



GST101

Conventional Fire Panel



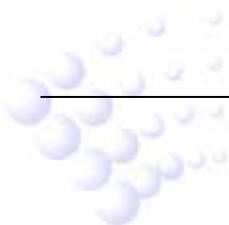
Installation and Operation Manual

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1 General

GST101 Conventional Fire Panel is developed using microprocessor. It can detect 1 zone, connecting with maximum 15 conventional detectors. It has 2 output control points to control some indicators, such as sounder strobes and sounders, etc. The panel is designed with stand-by batteries (two sealed acid storage batteries) and reserved space for installation; It is able to indicate normal status, fault, alarm and to check cables for short circuit or broken circuit. Installation and operation of the panel are very simple. All control functions are realized through a key.

2 Technical specifications

1 Operating Voltage

24VDC $\pm 15\%$ or 220VAC $\begin{matrix} +10\% \\ -15\% \end{matrix}$ 50Hz

Recommended Wiring: 1.5mm² or above shield cable, complying with local installation codes.

2 Stand-by Battery

Stand-by batteries are configured on order. The battery capacity can be calculated according to the equation in Clause 5.6 of this manual. The maximum capacity is 4Ah (lasting for 24 hours in monitor state).

Recommended Wiring: Fire cable 2 core and Earth 1.5mm² CSA, complying with local installation codes.

3 Detection Loop Parameters

Output voltage: 20VDC ~ 28VDC

Quiescent current: 2.4mA (connecting with 15 conventional detectors)

Resistance when alarming fire: 150 \sim 1.5k (normally 470 Ω)

Terminal resistance: 4.7k Ω or using active end of line unit(.AEOL)

Recommended Wiring: Fire cable 2 core and Earth 1.0mm² CSA, complying with local installation codes.

4 Output Parameters

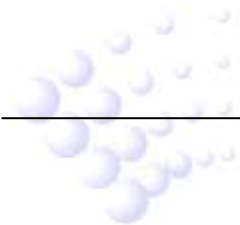
Recommended Wiring: Fire cable 2 core and Earth 1.0mm² CSA, complying with local installation codes.

Sounder: Output voltage 20VDC ~ 28VDC, output current 1A, terminal resistance 4.7k Ω .

Fault: Volt-free contact output, capacity 1A 24VDC

5 Dimension

210mm \times 297mm \times 90mm



3 Structure and Configuration

3.1 Appearance

Appearance of the panel is shown in Fig. 3.1.

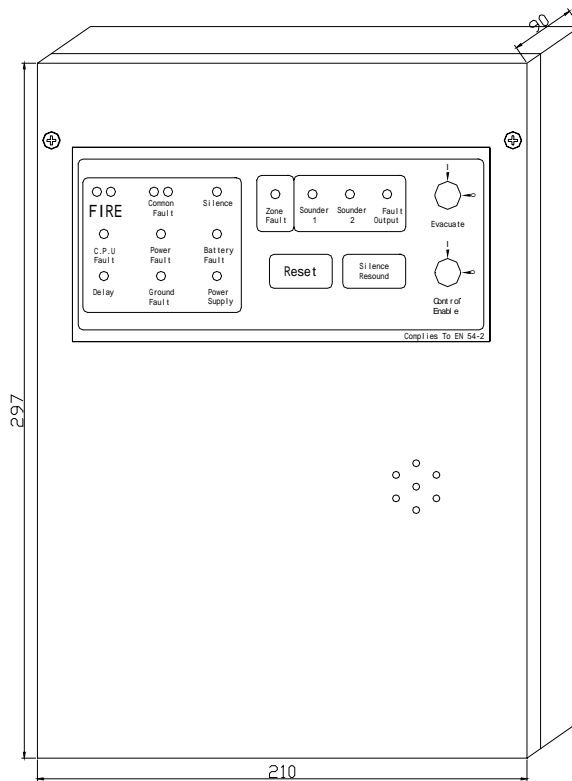


Fig. 3.1

3.2 Front Panel

Front panel of the panel is shown in Fig. 3.2.

