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Installation Precautions

Adherence to the following will aid in problem-free installation with long-term reliability:

✧ Do not attempt to install, service, or operate this unit until this manual is read and understood.

✧ This equipment must be installed in accordance with these instructions and the appropriate national, regional and local regulations specific to the country and location of the installation. Consult with the appropriate Authority Having Jurisdiction (AHJ) for confirmation of the requirements.

✧ GST200-2/1 Fire Alarm Control Panel (FACP) shall only be installed and serviced by trained specialist.

✧ Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energized.

✧ Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, and printed circuit board location.
Preface EN 54 Information

- GST200-2/1 Intelligent Fire Alarm Control Panel (FACP) complies with the requirements of EN 54-2 1997+A1: 2006 and EN 54-4 1997+A1: 2002+A2: 2006. In addition to the basic requirements of these standards, the panel conforms to the following optional requirements.

<table>
<thead>
<tr>
<th>Option</th>
<th>EN 54-2 Clause</th>
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</thead>
<tbody>
<tr>
<td>Indication</td>
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<tr>
<td>Fault signals from points</td>
<td>8.3</td>
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<td>Delays to Outputs</td>
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<td>Disablement of addressable points</td>
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<tr>
<td>Output to fire alarm devices</td>
<td>7.8</td>
</tr>
<tr>
<td>Outputs to fire protection equipment</td>
<td>7.10</td>
</tr>
</tbody>
</table>

- The power supply of GST200-2/1 FACP complies with EN 54-4 requirements.

AC-DC 100W Power Supply Functions

<table>
<thead>
<tr>
<th>AC-DC 100W Power Supply Functions</th>
<th>EN 54-4 Clause</th>
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<tbody>
<tr>
<td>Power supply from the main power source</td>
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<tr>
<td>Power supply from the standby power source (battery)</td>
<td>5.2</td>
</tr>
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<tr>
<td>Faults</td>
<td>5.4</td>
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</table>

- In addition to functions required by EN 54-2, the panel supports a number of ancillary functions that are not required. These are outlined below:

<table>
<thead>
<tr>
<th>Ancillary Function</th>
<th>Manual Section</th>
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</thead>
<tbody>
<tr>
<td>P-9901A Printer</td>
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<tr>
<td>RS232 output</td>
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<td>3.3.6</td>
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<td>GstDef2.1 Defining Tool</td>
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<tr>
<td>RS485 output</td>
<td>2.3 &amp; 4.4.3.5</td>
</tr>
<tr>
<td>Class change</td>
<td>4.4.3.1</td>
</tr>
<tr>
<td>PAS</td>
<td>6.3.5.4 &amp; 6.4.5.2</td>
</tr>
</tbody>
</table>
Chapter 1 Product Introduction

GST200-2/1 Intelligent Fire Alarm Control Panel (FACP) is designed to comply with EN 54-2 standard with qualities of simple installation, operation, and easy maintenance. It is used in fire alarm system with the following features:

✧ It controls at most 30 zones. Each zone has its own alarm and fault/disable LEDs and a label.

✧ Maximum two Class A loops. The first loop can have up to 235 addressable devices, and the second up to 242 devices. It is compatible with a series of addressable GST products, which are intelligent sounder strobe (I-9403) complying with EN 54-3, rate of rise and fixed temperature heat detector (I-9103) complying with EN 54-5, photoelectric smoke detector (I-9102) complying with EN 54-7, intelligent manual call point (I-9202) complying with EN 54-11, intelligent reflective beam detector (I-9105R) complying with EN 54-12, input and output module (I-9300, I-9301) complying with EN 54-18, and loop isolator (C-9503) complying with EN 54-17.

✧ The LCD can display 8 lines in total and 18 characters each line, assisting the 15 LEDs in displaying important information.

✧ The memory does not lose data even if power supply is accidentally removed.

✧ It has manual keys for each zone, which can activate/silence the sounder strobes separately.

✧ Automatically prompting operation steps for every alarm device and for smoke exhaust and fire extinguishing equipment by field programming.

✧ Sounder strobe interface provides 0.5A/24V output, compatible with GST conventional sounder strobe (C-9403) designed according to EN 54-3.

✧ RS232 interface enables communication with PC.

✧ RS485 interface enables networking.
Chapter 2 Technical Specifications

2.1 Operating Voltage
✓ Input Voltage: 220V/230VAC ±10%
✓ Frequency: 50Hz/60Hz
✓ Input Current: 0.5A
✓ Fuse: 2A delay
✓ Recommended Wiring: 1.5mm² or above screened cable, complying with local installation code.

2.2 Standby Batteries
✓ Maximum Charge Current: 1.2A
✓ Maximum Charge Voltage: 27.6V
✓ Type: Sealed lead acid batteries
✓ Maximum Charge Capacity: Two 12V/21Ah batteries
✓ Recommended manufacturer and model of battery: Power-Sonic PG12V21
✓ Maximum Internal Resistance: 1Ω
✓ Quiescent Current under Full-loaded Condition: 0.75A
✓ Maximum Battery Operating Current: 2.82A
✓ Recommended Wiring (subject to local installation codes):
  ➢ GST fire cable
  ➢ Vencroft Gold and Platignum
  ➢ Nexans NX 200 and 200 Plus (LPCB tested)
  ➢ Prysmian FP 200 and 200 Gold
  ➢ Draka Firetuf and Firetuf Plus
  And all LPCB approved Fire cables

2.3 Communication Loop Parameters

2.3.1 RS485 Communication Loop
✓ NETWORK (A, B): Communication cable for connecting with up to 32 network FACPs.
✓ REPEATER (A, B): Communication cable for connecting with up to 10 repeater panels.
✓ Recommended Wiring (subject to local installation codes):
  ➢ GST fire cable
  ➢ Vencroft Gold and Platignum
2.3.2 RS232 Communication Loop

RS232 communication loop is connected with a PC for running GstGMC2.0 Graphic Monitor Center (GMC) system PC through a DB9 port. Recommended Wiring: Standard RS-232 interface. The 2\textsuperscript{nd} pin (for sending data), the 3\textsuperscript{rd} pin (for receiving data), and the 5\textsuperscript{th} pin (ground) are connected with PC through three-core shield cable.

**Note:** Wire length should be less than 15m; the screening layer and computer’s enclosure should be earthed.

2.4 Detection Loop Parameters

- **LOOP OUT (+, -):** Polarized signal cable from the FACP connecting up to 235 addressable devices.
- **LOOP IN (+, -):** Polarized signal cable returning to the FACP.
- Output Voltage: 21V~27V pulse
- Output Current: 0mA~300mA
- Type of Loop: Class A loop
- Recommended Wiring (subject to local installation codes):
  - GST fire cable
  - Vencroft Gold and Platignum
  - Nexans NX 200 and 200 Plus (LPCB tested)
  - Prysmian FP 200 and 200 Gold
  - Draka Firetuf and Firetuf Plus
  - And all LPCB approved Fire cables.
- Recommended Cable Length ≤1000m

2.5 Output Loop Parameters

- Recommended Wiring (subject to local installation codes):
  - GST fire cable
  - Vencroft Gold and Platignum
  - Nexans NX 200 and 200 Plus (LPCB tested)
  - Prysmian FP 200 and 200 Gold
  - Draka Firetuf and Firetuf Plus
  - And all LPCB approved Fire cables.
- Recommended cable length ≤1000m

2.5.1 FIRE ALARM OUTPUT (+, -)

- Output Voltage: 21VDC ~27VDC
- Output Current: 0mA~500mA
2.5.2 F.P.E. OUTPUT (+, -)
- Output Voltage: 21VDC ~ 27VDC
- Output Current: 0mA ~ 500mA
- End of Line Resistor: 4.7kΩ

2.5.3 SOUNDER CIRCUIT OUTPUT (+, -)
- Output Voltage: 21VDC ~ 27VDC
- Output Current: 0mA ~ 500mA
- End of Line Resistor: 4.7kΩ

2.5.4 FAULT OUTPUT (NC, COM, NO)
- Contact Capacity: 24VDC @1.0A
- In fault state, NC and COM open, NO and COM close.

2.6 Dimensions
420mm × 580mm × 202mm
Chapter 3 Construction and Components

3.1 Appearance and Internal Construction

GST200-2/1 FACP is flush-mounted. Its appearance and internal structure are shown in Fig. 3-1 and 3-2.

![Diagram showing the appearance and internal structure of GST200-2/1 FACP.]

