

# **Operating Manual**

For

AH-02120

## Multi-Hazard Suppression Control Panel

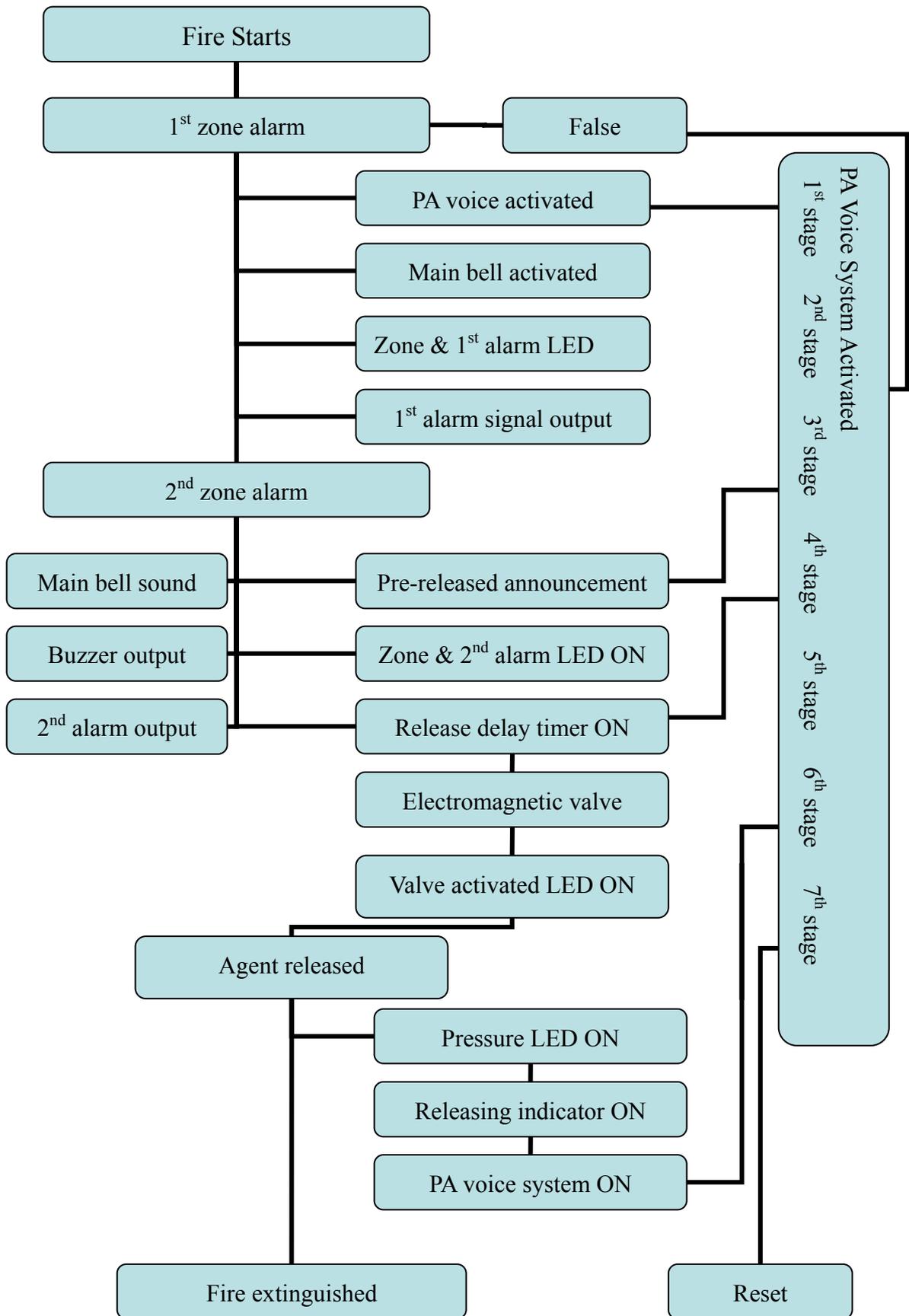
### A. System Features:

- This compact and esthetic unit is ideally suited for variety of agent releasing applications such as FM-200, CO2, and Dry & Wet Chemical.
- Expansion is available in order to protect more areas.
- Auto and Manual operation for agent releasing.
- System enables highly reliable monitoring and suppression control for up to eight separate hazards.
- Audible and visible indication when system has fault condition.
- Digital Release Countdown.
- PA system supply seven sections of voice and its content can be customizing.
- 24 characters LCD and printer are available for optional selection.