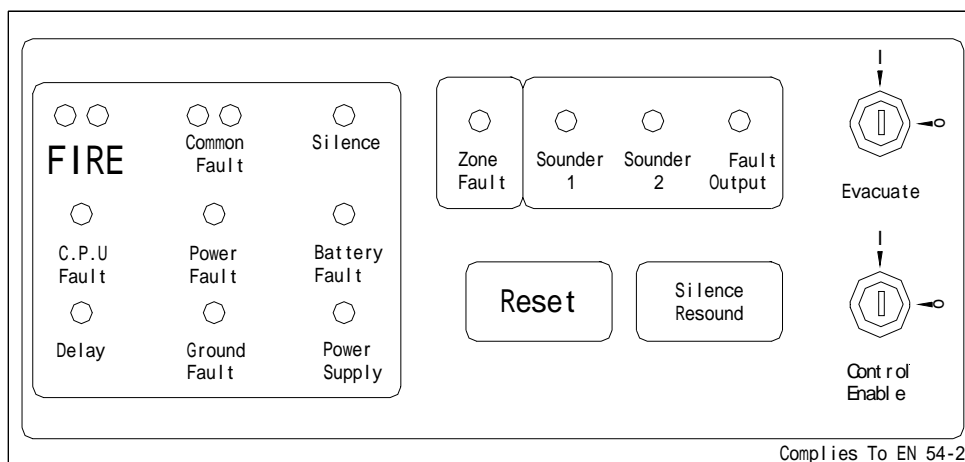


Fig. 3.2

Description of indicators and keys:

FIRE — Red, twin LEDs. They illuminate steadily when fire alarm occurs until the alarm is cleared.

Common Fault — Yellow, twin LEDs. They flash when any fault occurs.

Silence — Yellow. It illuminates steadily when the sounder is in silence state.

C.P.U Fault — Yellow. It illuminates steadily when the CPU is in fault.

Power Fault — Yellow. It illuminates steadily when AC power is in fault.

Battery Fault — Yellow. It illuminates steadily when the battery is in fault.

Delay — Yellow. It illuminates steadily when there is any output in delay state.

Power Supply — Green. It illuminates steadily when power supply is normal.

Ground Fault — Yellow. It illuminates steadily when there is ground fault.

Zone Fault — Yellow. It illuminates steadily when there is short circuit, broken circuit or there is removed detector.

Sounder 1 — Yellow. It illuminates steadily when sounder 1 outputs, and flashes when it's in fault.

Sounder 2 — Yellow. It illuminates steadily when sounder 2 outputs, and flashes when it's in fault.

Fault Output — Yellow. It illuminates steadily when fault output is activated.

Reset — To reset or self-test.

Silence/Resound — To silence internal speaker or to silence or resume sounder 1 and 2.

3.3 Internal Structure

Removing the two screws on top of the front panel, we can open the control and see its internal structure, as in Fig. 3.3.

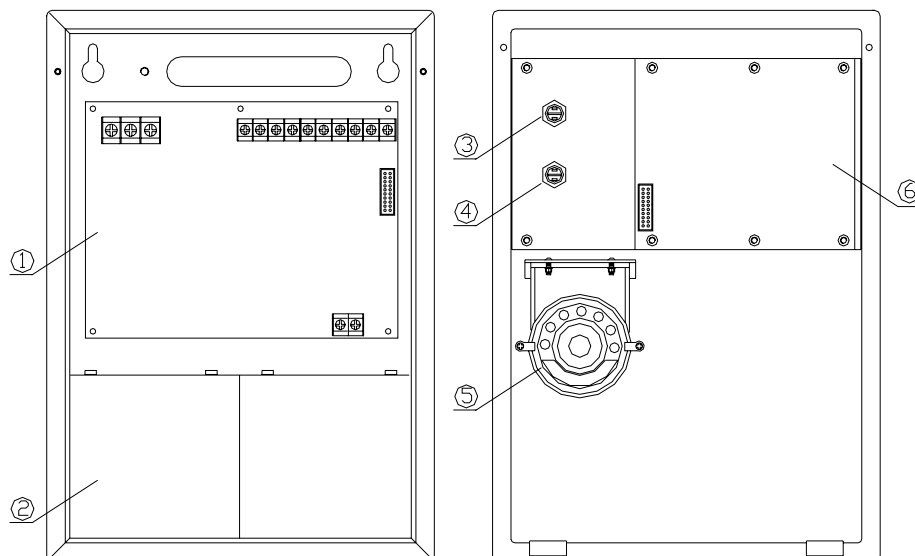


Fig. 3.3

- | | | | |
|-----------------|-----------------|-----------------|-----------------------|
| 1 Control Board | 2 Battery | 3 Evacuate Lock | 4 Control Enable Lock |
| 5 Speaker | 6 Display Board | | |

3.4 Terminals

Terminals are shown in Fig. 3.4.