**Fig. 3-1**
1 Clock  2 LCD  3 Printer panel  4 Zone indication and manual intervention panel (ZCP)  
5 Keypad  6 LED  7 Optional units (Fireman's Control Panel, FCP)

**Fig. 3-2**
1 Display control  2 Zone indication and manual intervention panel (ZCP)  3 Printer  
4 Optional units (FCP-fireman's control panel)  5 Speaker  6 Power supply  
7 Loop interface board  8 Transformer  9 PSU filter  10 Loop board (optional)

3.1.1 Display Area
The display area consists of clock, LCD, LED and keypad, which are shown in Fig. 3-3.

![Fig. 3-3](image)

3.1.2 Description of LEDs

- **FIRE**: Red. It illuminates when the FACP detects an alarm condition of connected detectors. After fire condition is removed, the fire status can only be cleared by pressing **RESET** key, and this LED goes out simultaneously.
- **COMMON FAULT**: Yellow. It illuminates when the FACP detects fault of connected devices or itself. It goes out automatically after the fault condition is removed.
- **DISABLED**: Yellow. It illuminates when any connected devices, zones or outputs are disabled. It goes out when such status is canceled.
- **TEST MODE**: Yellow. It illuminates when any zone is in test mode. It goes out when test mode is canceled.
- **POWER ON**: Green. It illuminates when the mains power or battery is normal.
- **SYSTEM FAULT**: Yellow. It illuminates if the program encounters a dead halt or the system cannot work normally. After the fault condition is removed, only by pressing **RESET**, can system fault be cleared, and this LED goes out.
- **POWER FAULT**: Yellow. It illuminates when the mains power, battery or charger of the FACP is in fault condition. It goes out when the fault is cleared.
- **F.P.E. FLT/DIS**: Yellow. It flashes when F.P.E. output is in fault and illuminates steadily after the F.P.E. output is disabled. It goes out after fault and disabled conditions are cleared.
- **DELAY MODE**: Yellow, it illuminates when the output is set in delay mode. It goes out when the delay mode is canceled.
- **SILENCE**: Yellow. It illuminates when the sounders are silenced. It goes out until a new alarm comes, or the FACP is reset or **EVAC** key is pressed.
- **PRE-ALARM**: Red. It illuminates when there is pre-alarm message.
3.1.3 Description of Keys

- **ACK/MUTE**: Pressing this key will manually acknowledge an alarm and silence the FACP. If new alarm comes, the FACP will sound again. In PAS (Positive Alarm Sequence) mode, pressing this key in 15 seconds after the alarm will start the second-stage delay.

- **SILENCE**: For silencing all sounders in the system, and lighting the SILENCE LED. This key requires operator password.

- **EVAC**: For starting all sounders in the system, and lighting the EVACUATE LED. This key requires operator password.

- **RESET**: For clearing all alarm messages, all detector alarms, and all outputs in order to reset the FACP to normal state. This key requires operator password.

- **BROWSE**: Pressing this key will enter device-browsing screen to browse devices by loop, by zone or by group, to check zones in test, to browse definition of communication devices, to browse definition of ZCP or to browse cause and effect equations.

- **LOG**: For searching and browsing history records.

- **MODE**: Pressing this key (operator password required) can enter setup screen to set contrast, message display mode, printing mode, pre-alarm mode, and manual start or stop mode.

- **VIEW FAULT**: Pressing this key can check all fault messages if the LCD is not displaying fault messages.

- **TEST**: Pressing this key can enter test setup screen to self-test the FACP, to set a zone into test mode, to set a zone to exit test mode, and to set all zones to exit test mode. This key requires operator password.

- **LOCK**: Locking the keypad when it is unlocked.

- **VIEW DISABLE**: Pressing this key can check all disabled messages if the LCD is not displaying disabled messages.

- **ENABLE/DISABLE**: Pressing this key can enter ENABLE/DISABLE screen to enable/disable devices, outputs or delayed outputs, and to delete disablement through network. This key requires operator password.
3.1.4 Zone Indication and Manual Interventional Panel (ZCP)

Appearance of the ZCP is shown in Fig. 3-4.

![Fig. 3-4]

On the ZCP, each unit consists of a key, two indicators and a label. The key is for start/stop control. Device labels can be stuck on the right side of the keys, and the user can put the corresponding names on them. Zone indication and manual intervention panel can complete the following functions through defining.

3.1.4.1 Zone Indication

- **LEDs**

  - **Fire**: Red. It illuminates when a fire occurs in a zone. It goes out after the FACP is reset.

  - **Fault/Disable**: Yellow. It flashes when there is any fault with the zone. If all devices in this zone have been disabled, the LED illuminates steadily. It goes out after the fault conditions are cleared or the FACP is reset.
3.1.4.2 Device Operation

- **Command LED**: Red. It illuminates when start command is given and goes out when stop command is given or the FACP resets.
- **Keys**: Pressing it can start a device. If a device is started, pressing this key will stop it.

3.2 Components

3.2.1 Standard Components

A standard FACP consists of main board, loop interface board, power supply, display area, and zone indication and manual intervention panel (ZCP).

- **Main board**
  Main board is the core of the FACP, which contains CPU and interfaces to other main parts and optional parts.

- **Loop interface board**
  This is the signal interface of the FACP, containing ports for communication, detection, fire alarm output and fault output etc. The loop interface board connects field devices and the FACP into a complete fire alarm system.

- **Power supply**
  It provides power to the main board, loop interface board and printer. Its backup feature ensures that devices registered during commission will not be lost in case of power fault.

- **Display area**
  This part is used to indicate and display different status of the system, and enables relative operations through keypad (browsing, programming, printing and etc).

- **Zone indication and manual intervention panel (ZCP)**
  The ZCP can indicate fire alarm, fault/disable state of corresponding devices, and start and stop them accordingly.

3.2.2 Optional Units

- **P-9901A Printer**
  It is a built-in micro printer. With dot matrix printing it can print 96 kinds of ASCII code characters (capital or lower case of Latin letters, figures and symbols), 128 coded non-standard characters and chart symbol (some Chinese characters, Greek letters, block symbol etc.), and 16 code characters (6×7 dot) which can be defined by the user through programming, and replace any code font by command, so as to print characters of different language.

- **Loop board**
  The loop board is used as the second Class A detection interface for connecting more addressable devices. The construction of the loop board is shown in Fig. 3-5.
1 24VDC power input.
2 Communication port XS3, 20P data cable, connecting to the main board.
3 Class A output, wiring method is the same as that of Class A detection loop on loop interface board. Refer to Section 4.4.3.4 for details.
4 Loop-shift indicator HL1, red. It illuminates when the loop line shifts.
5 Loop output shut-down indicator HL2, red. It illuminates when the loop output is shut down.
6 Communication indicator HL3, red. It illuminates when communicating with the main board.

**Communication card**

GST200-2/1 Intelligent Fire Alarm Control Panel (FACP) provides a multi-functional communication port, connecting with network cards to realize networking among GST series FACPs, to form urban fire alarm supervisory network through public telephone network and to fulfill graphic supervision by connecting with Graphic Monitor Center (GMC) system at the control center of buildings. The FACP monitors the running of network cards in real time so that the card can work after being inserted.

GST200-2/1 provides two kinds of network cards: Local Network Card (RS485 card) and Monitor & Control Card (RS232 card). Their structures are shown in Fig. 3-6.
Description:

1. 20P data cable connecting with main board.
2. Red LED, which lights on receiving signals.
3. Green LED, which lights on sending signals.
4. RS485 network communication cable (A and B).
5. 20P data cable connecting with main board.
6. Standard RS232 interface connecting with GMC.

Note: You need to include an RS232 card in your first order of GST200-2/1 FACP. Only with this card, device definition and C&E equations can be downloaded from PC.

3.3 Peripheral Devices

3.3.1 A Series of Intelligent Fire Detectors

GST200-2/1 can connect with a series of fire detectors, such as I-9102, I-9103, and I-9105R. The detectors mounted in the protected area transmit monitoring message to the FACP through Class A loop. Every detector has its own address with which the FACP can supervise the information of alarm, fault, and normal status of the detectors.

3.3.2 Modules

GST200-2/1 can connect with I-9300 Addressable Input Module and I-9301 Addressable Single I/O Module. I-9300 module is used for receiving normally open digital signal from fire protection devices and transmitting the signal back to the fire alarm control panel.

I-9301 module is for connecting fire protection devices that need to be controlled by the FACP, such as smoke valve, fresh air valve, and damper valve. It can also receive answer signal from these devices.

3.3.3 Loop Isolator

Loop Isolator can remove the shorted part of loop from the whole system to ensure normal operation of other devices and to ascertain the location of the part in fault. After the fault is repaired, the loop isolator can automatically reset the removed part into the system.

3.3.4 Manual Call Points

A series of manual call points (such as I-9202) can be connected to the loop of GST200-2/1. When fire is confirmed manually, pressing the glass on the MCP, alarm signal can be sent to the FACP. After receiving the alarm signal, the FACP will show the number and location of the MCP, and sound alarm.

3.3.5 Sounder Strobes
Addressable sounder strobe is a kind of audible/visual alarm device installed in the protected area, which can be activated by the FACP at the fire control center or by manual call points. A series of GST addressable sounder strobos such as I-9403 can be connected to the loop of GST200-2/1. After activated, it will generate strong audible/visual alarm signal.