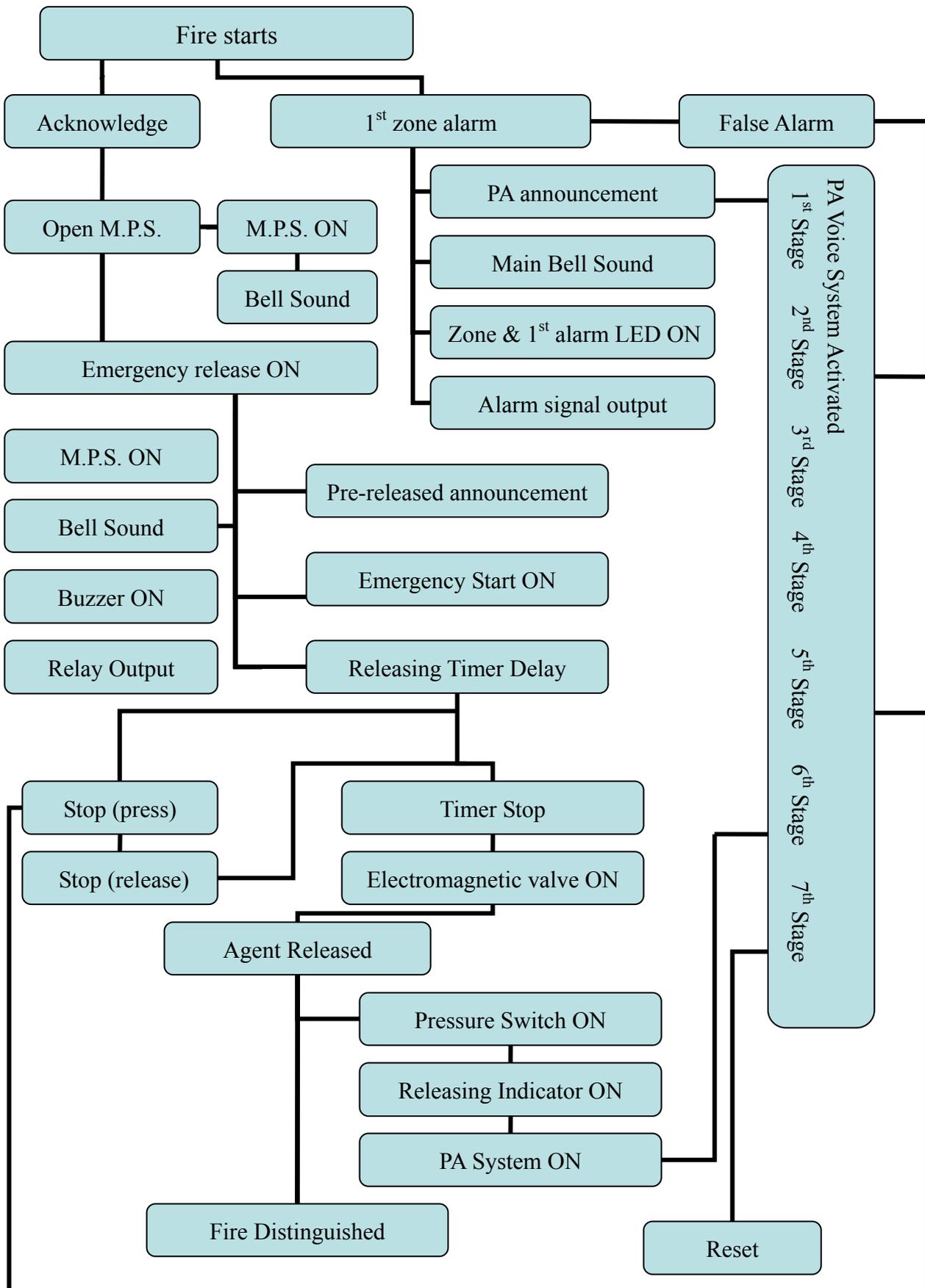
### B. Control Board Features:

1. Cross-zones detection to avoid false alarm.
2. Maintenance valve closed and system lock enable to avoid any dangerous from agent released during maintenance and test period.
3. Main bell can be silenced and will reactive when new alarm signal is issued.
4. 10seconds before PA Voice on 2<sup>nd</sup> stage (agent releasing), the digital release counter will start to countdown.
5. This unit has Emergency Stop & Start; it also can connect with external emergency initial device. Both buttons have protecting cover to avoid any false operation.
6. Hidden switch feature for system set-up
  - a. Adjustable releasing countdown (00-99 seconds).
  - b. Choice of releasing countdown from start or keep counting after Emergency Stop button released.
  - c. Choice of releasing indicator output to active via press switch.
  - d. Choice of printer (optional)
7. Status LED Indicators
  - a. 8 disconnection & alarm indication
  - b. CPU trouble indication
  - c. Voltage abnormal indication
  - d. Attention switch indication
  - e. Switches of main bell, area bell, buzzer, electromagnetic valve, speaker, relay output, reset are use membrane type.

C. Suppression System Flow Chart (Auto Operation)



## D. Manual Operation



### E. Content of PA Voice System

1<sup>st</sup> stage ~ 7<sup>th</sup> stage will depends on customer's request.

### F. Specifications

Supply Voltage	AC 220V 50/60Hz	Others also available
Standby Voltage	DC 24V 4Ah	
Loop Voltage	DC 24V	
External Resistance	Under 50Ω	
# Of Detector Connected	Heat detector – no limit Smoke detector – 30/loop	Except electronic type
EOL Resistance	10KΩ	
Detection Type	Cross-zone detection	
Dimensions	(H 520mm x W 390mm x D 135mm)	Size may vary depends on zones
Material	1.6mm steel plate	
Color	Ivory white	Other colors are available

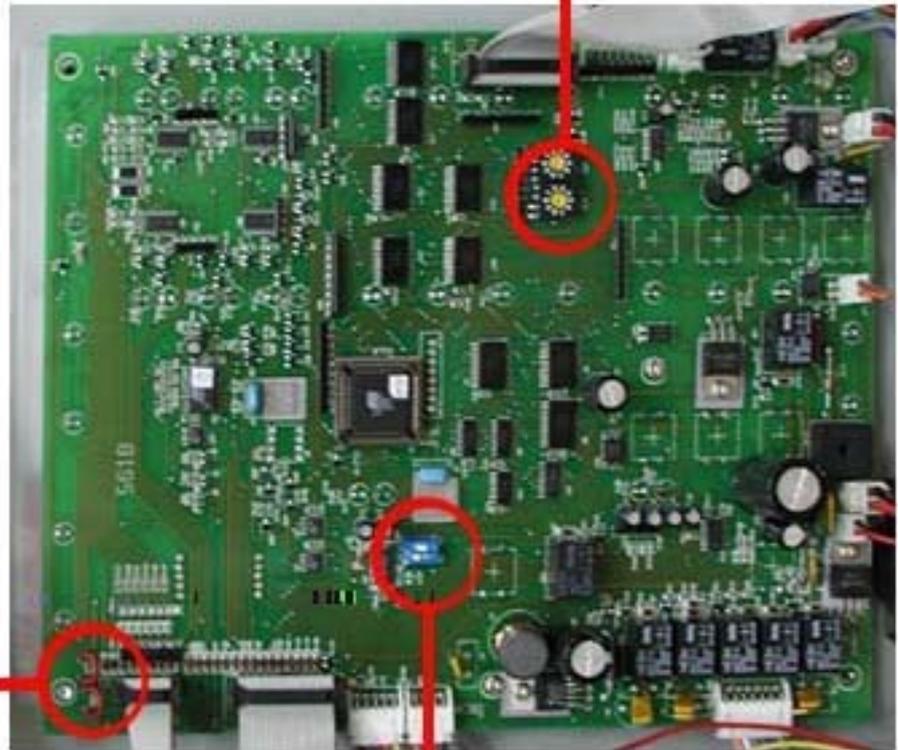
#### External Contacts:

Electromagnetic Valve	DC 24V
Sounder	DC 24V 200mA
Releasing indicator	DC 24V 200mA
Manual Station	RS485 transmission and up to 10 units/zone
Alarm Bell	DC 24V 200mA
Speaker	DC 12V (3W 8Ω/zone)

## G. Hidden Switches

Adjustable Countdown (0-99)

Emergency Start /  
Stop Disable Device

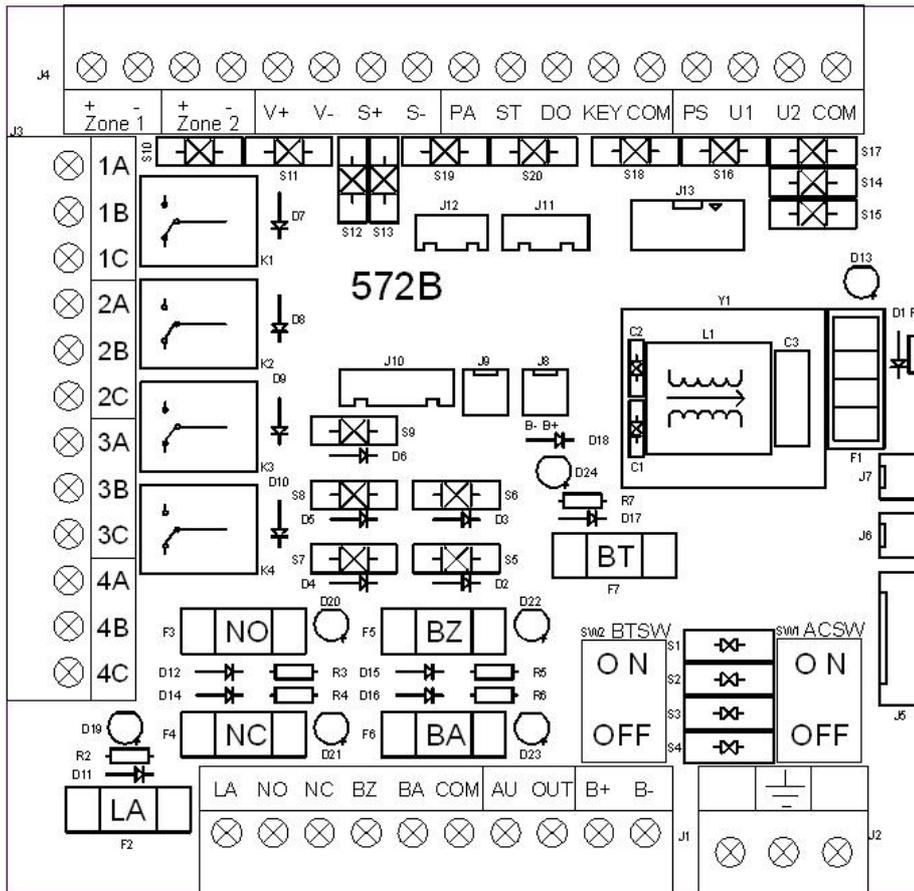


- 1 . Up : Releasing indicator output without pressure switch  
Down : Releasing indicator output via pressure switch
- 2 . Up : Release countdown restart  
Down : Release countdown keep counting