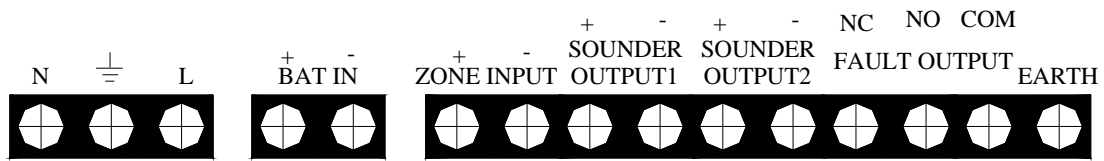


Fig. 3.4

N, \perp , L : 220VAC power terminals.

BAT IN (+, -) : Battery terminals.

ZONE INPUT (+, -) : Loop terminals.

SOUNDER OUTPUT1 (+, -) : Sounder 1 output terminals.

SOUNDER OUTPUT2 (+, -) : Sounder 2 output terminals.

FAULT OUTPUT (NC, NO, COM) : Fault output terminals.

EARTH : To chassis earth.

3.5 Working Status

3.5.1 Zone Status

- Fault: The zonal fault LED illuminates steadily and common fault LED flashes.
- Normal: The Zonal fault LED goes out.

3.5.2 Output Status

- Action: Corresponding output LED illuminates steadily.
- Fault: Corresponding output LED and common fault LED flash.
- Normal: All output LEDs turn off.

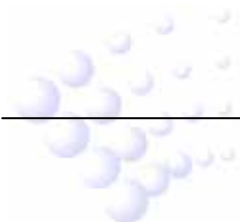
3.5.3 Speaker

- The speaker sounds according to sound priority. The 3 priority levels are: Level 0: alarm; Level1: fault; Level 2: normal.
- Alarm or manual start of sounder: 0.25s on, 0.25s off.
- Fault: 0.5s on, 4.5s off.
- Silence: 0.5s on, 9.5s off.

3.6 System Setting

3.6.1 Setting Operation Level

- As in Fig.3.6.1a, when "Control Enable" lock points to "O", the panel is at level 1, and the panel can be silenced.
- As in Fig.3.6.1b, when "Control Enable" lock points to "I", the panel is at level 2, the panel can self-test and reset, and sounders can be silenced.



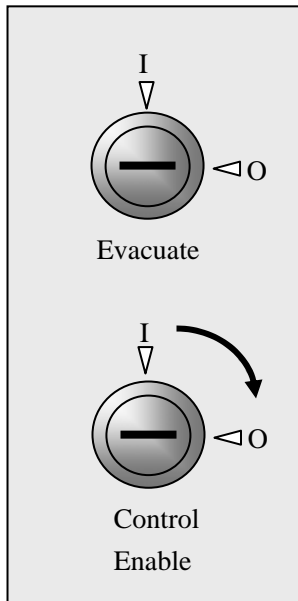


Fig. 3.6.1a

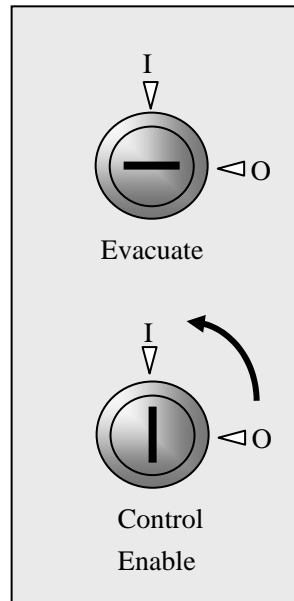


Fig. 3.6.1b

3.6.2 Setting Relay output

- a There are three output modes for the two sounders: normally closed contact output, normally open contact output and voltage output. For example: to set Sounder 1 as voltage output, plug fuse F2 and connect foot 5 with 6, and 2 with 3 of pin X2 by jumpers (location of the parts as in Fig.3.6.2).