### 3.3.6 Repeater Panel

GST852RP Repeater Panel is designed with a microprocessor. When one or more detectors alarm fire, the repeater panel can display the location and alarm message of the detectors with audible and optical signals. Through communication loops, it can be connected with FACPs, disposing and displaying the data from the FACPs. When monitoring several floors or several zones with one fire alarm control panel, a repeater panel on each floor or in each zone can replace zonal fire alarm control panel.

### 3.4 Defining Tool Software

This software is used for editing and downloading definition of device and C&E equation. Before the system starts operation, you need to define the device and C&E using this software on a computer, and then download them to the FACP.
Chapter 4 Installation

The steps below are guidance for installation of the FACP.

1. Check if you have received all items ordered.
2. Install the cabinet.
3. Power up the FACP and carry out start-up inspection.
4. Connect field devices.
5. Inspect circuits and register devices.
6. Define devices and C&E equations on a PC and download them to the FACP through definition software according to engineering configuration.
7. Commission and inspect field devices.

4.1 Component Inspection

Before installation, check the following items:

✧ Check Engineering Requirement

Check the components according to packing list. The main items to be examined are: installation and operation manual, keys to the FACP, etc.

✧ Check Internal Components and Interconnection of the FACP

All internal parts have been connected (including optional units ordered) before the FACP leaves the factory. Therefore, you can mainly check the zone indication and manual intervention panel and power supply, and the connection among parts, including the connection between main board and power supply, switch board and loop interface board, the connection of the zone indication and manual intervention panel with switch board, and of speaker and main board etc. Please refer to Appendix 1 for the internal connection diagram.

4.2 Installing the Cabinet

Dimension of the cabinet is shown in Fig. 4-1.

Ambient conditions for installation of the FACP:
- Temperature: 0℃ ~ +40℃
- Relative humidity ≤ 95%, non-condensing
4.3 Start-up Check

After installation, apply power to it as shown in Fig. 4-2. Turn on the main and standby power supply in the cabinet and check if the FACP can self-test. The procedures are as follows.

- Check if the digital displays showing time are illuminated one by one.
- Check if the LCD showing system messages such as fire alarm is illuminated.
- Check if the LEDs showing the state of system can be illuminated one by one.
- Check if the LEDs showing the device state on ZCP are illuminated in turn.
- Check if the speaker can give loud alarm sounds.

4.4 Connections of Peripheral Devices

4.4.1 Connection of Mains Power

- GST200-2/1 Fire Alarm Control Panel receives power from a 220V/230VAC, 50Hz/60Hz supply. The current flows through a filter to the transformer. The transformer converts the input mains voltage to 27VAC.
- The incoming power feed cable Earth (Green/Yellow) wire should be connected to the earth terminal.
- Connect the live wire to the L terminal and connect the neutral wire to the N terminal.

Note:

1. Do not power the system until the installation is completed.
2. The incoming mains cabling to the FACP should be supplied via a switch to facilitate servicing.
4.4.2 Connection of Batteries

Refer to the Standby Battery Calculations section for the size of the batteries required for a particular installation.

Connect the batteries according to Fig. 4-2b and then connect with the battery terminal P4.

Note: Do not make the final battery connections until the installation is completed.

4.4.3 Connection of Peripheral Devices

Caution: Do not connect power to your device until you have completed all input and output connections. Failure to do so may result in injury!

Terminals of loop interface board are shown in Fig. 4-3.
Description:

- **CLASS CHANGE (XT3):** Shorting this terminal can enable SOUNDER CIRCUIT OUTPUT (XT7) to output.
- **FAULT OUTPUT (XT8):** Fault relay is closed in normal condition, and it’s opened in fault condition.
- **SOUNDER CIRCUIT OUTPUT (XT7):** It outputs according to settings in Section 6.4.5 when there is fire alarm, which can be stopped by pressing *SILENCE* key on ZCP. Output can be disabled, and there is no output in disabled state. It can be included into C&E equation, and can be set at delay mode. The FACP will report fault when connected cable in short or open circuit.
- **F.P.E. OUTPUT (XT6):** It outputs according to settings in Section 6.4.5 when there is fire alarm. It can be disabled, and does not output when fire alarm occurs in disabled state. It can be included into C&E equation, but cannot be set at delay mode. The FACP alarms fault when connected cable in short or open circuit.
- **FIRE ALARM OUTPUT (XT5):** It outputs when there is fire and gives fault signals when connected circuit is short or open.
- **LOOP BUS (XT2, XT4):** Class A loop can connect with up to 235 addressable devices. With loop isolator in Class A loop, the detector protected by loop isolator is not missing when there is short or open circuit. In this case, the FACP reports loop fault.
- **RS-485 (XT11, XT12):** To be connected with repeater panel and FACP.
- **earth (X8):** This terminal is for checking earth fault when shorted.

F.P.E. OUTPUT, SOUNDER CIRCUIT OUTPUT and FIRE ALARM OUTPUT can provide three output modes, which are 24VDC voltage output, normally open output and normally closed output. You can set up the three modes through Pin X1~X7. See more details in Table 4-1.

<table>
<thead>
<tr>
<th>Output</th>
<th>24VDC</th>
<th>Normally Closed</th>
<th>Normally Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOUNDER CIRCUIT OUTPUT</td>
<td>Short 1 to 2 &amp; 4 to 5 of X3 Short X7</td>
<td>Short 3 to 4 &amp; 5 to 6 of X3 Disconnect X7</td>
<td>Short 2 to 3 &amp; 5 to 6 of X3 Disconnect X7</td>
</tr>
<tr>
<td>F.P.E. OUTPUT</td>
<td>Short 1 to 2 &amp; 4 to 5 of X2 Short X6</td>
<td>Short 3 to 4 &amp; 5 to 6 of X2 Disconnect X6</td>
<td>Short 2 to 3 &amp; 5 to 6 of X2 Disconnect X6</td>
</tr>
<tr>
<td>FIRE ALARM OUTPUT</td>
<td>Short 1 to 2 &amp; 4 to 5 of X1 Short X5</td>
<td>Short 3 to 4 &amp; 5 to 6 of X1 Disconnect X5</td>
<td>Short 2 to 3 &amp; 5 to 6 of X1 Disconnect X5</td>
</tr>
</tbody>
</table>

**4.4.3.1 Connection of SOUNDER CIRCUIT OUTPUT**

Connection of SOUNDER CIRCUIT OUTPUT is shown in Fig. 4-4.
A 4.7kΩ resistor is connected at the SOUNDER CIRCUIT OUTPUT (XT7) as factory default. Please remove it and keep it well before connection. Connect the loop in correct polarity and add the resistor to the end of the line.

**NOTE:** The sounder strobes are polarity-sensitive. Note polarity in connection. The maximum current of the circuit depends on the number of sounder strobes. Do not overload.

### 4.4.3.2 Connection of F.P.E. OUTPUT

F.P.E. OUTPUT is shown in Fig. 4-5.

A 4.7kΩ resistor is connected at the F.P.E. OUTPUT (XT6) as factory default. Please remove it and keep it well before connection. Connect the loop in correct polarity and add the resistor to the end of the line.

**NOTE:** F.P.E. are polarity-sensitive. Note polarity in connection. The maximum current of the circuit depends on the number of F.P.E. Do not overload.

### 4.4.3.3 Connection of FIRE ALARM OUTPUT

FIRE ALARM OUTPUT is shown in Fig. 4-6.
4.4.3.4 Connection of Class A Loop

A Class A loop is shown in Fig. 4-7.

[Diagram of Class A loop]

Note: If more than 32 devices are connected to the loop, loop isolators shall be used and each loop isolator shall not cover more than 32 detectors.

4.4.3.5 Connection of Communication Loop

[Diagram of Communication Loop]

4.5 Connection Checking and Device Registration

4.5.1 Connection Checking

Check the circuit connected with the FACP. Measure the insulation resistance between loops and between loops and ground, which should be more than 20MΩ. Measure the load of detection loops, which should be more than 1kΩ. The resistance between cables of FIRE ALARM OUTPUT, SOUNDER CIRCUIT OUTPUT and F.P.E. OUTPUT should be equal to the end-of-line resistance.

4.5.2 Device Registration

Press SYSTEM and input commission password. Then press ENTER to go to system setting menu. Then press ESC to exit system setting menu, the system enters commission state (there will be a "-" at the right bottom of the screen). Rebooting the
FACP will register the devices automatically. Please check if the number of devices, programming, and operation state is in compliance with the project design and remove any problems.

4.6 Device Definition

Please define devices and C&E equations by the software GstDef2.1 Defining Tool through a PC, and download the definitions to the FACP. Refer to *GstDef2.1 Defining Tool User’s Manual* for detailed operation.

4.7 Field Device Commission

After connection, definition and download of device and C&E equations, you can power up the FACP and start commission. The following steps are for reference.

1. Complete the labels of ZCP.
2. Test all the detectors and make sure their positions are correct.
3. Check all device definition, and modify improper part.
4. Check all C&E equations, modify improper parts, and test automatic activation by C&E equation.
Chapter 5 Display and Disposal of System Information

GST200-2/1 can be started after installation according to description in Chapter 4. Turn on the power supply, and main and standby power switch on the FACP, the FACP executes self-test and enter normal standby state. The system will display properly if it is in normal state, otherwise it will display abnormal information.

