first two digits of the nixie tube and the **BWD +** key means to add 1 to the latter two digits of the nixie tube. The adjustment method is as follows:

1. If indicator H11 is lit after **Switching** key S12 is pressed, it means that it is in the timing status and the nixie tube displays the current year in the format of ? ?. After **BWD +** key S10 is pressed, the figure displayed by the nixie tube will increase within the range of 1~60 in a cyclic way.
2. If **Switching** key S12 is pressed again, the nixie tube will display the month and day information in the format of ? ? .? ?. To adjust the month (1~12), press the **FWD +** key S11; and to adjust the day (1~31), press the **BWD +** key S10.
3. If the **Switching** key S12 is pressed for the third time, the nixie tube will display the hour and minute information in the format of ? ? :? ?. To adjust the hour (0~23), press the **FWD +** key S11 and to adjust the minutes (0~59), press the **BWD +** key S10.
4. If the **Switching** key S12 is pressed for the fourth time, clock setup will be finished, indicator H11 will go out and the nixie tube will display the hour and minute information of the clock.

Chapter VII Troubleshooting methods of common faults

1. Fault: Both the detector circuits have detected fire alarms, but there is no release.
   Troubleshooting method: After fire alarms are detected by the two detector circuits, there will be a delayed release output only in the auto mode. Setup may be done through the external MANUAL/AUTO switch and the MANUAL/AUTO switching key on the display panel. For more details, see the descriptions about input terminals and keys.
2. Fault: The EMERGENCY RELEASE button is pressed, but the electromagnetic valves fail to operate.
   Troubleshooting method: Inspect the settings of the jumpers on the display panel to see if release is controlled by the key lock. According to the factory default, it is not controlled by the key lock.