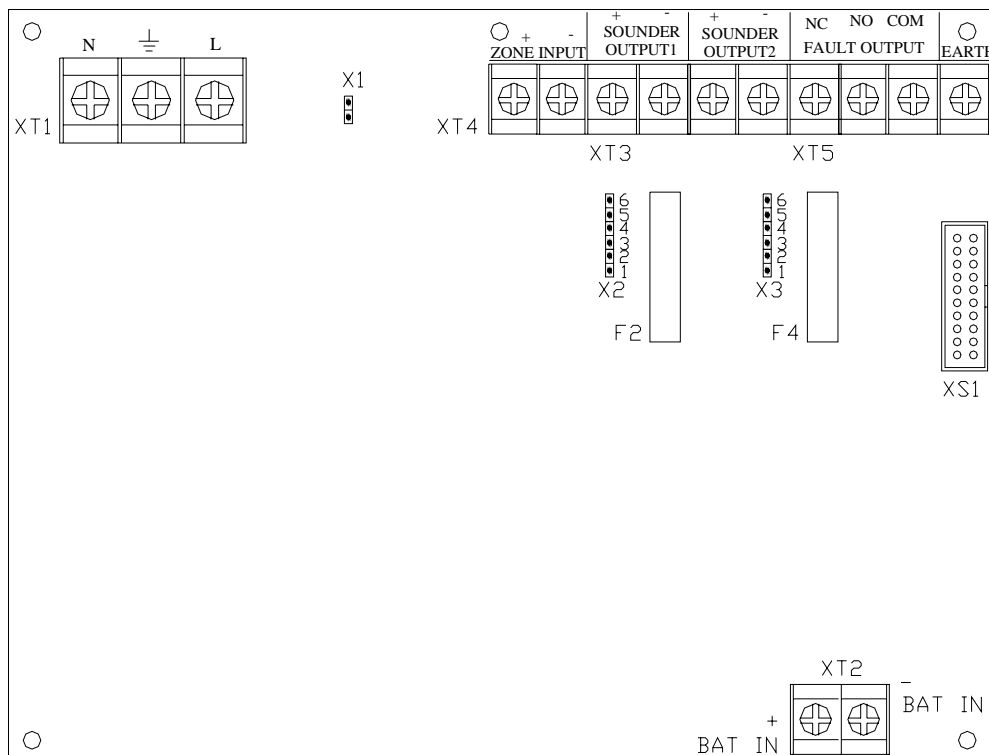


Fig. 3.6.2

- b Detailed description are shown in Table 1 (position of the parts is shown in Fig.3.6.2).

Table 1

Output	Normally closed contact		Normally open contact		Voltage output	
	Fuse to be removed	Jumpers	Fuse to be removed	Jumpers	Fuse to be removed	Jumpers
Sounder 1	F2	X2/ 3&4,1&2	F2	X2/ 5&4,1&2	/	X2/ 5&6,2&3
Sounder 2	F4	X3/ 3&4,1&2	F4	X3/ 5&4,1&2	/	X3/ 5&6,2&3

4 Mounting

The panel is wall-mounted, as shown in Fig. 4.1.