5.1 Normal Information

The normal display is shown in Fig. 5-1, which means the system is in working state. Then only POWER ON LED lights.

![Fig. 5-1](image)

Fig. 5-1

Fig. 5-2 shows the system is in normal operation but with disabled devices. Pressing VIEW DISABLE can browse these devices.

![Fig. 5-2](image)

Fig. 5-2

5.2 Fire Alarm

5.2.1 Fire Alarm Screen

FIRE LED is lit when there is fire alarm signal. Speaker of the FACP sounds (fire truck sound), and corresponding FIRE LED on the ZCP is also lit.

1. Fire alarm screen is shown like Fig. 5-3 when in zone display mode.
Fig. 5-3
✧ 001 0f 003 !FIRE! 05:25 // There are fire alarms in three zones and this is the first.
✧ Zone:001-Zone 1 // The number of zones with fire alarm and description of the zone.
✧ 002/003 //There are three devices in the zone, and two of them alarmed.
✧ Device-30 // The description of the device with the first fire alarm signal.
✧ Last! Fire! Zone:003 // Zone number of the last fire alarm.
✧ Zone 3 Device-061 //Description of zone with the last fire alarm and description of the device of that zone with the first fire alarm.

2. Fire alarm screen for loop display mode is shown in Fig. 5-4.

Fig. 5-4
✧ 001 0f 006 !FIRE! 05:25 // There are six devices with fire alarm signals, and this is the first.
✧ Z001-L1-N030MCP // The number of zone with fire alarm and type and address of the device in fire alarm.
✧ Device-30 // Description of device in fire alarm.
✧ Last! Fire! Zone:003 // Number of the zone where the last fire alarm occurs
✧ Z-003 Device-066 // Description of zone and device of the last fire alarm.

5.2.2 Disposal of Fire Alarm Signal

When fire alarm occurs, first find out the location according to the information shown on the FACP to verify whether the fire really happened.

If it’s a real fire, please take corresponding measures as outlined below.
Step 1: Evacuate the people in field.

Step 2: Call the fire department.

Step 3: Initiate extinguishing equipment.

If it is a false alarm, please take the following measures.

Step 1: Press SILENCE to stop the sound.

Step 2: Remove the causes of the false alarm.

Step 3: Press RESET to make the FACP back to the normal state. If the device still gives false alarm, disable it and inform the installer or manufacturer for repair.

5.3 Fault

5.3.1 Fault Indication

The indication of the fault message depends on the type of fault. Specific fault types and causes are shown in Appendix 2.

✧ Power fault: If the AC power is down, the battery voltage is less than 18.9V, or if there is charging fault, the panel reports power fault, and
  ➢ Light COMMON FAULT and POWER FAULT LED.
  ➢ The LCD displays the type of the fault.
  ➢ The panel generates fault sound.
  ➢ Fault relay outputs.

✧ System fault: The panel would report system fault if its control CPU and circuits is in fault and the panel cannot work normally.
  ➢ It lights the COMMON FAULT and SYSTEM FAULT LED.
  ➢ There is no display on the LCD.
  ➢ The panel generates continuous alarm sound.
  ➢ The panel cannot monitor fire alarm.
  ➢ The keypad cannot be used.
  ➢ If system fault indication remains for less than 5 seconds, the panel will assume that this is not a true fault and automatically clear the LED and sounder indication and return to normal monitor state. If system fault indication remains for more than 5 seconds, the panel will then interpret it as a genuine fault and the LCD displays “System fault must be reset manually. System time must be reset.” after it’s cleared. You need to press RESET key to clear the fault indication and reset system time.
  ➢ Fault relay outputs.

✧ Keypad fault: The panel reports keypad fault if its keypad circuit is in fault:
  ➢ It lights the COMMON FAULT and SYSTEM FAULT LED.
  ➢ The LCD displays “Key fault”.
  ➢ The panel generates continuous alarm sound.
  ➢ Fault relay outputs.
The keypad cannot be used.

The panel can monitor fire alarm.

The panel can reset automatically after the fault is removed.

Field device fault: If there is trouble with one of the field devices, the panel reports fault with it, and

- The panel lights the COMMON FAULT LED.
- The corresponding ZCP LED flashes.
- The panel generates fault sound.
- Fault relay outputs.
- The LCD displays the fault message. The fault screen is as in Fig. 5-5 in zone display mode, and as in Fig. 5-6 in loop display mode.

001 0f 002 FAULT 10:18
Zone:003-floor 3
001/012 Office 3

Fig. 5-5

- 001 0f 004 FAULT 10:18 // There are two zones reporting fault, and this is the first fault message.
- Zone: 003-floor 3 // The number description of the zone with fault message.
- 001/012 // There are 12 devices in the zone totally, and one of them reports fault.
- Office3 // Description of the device with the fault.

001 0f 004-FAULT 10:18
Z003-L2-N011Optical

Fig. 5-6

- 001 0f 004 FAULT 10:18 // There are four devices reporting fault, and this is the first fault message.
- Z003-L2-N011Optical // The number of the zone and loop with the fault message, and the address and type of the device with the fault message.
5.3.2 Disposal of Fault Message

There are two kinds of fault message. One is system fault, like power fault, and loop fault. The other is field device fault, like fault with detectors and modules etc.

✧ If the system is powered by battery for longer time than its capacity, the panel will shut down to protect the battery. Please charge the battery in time to avoid any possible damage to it.

✧ If it is system fault, please check and repair in time. If the panel needs to be shut down, please make detailed notes.

✧ If it is field device fault, please repair it in time. You can disable it if the fault can’t be cleared for some reason, and enable it when the fault is removed.

5.4 Rules for Message Display

If there are multiple messages in the system, they will be displayed in the following order: fire alarm, fault, action, disable.

1. The earliest fire alarm is displayed in priority. The latest fault, action, disabled message is displayed in priority.

2. There are zone and loop display modes for fire alarm, fault, and disabled messages. Action message only has loop display mode.

3. In any display mode, the system will return to displaying of the highest priority if there is no operation within 20s (15s ~ 30s).

5.5 Rules for Sound Indication

The FACP will sound to indicate fire alarm or fault messages.

✧ The FACP gives fire truck sound when fire alarm occurs.

✧ The FACP gives police car sound when any fire extinguishing device is activated.

✧ Delayed activation of devices by automatic C&E equation--quick “tick” sound.

✧ The FACP gives ambulance sound when fault occurs.

The FACP will give sound of higher priority if two types of event occur simultaneously.
Chapter 6 Description of System Operation

6.1 Keypad

6.1.1 Keypad Functions

Most of the keys have double functions. Lower mark is a character and upper mark is a command that is only activated in monitoring state. Most functional keys are controlled by password. The characters are only active after entering the menu. Pressing ESC will return to previous level of the menu.

6.1.2 Methods of Data Input

Pressing a character key, all characters disappear, and the display shows the newly input one. The cursor will indicate the next input position (The cursor always indicates the position of the next to input, and returns to the first character after completion of a line). Pressing △ or ▽, to move the cursor to modify any character.

Pressing TAB, the highlight moves to the next position and returns to the first after the last position. Wherever the cursor is, Pressing ENTER key, all the input data will be saved.

If there is no keypad operation for over 1 minute, the system will exit present state without saving the input data.

6.1.3 Unlocking and Locking the Keypad

✧ Unlocking the Keypad

The FACP is locked by default when powered up. If some operations are needed, the LCD will display a screen requiring proper password. Entering the correct password and pressing ENTER, you can continue to operate, as the keypad is unlocked. See Fig. 6-1.

Fig. 6-1

✧ Locking the Keypad

The keypad shall be locked after an operation or when the personnel on duty leave. Pressing LOCK, the screen will display “Press ENTER confirm” like in Fig. 6-2. Pressing ENTER, the keypad is locked. You will have to input password again to unlock the keypad for any new operation.
6.2 User Operation Instruction (No Password Requirement)

6.2.1 Changing displayed time

The clock usually displays in hour and minute. In normal monitoring state, pressing ENTER, month and date are displayed. Pressing ENTER again or after a minute, hour and minute is displayed again.

6.2.2 Browsing messages

6.2.2.1 Turning pages

You can look through information one by one by pressing ▲ and ▼.

6.2.2.2 Browsing more than one piece of message

The current information is highlighted when there is more than one piece of message on the LCD. You can view details of this item by pressing ENTER or exit by pressing ESC. When the printer is set as “All History” mode, pressing ENTER while browsing can print the current displayed message.

6.2.2.3 Browse

Pressing BROWSE, the system enters the browsing screen as shown in Fig. 6-3.

From the above screen, you can operate as follows:

✧ Entering number 1 to choose “1. Loop Devices” will enter the screen to view devices by loop, as shown in Fig. 6-4.
Entering No. 2 will enter the screen for browsing loop devices by zone, as in Fig. 6-5.