Printer ON/OFF Switch



## H. Wiring Diagram



<b>Zone 1</b>	+	LOOP 1
	-	LOOP 1
<b>Zone 2</b>	+	LOOP 2
	-	LOOP 2
<b>V+</b>	V+	
<b>V-</b>	V-	
<b>S+</b>	S+	
<b>S-</b>	S-	
<b>PA</b>	STOP	
<b>ST</b>	START	
<b>DO</b>	DOOR	
<b>KEY</b>	A & M	
<b>COM</b>		
<b>PS</b>	PRESSURE SWITCH	
<b>U1</b>	MAINSYS	
<b>U2</b>	STANDBY	
<b>COM</b>		

<b>1A</b>	N.O.
<b>1B</b>	N.C.
<b>1C</b>	COM.
<b>2A</b>	N.O.
<b>2B</b>	N.C.
<b>2C</b>	COM.
<b>3A</b>	N.O.
<b>3B</b>	N.C.
<b>3C</b>	COM.
<b>4A</b>	N.O.
<b>4B</b>	N.C.
<b>4C</b>	COM.

<b>LA</b>	BELL
<b>N.O.</b>	BUZZER
<b>N.C.</b>	VALVE OFF
<b>BZ</b>	VALEE ON
<b>BA</b>	REL LAMP
<b>COM</b>	LOAD
<b>AU OUT</b>	SPEAKER
<b>B +</b>	BATT +
<b>B -</b>	BATT -
<b>AC IN</b>	AC
	EARTH
	AC

## I. Monitoring Function List

Unit	Monitoring Content	Relay Output		Alarm Indication	
		Central Monitor System	System Fault	LED Visual Indication	Audio Sound Indication
Control Panel	1 <sup>st</sup> zone alarm	▲		▲	▲
	2 <sup>nd</sup> zone alarm	▲		▲	▲
	1 <sup>st</sup> zone disconnection	▲	▲	▲	▲
	2 <sup>nd</sup> zone disconnection	▲	▲	▲	▲
	Agent released	▲		▲	
	Attention switch	▲	▲	▲	▲
	Power supply failed	▲	▲	▲	▲
	Manual release	▲		▲	▲
	Manual stop	▲		▲	▲
	Auto/Manual	▲		▲	
	Reset	▲			
	System fault			▲	▲
	Fuse fault		▲	▲	▲
	Releasing indicator disconnection		▲	▲	▲
	Manual pull station disconnection		▲	▲	▲
	Speaker disconnection		▲	▲	▲
	Bell disconnection		▲	▲	▲
	Buzzer disconnection		▲	▲	▲
Maintenance Valve	Valve OFF			▲	▲
System Lock	LOCK-OFF			▲	▲

## J. Simultaneous Output and Relay Output

Power ON:

Panel Display	Simultaneous Output	Relay Output
AC power ON Auto LED ON Countdown setting	Speaker output Electromagnetic valve	System Reset

Auto Operation:

	Panel Display	Simultaneous Output	Relay Output
Detection Zone Alarm	Zone LED ON 1 <sup>st</sup> Alarm LED ON Main Bell ON	Area Bell Speaker	Zone Alarm 1 <sup>st</sup> Alarm NO.NC.COM
Cross Zone Alarm	2 zones LED ON 1 <sup>st</sup> Alarm LED ON 2 <sup>nd</sup> Alarm LED ON Main Bell ON Start Countdown	Area Bell Speaker Buzzer	2 Zones Alarm 1 <sup>st</sup> Alarm 2 <sup>nd</sup> Alarm NO.NC.COM
Agent Releasing	2 zones LED ON 1 <sup>st</sup> Alarm LED ON 2 <sup>nd</sup> Alarm LED ON Main Bell ON Start Countdown Pressure Switch ON Releasing Indicator ON Electromagnetic ON	Area Bell Speaker Buzzer Electromagnetic Releasing Indicator	2 Zones Alarm 1 <sup>st</sup> Alarm 2 <sup>nd</sup> Alarm Pressure Switch Releasing Indicator NO.NC.COM
System Reset	AC Power ON Auto LED ON Countdown Set-up	Speaker Electromagnetic	System Reset