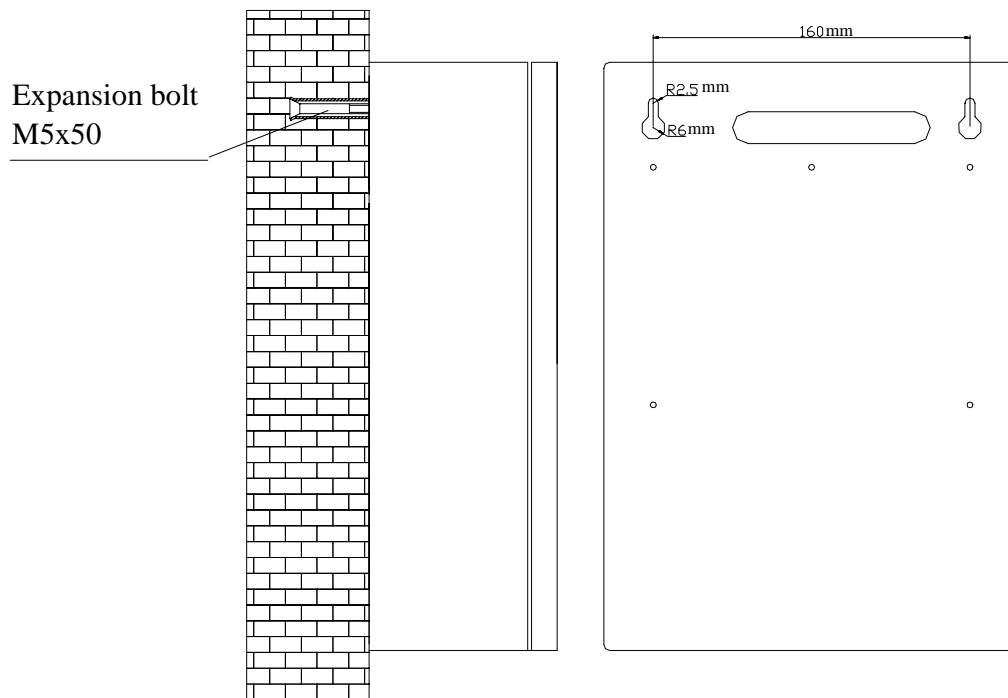


Fig. 4.1

5 Operation

5.1 Basic Operation

5.1.1 Silence of Fault and Fire Alarm

- a When "Control Enable" lock points to "O", the panel is in operation level 1; Pressing *Silence/Resound*, the speaker of the panel can be silenced.
- b When "Control Enable" lock points to "I", the panel is in operation level 2; Pressing *Silence/Resound*, *Silence* LED illuminates, the sounders are silenced and the panel's speaker is also silenced. Pressing *Silence/Resound* again, the sounders will sound again and *Silence* LED goes out.

5.1.2 Self-test

In monitoring state, the panel is in operation level 2. If you press *Reset* for 1 second, it

will self-test the sound and LEDs.

5.1.3 Clearance of alarm state

Clearance of fault and fire alarm is under operation level 2. Pressing *Reset* for 1 second in fire alarm state, we can clear the fire alarm and all outputs.

5.1.4 Control of Sounders

- a As in Fig.5.1.4.1, when “Evacuate” lock points to “I”, the two sounders will be activated.

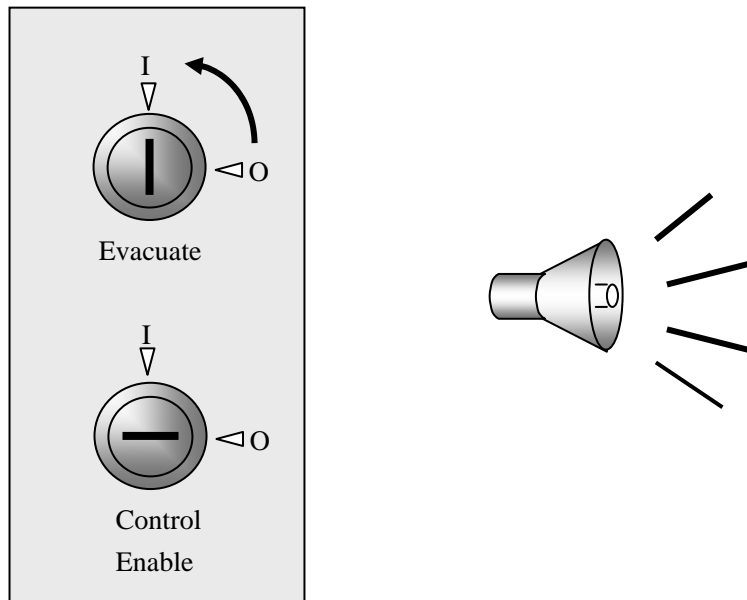


Fig. 5.1.4.1

- b As in Fig.5.1.4.2, when “Evacuate” lock points to “O”, the sounders will be stopped.