- 3 Zone (008)(004) // 3 zones in total, 8 addressable devices on Loop 1, and 4 on Loop 2
- Zone:01(001)Sum:004 // Zone 01, (001) is the zone number with starting zone added, total number of devices is 4.
- Zone: 001 office1 // Zone number and location
- NO.001 Optical // Device address and type
- Sensitivity: Nominal // Device properties
- Office1 // Device position description.

Entering number 3 to choose “3. Group Devices” will enter the screen for browsing devices by group, as shown in Fig. 6-6.
2 (Group) (012)(020)  // 2 groups are defined. There are 12 addressable devices on Loop 1, and 20 on Loop 2.

Group:01 office 1  // Zone number and location of the zone

NO. 001 Sounder  // Device address and type

Output: Persist  // Device properties

Office 1  // Device location

Entering number 4 to choose “4. In Test Mode Zones” will enter the screen for browsing zones in test mode, as shown in Fig. 6-7.

Fig. 6-7

- Sum:002  // Total number of zones in test
- Zone 01: office1  // Zone 1 is in test mode. Zone description is “office1”.
- Zone 05: office5  // Zone 5 is in test mode. Zone description is “office5”.

Entering number 5 to choose “5: COM Devices” will enter the screen for browsing network FACPs and repeater panels.

Entering number 6 to choose “6. Access” will enter the screen for browsing ZCP key definition, as in Fig. 6-8.
Entering No. 7 to choose “7: Browsing C&E” will enter the screen for browsing C&E equation, as shown in Fig. 6-9.

- The part before “=” is the condition and that after it is the result.
- “x” means “and”, and “+” means “or”.
- A condition is composed of the following items:
  - Device type
  - Device address/Quantity of events defined in special condition
  - Zone number of the device
  - G: General conditions
  - S: Special conditions

**General Condition:** A device can be activated if its zone number, code and device type are correct.

**Special Condition:** Both zone number and device type can be defined. If events with the same zone number and device type reach a defined number, this special condition comes into effect. Asterisk wildcard “*” represents any number used in
special conditions.

**Event:** It is the message generated by the FACP when there is fire alarm or action of device.

✧ A result is composed of the following items.

![Diagram of History Record]

6.2.2.4 Browsing history log

Pressing *LOG*, the FACP enters the state of browsing history record. Using ▲ and ▼, you can browse every item, the screen is shown in Fig. 6-10.

![History Record]

✧ NO. 200 // The two hundredth history log
✧ ! FIRE! // Fire alarm message
✧ TIME: 10:23 14/08 // Date and time of the event
✧ Zone: Name // Zone number, zone name
✧ 121 Optical // Device address and type

6.2.2.5 Browsing fault messages

You can view fault messages by pressing *VIEW FAULT* when the screen is displaying non-fault messages. The display varies by the type of fault messages. Please refer to Section 5.3.

6.2.2.6 Browsing disable messages

You can view disable messages by pressing *VIEW DISABLE* when the screen is displaying non-disable messages. The screen of loop mode is shown in Fig. 6-11 and the screen for zone mode is shown in Fig. 6-12 and Fig. 6-13.
001 of 003 Disable 12:01  // There are three disabled devices in the system and this is the first.
Z001-L2-N004Sounder  // The zone number, loop number, address and device type of the disabled device.
Office1  // Description message of the disabled device.

001 of 002 Disable 12:01  // There are devices from 2 zones that are disabled, and this is the first zone.
Zone: 005 Z-005  // Zone number and description message of the disabled zone.
029/029  // All 29 devices of the current zone are disabled.
Zone Fully Disabled  // Current zone are completely disabled.

002 of 002 Disable 12:01  // There are devices from 2 zones that are disabled, and this is the second zone.
Zone: 006 Z-006  // Zone number and description message of the disabled zone.
016/030  // There are 16 disabled devices in all 30 devices of the current
Zone Part Disabled // The zone is partially disabled.

6.2.3 Silencing the panel

Pressing ACK/MUTE can stop the sound of speaker; pressing ACK/MUTE again, the FACP is still in mute state. It will only sound by priority when new event appears.

6.3 Instructions for Operator (Operator Password Required)

6.3.1 Resetting the system

Pressing RESET can turn off all the control modules, local outputs and reset all the detectors, but will leave the disabled devices as they are. The LCD displays “RESET IN SYSTEM”. LEDs will be turned off (Except for “POWER ON”, “TEST MODE”, “DELAY MODE” LEDs). The reset information will be written into running log. If there is still fire alarm, fault and action not acknowledged after pressing the RESET key, the FACP will remain relative sound indications. If all messages have been acknowledged by pressing RESET key, the system returns to normal display state.

6.3.2 Alarm Silence

Pressing SILENCE key can silence all sounders in the system, and light the SILENCE indicator.
The silenced sounders will re-sound on receiving new alarms. SILENCE indicator will go out when RESET key is pressed for reset, when EVAC key is pressed for evacuation, or when system sounders gives new alarm sound.

6.3.3 Evacuation

Pressing EVAC key can start all system sounders, and light EVAC LED until SILENCE or RESET key is pressed. After EVAC key is pressed, the LCD will display “EVAC IN SYSTEM Press ENTER confirm”. Pressing ENTER in 10 seconds will start evacuation. If ENTER key is not pressed in 10 seconds, the FACP will resume the state before EVAC key is pressed.

6.3.4 Disable/Enable

The disabling/enabling of devices is mainly used when the trouble condition of a device cannot be removed immediately. This device can then be temporarily disabled, and enabled after it’s repaired.
The disabling/enabling of alarm output can be set as needed either to start or not to start SOUNDER CIRCUIT OUTPUT and FPE OUTPUT automatically.
The disabling/enabling of delay can be set as needed. For example, if there is person on duty, the system delay can be enabled, so that the system can select delay by C&E equation or by the pre-set default local delay in case of an alarm. If there is nobody on duty, the delay can be disabled and the system outputs immediately.
Pressing ENABLE/DISABLE, the screen will be shown as in Fig. 6-14.
6.3.4.1 Disabling a Device

In the screen shown in Fig. 6-14, input number “1”, you can enter disable screen as shown in Fig. 6-15, where you are able to disable devices. The panel provides four methods for disabling devices. You can disable all devices of a zone, a single device (single-device disable), disable all loop sounders, or disable a device by user code.

Fig. 6-14

![Disabling a Zone](image)

**Disabling a zone**

Entering number “1” in the screen of Fig. 6-15 will enter disable screen as shown in Fig. 6-16.

Fig. 6-15

![Disabling Devices](image)

**Disabling Devices**

1 Each Zone Fully  
2 Individual Points  
3 All Loop Sounder  
4 Use Devices Code

Fig. 6-16

Disabling a zone  
Zone: 000

Disabling a zone  
Zone: 000

Entering 3-digit zone number and Pressing ENTER key to confirm will disable all devices of the zone.

Disabling a point (device)

Entering number “2” in the screen of Fig. 6-15 will enter the screen for disabling a single device, as shown in Fig. 6-17.
Entering 1-digit loop number (1 or 2) and 3-digit point number (any number between 1 to 242), and then pressing ENTER will disable the selected device.

✧ Disabling all loop sounders

Entering number “3” in the screen of Fig. 6-15 will enter the screen for disabling all loop sounders, as shown in Fig. 6-18.

Pressing ENTER on prompt will confirm the operation and disable all loop sounders.

✧ Disabling a device by user code

Enter number “4” in the screen of Fig. 6-15 will enter the screen for disabling a device by user code, as shown in Fig. 6-19.

Enter 3-digit zone number or “*” at the cursor position after letter “Z”.

Enter 3-digit device code or “*” at the cursor position after letter “C”.

Enter 2-digit device type or “*” at the cursor position after letter “T”.

Example 1, in order to disable devices with type number 001 of Zone No.1, you need to input in sequence the zone number 001, device number 001 and device type 03.

Example 2, in order to disable all alarm devices with type number 01～11 of Zone No.1, you need to input in sequence the zone number 001, device code *** and device type **. Please note that the asterisk mark “***”is not allowed for the type number of action devices with type number 12～65.
6.3.4.2 Enabling Devices

In the screen shown in Fig. 6-14, input number 2, you can enter device enable screen as shown in Fig. 6-20. Same as disabling devices, you can also enable all devices of a zone, a single device (single-device enable), all loop sounders, or enable a device by user code.

*Enable Devices*
1. Each Zone Fully
2. Individual Points
3. All Loop Sounder
4. Use Devices Code

Fig. 6-20

6.3.4.3 Disabling/Enabling Alarm Outputs

Entering number “3” in the screen of Fig. 6-14 will enter the screen for disabling/enabling alarm output, as shown in Fig. 6-21.

*Dis/En-able Outputs*
1. Sounder Circuit
2. F.P.E. Output

Fig. 6-21

In this screen, the SOUNDER CIRCUIT OUTPUT and FPE OUTPUT on the loop interface board can be disabled or enabled.