**K. Manual Operation:**

	Panel Display	Simultaneous Output	Relay Output
Auto → Manual	Manual LED ON		Manual Mode
Manual Pull Station	M.P.S. LED ON Main Bell ON	Alarm Bell	Manual Pull Station
Emergency Start	M.P.S. LED ON Main Bell ON E. Start LED ON Start Countdown	Alarm Bell Buzzer Speaker	Manual Pull Station Emergency Start
Emergency Stop (Press down)	M.P.S. LED ON Main Bell ON E. Start LED ON Stop Countdown E. Stop LED ON	Alarm Bell Buzzer Speaker	Manual Pull Station Emergency Start Emergency Stop
Emergency Stop (Release)	M.P.S. LED ON Main Bell ON E. Start LED ON Start Countdown E. Stop LED ON	Alarm Bell Buzzer Speaker	Manual Pull Station Emergency Start
Agent Released	M.P.S. LED ON Main Bell ON E. Start LED ON Stop Countdown Pressure S.W. ON Releasing Ind. ON EM. Valve ON	Alarm Bell Buzzer Speaker EM. Valve Releasing Indicator	Manual Pull Station Emergency Start Pressure Switch Releasing Indicator
System Reset	AC Power ON Auto LED ON Countdown Set-up	Speaker EM. Valve	System Reset

**L. Wire Disconnection:**

	Panel Display	Simultaneous Output	Relay Output
Any Zone Disconnection	Zone discon. ON Main bell ON Disconnection ON		Zone Disconnection
Manual Pull Station Disconnection	MPS discon. ON Main bell ON Disconnection ON		Fault
Pressure Switch Disconnection	PS discon. ON Main bell ON Disconnection ON		Fault
Emergency Start Disconnection	E. Start discon. ON Main bell ON Disconnection ON		Fault
Emergency Stop Disconnection	E. Stop discon. ON Main bell ON Disconnection ON		Fault
EM. Valve Disconnection	Output Fault ON Main Bell ON		Fault
Alarm Bell Disconnection	Output Fault ON Main Bell ON		Fault
Buzzer Disconnection	Output Fault ON Main Bell ON		Fault
Speaker Disconnection	Output Fault ON Main Bell ON		Fault
System Lock Disconnection	Output Fault ON Main Bell ON		Disconnection
Maintenance Valve Disconnection	Output Fault ON Main Bell ON		Disconnection

**M. Others:**

	Panel Display	Simultaneous Output	Relay Output
Power Failure	Back-up power ON System fault ON Main bell ON		System fault
Switch Not On Position	Attention SW. ON (Area bell SW. ON) (Buzzer SW. ON) (E. valve SW. ON) (PA SW. ON)		Attention switch
Relay Output	Attention SW. ON Relay output SW. ON		
CPU Fault	System fault ON		System fault

## N. Simple Trouble Shooting

Symptom	Solution
AC power OFF	Check AC power switch Check AC power fuse
Back-up power OFF	Check battery
Disconnection ON	Check wiring connection
NO relay output	Check relay output switch Check wiring connection
NO PA output	Check PA switch Check wiring of speaker
NO area bell output	Check area bell switch Check wiring
NO buzzer output	Check buzzer switch Check wiring
NO main bell output	Check main bell switch
Attention SW. ON	Check all switches
Emergency stop LED ON	Check manual pull station and control board for STOP button
Emergency start LED ON	Check manual pull station and control board for START button
Manual pull station LED ON	Check manual pull station if it is well closed

## O. Maintenance

### a. Control Unit

1. Normal – AC power ON
2. Power-off – DC power ON

### b. General

1. System should be inspected annually and all the recorded data should well keep by responsible department or person.
2. During maintenance, control system or maintenance valve may need shout off depends on site situation.