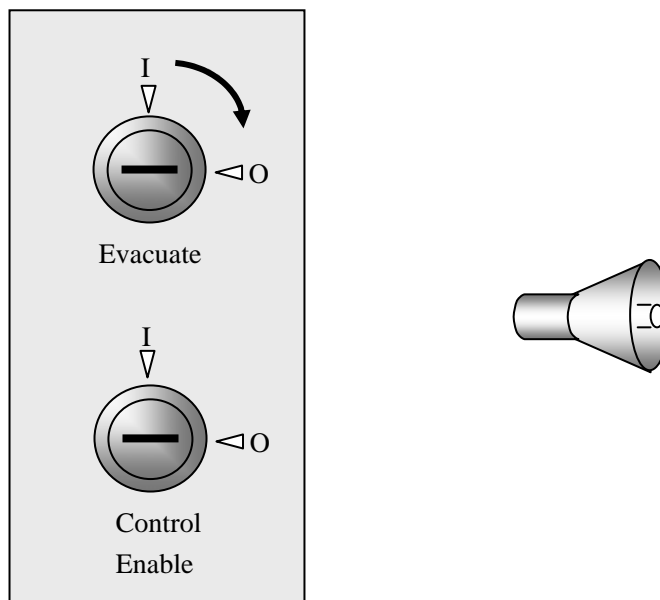


Fig. 5.1.4.2

5.2 Setting Delay State

- a Sounder 1, sounder 2 and fault output can be set to delay or direct output through jumpers on the display board.

- b Delay time can be set to 30 seconds or 5 minutes.
- c Setting pins of delay time are shown in Fig. 5.2.

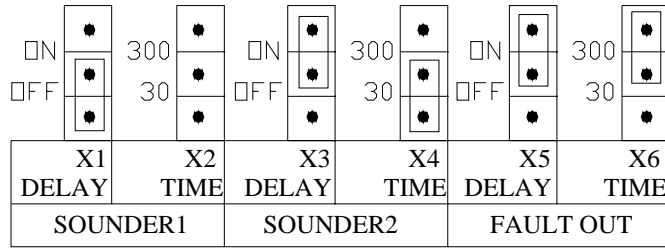


Fig. 5.2

In Fig. 5.2, Sounder 1 is in direct output state; Sounder 2 is delayed for 30 seconds; Fault output is delayed for 5 minutes.

5.3 Setting Ground Fault

Shorting pin X1 with a jumper will enable the panel to check ground fault. Otherwise it won't check ground fault.

5.4 Wiring of Detectors, Manual Call Points and Output Loop

- a Considering electromagnetic compatibility, shielded cables should be used. Please keep reliable contact of the shield layer with the chassis.
- b There can be 15 detectors and infinite manual call points in each loop, and there are two wiring methods.
 - (1) In the loop, all manual call points are connected in front of the detectors and a 4.7k resistor should be connected at the end of the loop (Fig.5.4.2a).

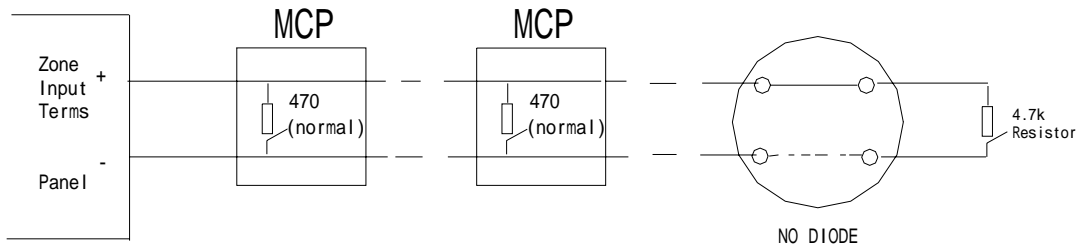


Fig.5.4.2a

- (2) In the loop, the detectors and manual call points can be connected at any position and an Active End of Line Unit (AEOL) is connected at the end of the loop. A diode should be connected on the detector base (Fig.5.4.2b).

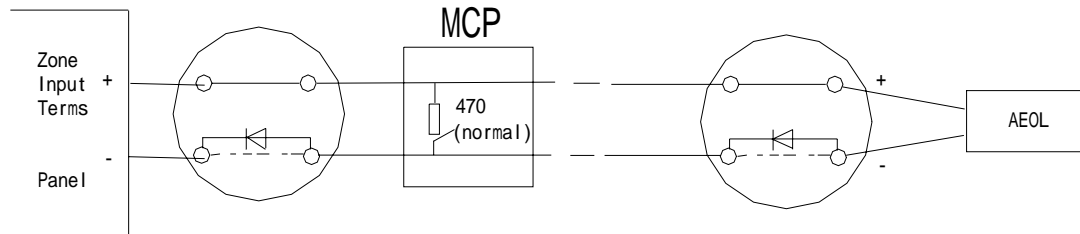


Fig.5.4.2b

- c Wiring of Output Loop: The sounders and remote devices should be

polarity-sensitive and connected into the loop according to the marked polarity. A 4.7k resistor should be paralleled at end of the loop.