6.3.4.4 Disabling/Enabling Delays

Inputting number 4 in the screen shown in Fig. 6-14 can enter the screen of disabling/enabling delays, as shown in Fig. 6-22.

* Delay Mode*
1. Disable
2. Enable

Fig. 6-22

In the above screen, you can operate as follows:
✓ Selecting number 1 will disable all delay settings in the system.
✓ Selecting number 2 will enable system to output according to the pre-set delay time, and light DELAY MODE LED.
Note: If the fire alarm is from a manual call point, then the system will output immediately despite any delay settings.

6.3.4.5 Deleting Disabled Information in Network

Entering number 5 in the screen of Fig. 6-14 will enter the screen for deleting disabled information in network, as shown in Fig. 6-23.

![Fig. 6-23]

In the above screen, entering the number of the message, and pressing ENTER to confirm will delete the disabled information from network FACP.

6.3.5 User Mode

Pressing MODE key can enter user mode setup screen as shown in Fig. 6-24.

![Fig. 6-24]

In this screen, the user can setup the screen contrast, display mode, printing mode and pre-alarm mode, and can also start or stop devices.

6.3.5.1 LCD Contrast Setup

Entering 1 in Fig. 6-24 will enter the screen for setting up LCD contrast, as shown in Fig. 6-25.

![Fig. 6-25]

6.3.5.2 Display Mode Setup

Entering 2 in the screen of Fig. 6-24 will enter the screen for setting up display mode, as
6.3.5.3 Printing Mode Setup

Entering 3 in the screen of Fig. 6-24 will enter the screen for setting up print mode, as shown in Fig. 6-27.

- Entering number “1” means printing is disabled.
- Entering number “2” means only printing fire alarm message.
- Entering number “3” means printing the currently viewed message when checking history records.

6.3.5.4 Positive Alarm Sequence (PAS) Setup

Entering 4 in the screen of Fig. 6-24 will enter the screen for setting up pre-alarm screen, as shown in Fig. 6-28.

If the panel is set to PAS mode enabled,
- On receiving the first fire alarm from a detector, PRE-ALARM LED will illuminate.
- The FACP generates fire alarm sound, and starts 15-second delay. The LCD
displays pre-alarm message, indicating the position of the alarm and the remaining delay time.

- During the 15-second delay time, if **ACK/MUTE** is pressed, the alarm sound will stop, and the delay time will be increased by PAS DELAY (0-180s) setup.
- After the delay of any stage expires, the pre-alarm will change to fire alarm and fire protection devices in the system will be started.
- During any stage of delay, if there is another detector of the same zone or any manual call point in the system alarms, the delay will be stopped, the pre-alarm will be changed to fire alarm, and fire protection devices in the system will be started.
- During the delay time, pressing **RESET** will clear the pre-alarm and PAS delay.

### 6.3.5.5 Manual Start of Loop Device

Entering 5 in the screen of Fig. 6-24 will enter the screen for manual start of system devices, as shown in Fig. 6-29. The FACP provides two modes, starting a single device and starting multiple devices. The method of operation and the use of "*" is the same as disablement.

![Fig. 6-29](Image)

### 6.3.5.6 Manual Stop of Loop Devices

Entering 6 in the screen of Fig. 6-24 will enter the screen for manual stop of loop devices. The method for stopping a device is the same as starting a device.

![Fig. 6-30](Image)

### 6.3.6 Device Start/Stop through ZCP

According to definition of the ZCP, press the key corresponding to a device, and input the requested password, you can start the device. Corresponding command LED of the key is lit. Press the key and input password again, you can stop the device, and the command LED turns off.

### 6.3.7 Test Mode Setup
Pressing TEST can enter test mode setup screen as shown in Fig. 6-31.

![Test Mode Menu](image)

In this screen, the user can carry out self-test on audible/visual performance, setting up single-zone testing, exiting single-zone testing mode and exiting testing of all zones.

### 6.3.7.1 Audible/Visual Self-test

Entering 1 in the screen of Fig. 6-31, if the system is in normal standby state, the FACP will self-test all indicators and audible components.

### 6.3.7.2 Single-zone Testing Setup

Entering 2 in the screen of Fig. 6-30 will enter the screen for setting up single-zone testing, as shown in Fig. 6-32.

![Single-zone Testing Setup](image)

Entering the zone to test in this screen and pressing ENTER to confirm, the zone will enter test mode, and the TEST MODE indicator will illuminate.

### 6.3.7.3 Exiting Single-zone Testing Mode

Entering 3 in the screen of Fig. 6-31 will enter the screen for exiting single-zone test mode, as shown in Fig. 6-33.

![Exiting Test Mode](image)

Entering the number of the zone to exit test mode and pressing ENTER to confirm will enable the zone to exit test mode.
6.3.7.4 Exiting Test Mode for All Zones

Entering 4 in the screen shown in Fig. 6-31 will enter the screen for all zones to exit test mode, as in Fig. 6-34.

![Stop All Zones Test (Fig. 6-34)]

The screen for display a prompt before exit. After pressing ENTER for confirmation, TEST MODE indicator will go out.

6.4 Instructions for System Administrator (Manager Password Required)

Press SYSTEM to enter the system setting screen. The screen is shown in Fig. 6-35.

![*System Mode* (Fig. 6-35)]

6.4.1 Modifying System Time

Entering “1” in the screen of Fig. 6-35, the system enters Time/Date setting screen, as shown in Fig. 6-36. After Entering time at highlighted position and press TAB, then the next cell is highlighted. Pressing ENTER will save the modification.

![*Time/Date Setting* (Fig. 6-36)]

6.4.2 Modifying Password

Entering “2” on the screen in Fig. 6-35, the system enters the window for password modification, as in Fig. 6-37. Now the passwords can be modified.
Entering “1” or “2” can choose the password to modify, the system enters the window in Fig. 6-38.

After the password (8 digits from 0-9) is input, the LCD will display the screen shown in Fig. 6-39, requesting to confirm password.

Entering the new password again, if the two passwords are the same, the LCD will display the window shown in Fig. 6-40, meaning the modification is successful.

6.4.3 Network Setup

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Success
Input “3” on the screen in Fig. 6-35, the screen shown in Fig. 6-41 will be displayed.

Fig. 6-41

*NETWORK SETUP*
1. NET Local Address
2. NET Event Display

In the above screen,
✧ You can set the panel’s network address by entering number 1, as shown in Fig. 6-42.

Fig. 6-42

✦ You can set the panel to display network message or not by entering number 2, as shown in Fig. 6-43.

Fig. 6-43

6.4.4 Setting up Beginning Zone Number

Pressing "4" on the screen shown in Fig. 6-35, you can set beginning zone number of the FACP in network. Duplicate zone number should be avoided. The screen is shown in Fig. 6-44. Entering the number of zones in the network on highlighted position and pressing ENTER, the zone numbers of the FACP will start from this number. For example, if the beginning number is 003, then the FACP zone number will be 003, 004, 005….in sequence.
6.4.5 Customize

Entering number 5 in the screen in Fig. 6-35 will enter the customize screen, as shown in Fig. 6-45.

In this screen you can setup the output mode and PAS delay time.

6.4.5.1 Output Setup

Entering 1 in the screen of Fig. 6-45 will enter the screen for setting up output modes, as in Fig. 6-46.

- **Default Outputs**
  Selecting “1. Default Outputs” in the screen of Fig. 6-46 will set SOUNDER CIRCUIT OUTPUT (Sounder A) on loop interface board and F.P.E. OUTPUT (F.P.E.) and the zonal sounder to default output. That is, if any fire alarm comes,
  - If you have set the “Delay Mode” in Section 6.3.4.4 to “Disable”, Sounder A, zonal sounder and F.P.E. will be automatically started.
  - If you have set the “Delay Mode” in Section 6.3.4.4 to “Enable”, Sounder A and zonal sounder output after a 30-second delay, and F.P.E. immediately outputs.

- **C&E Outputs**
Selecting “2. C&E Outputs” on the screen of Fig. 6-46 will set Sounder A on loop interface board and F.P.E. and the zonal sounder to output by C&E.

- The above Default Output does not take effect.
- Sounder A, zonal Sounder and F.P.E need to be edited into C&E equation.
- Sounder A, zonal Sounder and F.P.E are started according to C&E.

Note:
1. If you have set the “Delay Mode” in Section 6.3.4.4 to “Disable”, the delay time set here will not take effect.
2. Under no conditions will F.P.E output be delayed.

6.4.5.2 PAS Delay Time Setup

Entering 2 in the screen of Fig. 6-45 will enter the screen for setting up PAS delay time, as in Fig. 6-47.

![PAS Delay Time Screen](image)

When the “PAS Mode” in Section 6.3.5.4 is set to “Enable”, the FACP will enter the first stage of delay on receiving a fire alarm. Pressing ACK/MUTE at this time, the FACP will enter the second stage of delay. The delay time for the second stage can be set in the screen shown in Fig. 6-47 as described in Section 6.3.5.4.

6.4.5.3 Resounding Loop Sounders

Choosing “3” on the screen of Fig. 6-45 will enter the screen for resounding loop sounders, as in Fig. 6-48.

![Resounding Sounders Screen](image)

6.4.5.3.1 Resounding Sounders of Other Zones

Choosing “1” on the screen of Fig. 6-48, the silenced sounders of all zones will be resounded on a new fire alarm from any zone.

6.4.5.3.2 Resounding Sounders of the Same Zone

Choosing “2” on the screen of Fig. 6-48, a new fire alarm will enable to resound sounders from the same zone. Sounders of other zones will not be resounded.
6.4.6 System Initialization

Entering “6” on the screen shown in Fig. 6-35 can initialize system data.

6.4.7 Viewing Supervisory Data of Addressable Devices

Entering “7” on the screen shown in Fig. 6-35 will enter the window shown in Fig. 6-49. Entering the equipment number and the order number can view the supervisory value of addressable devices.

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Equipment Num:001
Order Number:002

Fig. 6-49
Chapter 7 Standby Battery Calculations

Equation for calculating the battery capacity:

Battery capacity (Ah) = \( I_{Q_{\text{max}}} \times T_1 + (I_{Q_{\text{min}}} + I_{L_{\text{max}}} + I_{F_{\text{out}}}) \times T_2 \)

In which:

- \( I_{Q_{\text{max}}} = 0.75 \text{A} \), which is the quiescent current when the FACP is full-loaded;
- \( I_{Q_{\text{min}}} = 0.42 \text{A} \), is the quiescent current when the FACP is with no load;
- \( I_{L_{\text{max}}} = 0.3 \text{A} \times 2 = 0.6 \text{A} \), is the maximum loop current for 2 detection loops;
- \( I_{F_{\text{out}}} = 0.5 \text{A} \times 3 = 1.5 \text{A} \), which is the alarm output current (The FACP provides 3 fire alarm outputs, output current of each is 0.5A).
- \( T_1 \) is the monitoring time when the FACP is full-loaded, which shall be at least 24 hours according to EN 54-4.
- \( T_2 \) is the alarm time which shall be at least 30 minutes according to EN 54-4.

From the above equation, we can get the battery capacity is 19.26Ah, so that a 21Ah battery is recommended.
Chapter 8 Maintenance

The FACP shall only be repaired by specially trained technical service personnel. Please disconnect the power before repair!

8.1 Replacing the Battery

Type of battery: Sealed lead-acid battery
Recommended period for replacing the battery: 5 years (25°C)
Recommended manufacturer and model: Power-Sonic PG12V21
Disposal of used batteries: Please properly dispose the used batteries according to your local rules and regulations.

NOTE: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

8.2 Replacing the Fuses

<table>
<thead>
<tr>
<th>Location</th>
<th>Mark</th>
<th>Rated Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power filter F7.820.323</td>
<td>F1</td>
<td>2A Delay</td>
</tr>
<tr>
<td>Power board F7.820.829b</td>
<td>F1, F2</td>
<td>5A</td>
</tr>
<tr>
<td>Loop interface board F7.820.828</td>
<td>F1, F2, F3</td>
<td>2A</td>
</tr>
</tbody>
</table>

8.3 Troubleshooter
### Table 8-2

<table>
<thead>
<tr>
<th>No.</th>
<th>Problems</th>
<th>Possible Causes</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No indication on the panel or abnormal indication</td>
<td>a. AC input fuse blown</td>
<td>a. Replace fuse.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Power is abnormal</td>
<td>b. Check and replace low-voltage switch power.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Loose connection with switchboard.</td>
<td>c. Check the connection to display board.</td>
</tr>
<tr>
<td>2</td>
<td>Display &quot;AC Fault&quot; after power-up.</td>
<td>a. No AC power</td>
<td>a. Check and connect AC wire.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. AC fuse blown</td>
<td>b. Replace AC fuse (refer to the specification on the label)</td>
</tr>
<tr>
<td>3</td>
<td>Display &quot;Bat Fault&quot; after power-up.</td>
<td>a. Loose connection with battery.</td>
<td>a. Open the power box and check relative parts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Battery discharged or damaged.</td>
<td>b. Power up for more than eight hours with the AC power supply, if the fault still exists, replace the batteries.</td>
</tr>
<tr>
<td>4</td>
<td>Unable to register loop equipment</td>
<td>Bus wrong or loose connection</td>
<td>Check the loop</td>
</tr>
<tr>
<td>5</td>
<td>Unable to register repeater panels</td>
<td>Wrong or loose connection of communication cables</td>
<td>Check power supply to repeaters and communication wires</td>
</tr>
<tr>
<td>6</td>
<td>Cannot print</td>
<td>a. Print mode is not set</td>
<td>a. Set the print mode.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Loose connection with printer.</td>
<td>b. Check and connect the printer well.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Printer damaged</td>
<td>c. Replace the printer.</td>
</tr>
<tr>
<td>7</td>
<td>No response after pressing keys on zone indication and manual intervention panel</td>
<td>a. Loose connection with ZCP.</td>
<td>a. Check and connect, then register again.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. The circuit board of ZCP damaged.</td>
<td>b. Replace the circuit board of zone indication and manual intervention panel.</td>
</tr>
<tr>
<td>8</td>
<td>Equipment fault</td>
<td>a. Equipment disconnected.</td>
<td>a. Check connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Equipment damaged</td>
<td>b. Replace equipment</td>
</tr>
<tr>
<td>9</td>
<td>Loop fault</td>
<td>Loop is shorted</td>
<td>Check the loop and repair.</td>
</tr>
<tr>
<td>10</td>
<td>Clock or memory fault.</td>
<td>a. External interference.</td>
<td>a. Check whether ground is properly connected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Corresponding parts are aging.</td>
<td>b. Inform our technical service</td>
</tr>
</tbody>
</table>

### WEEE Information

2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points.
Appendix 1 Internal Connection Diagram

1 Main Board   2 Switch Board   3 LCD   4 Printer   5 Speaker   6 Loop Interface Board
7 Power Board   8 Transformer   9 Power Filter   10 ZCP
11 Loop Board(optional)
## Appendix 2 Internal Fault Description

<table>
<thead>
<tr>
<th>No.</th>
<th>Problems</th>
<th>Description</th>
<th>Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC Power</td>
<td>AC power fault</td>
<td>No AC power</td>
</tr>
<tr>
<td>2</td>
<td>Bat Fault</td>
<td>Battery fault</td>
<td>No battery or low voltage</td>
</tr>
<tr>
<td>3</td>
<td>BATHighZ</td>
<td>Battery high resistance</td>
<td>Battery aging or loose connection.</td>
</tr>
<tr>
<td>4</td>
<td>Charger</td>
<td>Charger fault</td>
<td>Charger circuit damaged.</td>
</tr>
<tr>
<td>5</td>
<td>Ground. F</td>
<td>Ground fault</td>
<td>Output loop connects to the ground.</td>
</tr>
<tr>
<td>6</td>
<td>F.P.E.</td>
<td>F.P.E. output loop fault</td>
<td>F.P.E. output circuit opens, shorts or the end-of-resistor is not connected.</td>
</tr>
<tr>
<td>7</td>
<td>Sounder A</td>
<td>Sounder output loop fault</td>
<td>Sounder output loop opens, shorts or the end of line resistor is not connected.</td>
</tr>
<tr>
<td>8</td>
<td>Output1</td>
<td>Alarm output fault</td>
<td>Alarm output circuit opens, shorts or the end of line resistor is not connected.</td>
</tr>
<tr>
<td>9</td>
<td>PowerBox</td>
<td>Power box fault</td>
<td>Power damaged or can’t communicate with main board.</td>
</tr>
<tr>
<td>10</td>
<td>Loop1FAIL</td>
<td>Class A Loop 1 fault</td>
<td>Class A loop 1 opens or shorts.</td>
</tr>
<tr>
<td>11</td>
<td>Loop2FAIL</td>
<td>Class A Loop 2 fault</td>
<td>Class A loop 2 opens or shorts.</td>
</tr>
<tr>
<td>12</td>
<td>Loop2 Card</td>
<td>Loop board 2 fault</td>
<td>Loop board 2 damaged or cannot communicate with main board.</td>
</tr>
<tr>
<td>13</td>
<td>Key Fault</td>
<td>Key fault</td>
<td>CPU for keys damaged or can’t communicate with main board.</td>
</tr>
<tr>
<td>14</td>
<td>Access</td>
<td>ZCP fault</td>
<td>Zone indication panel damaged or cannot communicate with main board.</td>
</tr>
<tr>
<td>15</td>
<td>ProtBoard</td>
<td>Loop interface board fault</td>
<td>The board damaged or cannot communicate with main board.</td>
</tr>
<tr>
<td>16</td>
<td>CRT Board</td>
<td>CRT board fault</td>
<td>CRT board damaged or cannot communicate with main board.</td>
</tr>
<tr>
<td>17</td>
<td>Net Card</td>
<td>Network card fault</td>
<td>The card damaged or can’t communicate with main board.</td>
</tr>
<tr>
<td>18</td>
<td>Repeater</td>
<td>Panel repeater fault</td>
<td>The repeater damaged or can’t communicate with main board.</td>
</tr>
</tbody>
</table>
## Appendix 3 Device Type List