5.5 Typical Wiring Diagram

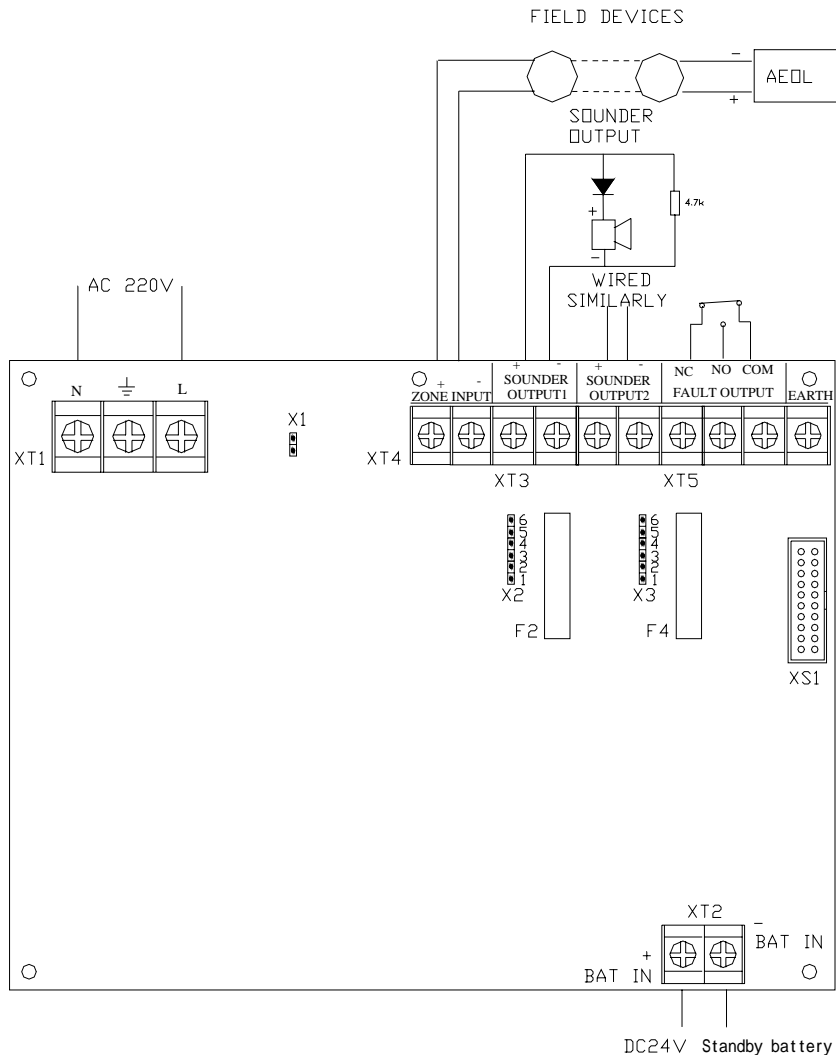


Fig.5.5

5.6 Calculation of Stand-by Battery Capacity

- Battery voltage: 24VDC
- Power supply specifications

The equation for calculating the battery capacity for the panel is as follows:

$$\text{Battery Capacity (Ah)} = K*[I_1 \times T_1 + (I_2 + I_3) * T_2] \text{Ah}$$

In which,

I1 is the current consumption of the FACP when the battery works in monitoring status, which is 0.1A.

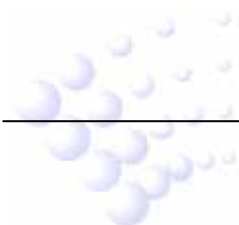
I2 is the current consumption of the FACP when the battery works in alarm status, which is 0.25A.

I3 is the output current when the battery works in alarm status, which is 1A.

T1 is the time for the battery to work in monitoring status which shall be 24 hours by EN 54 standard.

T2 is the time for the battery to work in alarm status which shall be 0.5 hour by EN 54 standard.

K is a margin factor, which is recommended by the manufacturer to be 1.25.





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