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undefined</td>
<td>00</td>
<td>Undefined</td>
</tr>
<tr>
<td>ION</td>
<td>01</td>
<td>Ionization detector</td>
</tr>
<tr>
<td>R+F.Heat'</td>
<td>02</td>
<td>Rate of rise and fixed temperature detector</td>
</tr>
<tr>
<td>Optical</td>
<td>03</td>
<td>Photoelectrical smoke detector</td>
</tr>
<tr>
<td>Fix Temp</td>
<td>04</td>
<td>Fixed temperature detector</td>
</tr>
<tr>
<td>Gas Det</td>
<td>05</td>
<td>Gas detector</td>
</tr>
<tr>
<td>Beam Det</td>
<td>06</td>
<td>Infrared beam detector</td>
</tr>
<tr>
<td>FlameDet</td>
<td>07</td>
<td>Ultraviolet flame detector</td>
</tr>
<tr>
<td>CableDet</td>
<td>08</td>
<td>Cable heat detector</td>
</tr>
<tr>
<td>Heat Det</td>
<td>09</td>
<td>Analogue heat detector</td>
</tr>
<tr>
<td>ION</td>
<td>10</td>
<td>Combination detector</td>
</tr>
<tr>
<td>MCP</td>
<td>11</td>
<td>Manual call point</td>
</tr>
<tr>
<td>VAModule</td>
<td>12</td>
<td>Voice alarm module</td>
</tr>
<tr>
<td>Sounder</td>
<td>13</td>
<td>Sounder strobe</td>
</tr>
<tr>
<td>FTMODULE</td>
<td>14</td>
<td>Fire telephone module</td>
</tr>
<tr>
<td>HR MCP</td>
<td>15</td>
<td>Hydrant pump</td>
</tr>
<tr>
<td>HR Pump</td>
<td>16</td>
<td>Hydrant pump</td>
</tr>
<tr>
<td>SPKR Pmp</td>
<td>17</td>
<td>Sprinkler pump</td>
</tr>
<tr>
<td>PS.SW</td>
<td>18</td>
<td>Stabilized pressure pump</td>
</tr>
<tr>
<td>Extract</td>
<td>19</td>
<td>Smoker exhauster</td>
</tr>
<tr>
<td>Presuriz</td>
<td>20</td>
<td>Blower</td>
</tr>
<tr>
<td>FreshAir</td>
<td>21</td>
<td>Fresh air</td>
</tr>
<tr>
<td>Damper</td>
<td>22</td>
<td>Fire damp</td>
</tr>
<tr>
<td>SM Vent</td>
<td>23</td>
<td>Smoke vent</td>
</tr>
<tr>
<td>AirInlet</td>
<td>24</td>
<td>Air inlet</td>
</tr>
<tr>
<td>SolValve</td>
<td>25</td>
<td>Solenoid valve</td>
</tr>
<tr>
<td>SM CURT</td>
<td>26</td>
<td>Roller shutter door middle point</td>
</tr>
<tr>
<td>RSD Cloe</td>
<td>27</td>
<td>Shutter screen door close point</td>
</tr>
<tr>
<td>FireDoor</td>
<td>28</td>
<td>Fire door</td>
</tr>
<tr>
<td>PS.DIFF</td>
<td>29</td>
<td>Pressure switch</td>
</tr>
<tr>
<td>Flow SW</td>
<td>30</td>
<td>Water flow indicator</td>
</tr>
<tr>
<td>Elevator</td>
<td>31</td>
<td>Elevator</td>
</tr>
<tr>
<td>AHU</td>
<td>32</td>
<td>Air handling unit</td>
</tr>
<tr>
<td>GENI</td>
<td>33</td>
<td>Diesel generator</td>
</tr>
<tr>
<td>Light.DB</td>
<td>34</td>
<td>Power for lightening</td>
</tr>
<tr>
<td>Power.DB</td>
<td>35</td>
<td>Power distribution</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------</td>
<td></td>
</tr>
<tr>
<td>WTR.CURT</td>
<td>Solenoid valve for water curtain</td>
<td></td>
</tr>
<tr>
<td>Gas Dump</td>
<td>Gas start-up</td>
<td></td>
</tr>
<tr>
<td>GasAbort</td>
<td>Gas stop</td>
<td></td>
</tr>
<tr>
<td>Net Unit</td>
<td>Net unit</td>
<td></td>
</tr>
<tr>
<td>Repeater</td>
<td>Repeater panel</td>
<td></td>
</tr>
<tr>
<td>Module</td>
<td>Flash-locks valve</td>
<td></td>
</tr>
<tr>
<td>DryPower</td>
<td>Dry powder fire extinguisher</td>
<td></td>
</tr>
<tr>
<td>FoamPump</td>
<td>Foam pump</td>
<td></td>
</tr>
<tr>
<td>FieldPSU</td>
<td>Power supply unit</td>
<td></td>
</tr>
<tr>
<td>EM Light</td>
<td>Emergency light</td>
<td></td>
</tr>
<tr>
<td>EscapeLT</td>
<td>Escape light</td>
<td></td>
</tr>
<tr>
<td>GasActiv</td>
<td>Gas activation</td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>Security module</td>
<td></td>
</tr>
<tr>
<td>ZoneValv</td>
<td>Zone valve</td>
<td></td>
</tr>
<tr>
<td>Cylinder</td>
<td>Cylinder</td>
<td></td>
</tr>
<tr>
<td>DelugePM</td>
<td>Deluge pump</td>
<td></td>
</tr>
<tr>
<td>Define</td>
<td>Undefined</td>
<td></td>
</tr>
<tr>
<td>Stop Mod</td>
<td>Device stop</td>
<td></td>
</tr>
<tr>
<td>Silence</td>
<td>Mute key</td>
<td></td>
</tr>
<tr>
<td>SounderA</td>
<td>Fire alarm sounder</td>
<td></td>
</tr>
<tr>
<td>SounderF</td>
<td>Fault sounder</td>
<td></td>
</tr>
<tr>
<td>Loop SW</td>
<td>Loop switch</td>
<td></td>
</tr>
<tr>
<td>CRTFault</td>
<td>GMC fault</td>
<td></td>
</tr>
<tr>
<td>Loop</td>
<td>Loop</td>
<td></td>
</tr>
<tr>
<td>PSU.Bat</td>
<td>Battery</td>
<td></td>
</tr>
<tr>
<td>PSU.AC</td>
<td>AC power</td>
<td></td>
</tr>
<tr>
<td>Lock</td>
<td>Multi-wire lock</td>
<td></td>
</tr>
<tr>
<td>PART</td>
<td>Partial devices</td>
<td></td>
</tr>
<tr>
<td>ZoneDir</td>
<td>Zone direction</td>
<td></td>
</tr>
<tr>
<td>F.P.E</td>
<td>Fire protection equipment</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 4 Operation Menu

Menu

BROWSE

1 Loop Devices
2 Zone Devices
3 Group Devices
4 In Test Mode Zones
5 COM Devices (Network devices)
6 Access (Displaying ZCP information)
7 Browsing C&E

LOG (History records)

VIEW FAULT

VIEW DISABLE

MODE [Operator password required]

1 LCD Contrast
2 Browse Mode

Zone Mode
Loop Mode

3 Print Mode

Disable
Only Fire
All History (Pressing PRINT when viewing history records can print out the messages being viewed.)

4 PAS (Positive Alarm Sequence) Setup

1 Disable
2 Enable

5 Start Devices (manually start)
6 Stop Devices (manually stop)

TEST [Operator Password required]

1 Display Test (Self-test)
2 Each Zone In Test
3 Stop a Zone Test
4 Stop All Zone Test

ENABLE/DISABLE [Operator Password Required]

1 Disable Devices
2 Enable Devices
3 Dis/En-able Output
4 Dis/En-able Delays
5 Delete Net Disable
SYSTEM [Manager Password Required]
  Time/Date
  Password Change
  Network Setup
  Zone Start Number
  Customize
  Initialize System
  Devices debug

ACK/MUTE (Silencing the FACP or acknowledging a fire alarm during the first stage of PAS delay)

SILENCE (Silencing all sounders in the system) [Operator Password Required]

EVAC (Start all sounder in the system for evacuation) [Operator Password Required]

LOCK (Locking keypad)

“△” / “▽” (Turning pages)

ESC (Canceling or exiting operation menu, or enabling the FACP to displaying information of the highest priority)

ENTER (Confirmation an input. Shifting time display mode between month/day and hour/minute in normal standby state.)

RESET (Resetting the FACP from fire or fault to normal standby state) [Operator Password Required]