

SIEMENS



FC18 Controller

Operating manual

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CHAPTER 1 SYSTEM OVERVIEW

There are three types of FC18 series controllers:

- FC1820 fire alarm controller (interlocking)
- FC1840 fire alarm controller (interlocking)
- FC1840C fire alarm controller (no interlocking panel, no printer)

1. FEATURES

- FC1820 and FC1840 fulfill Chinese Standard of GB4717-2005 and GB16806-2006.
- FC1840C fulfill Chinese Standard of GB4717-2005.
- Multi-language operation menu designed with windows style for fast and easy operation.
- Shortcut key (right key) for popping out operation items of equipment/event.
- Large memory space for up to 10000 history records, first in first out order, and all events can be recorded during operation period.
- LCD backlight Auto-off mode. When no operation or event to display within preset time, LCD backlight will be automatically turn off. When there are events / operations, LCD will light up automatically to display events and/or interlocking devices.
- 2 channels of programmable input/output (Output: 40mA@24VDC, it can be programmed as general alarm output or general trouble output; Input: dry contact).
- 1 channel of NAC for audible and visible devices (max. 0.5A @24VDC).
- 8 channels of interlocking functions for automatic control and manual operations of control equipments.
- Efficient group programming according to different using.
- FC1820 controller can connect up to 252 points, FC1840(C) controller can connect up to 504 points.
- Network bus (FC18-BUS), the max. distance is 1000m (the twist wiring capacity is 1.0 to 1.5 mm²). Up to 32 controllers can be networked together with FC1820 and FC1840(C).
- FRT bus (FR18-BUS), the max. distance is 1000m (the twist wiring capacity is 1.0 to 1.5 mm²). Up to 32 floor repeater displays can be networked.
- Detection bus (FD18-BUS), 2-wire polarity-free, the max. distance for line resistance is 4000m, the max. distance for line capacitance is 5000m. (the twist wiring capacity is 1.0 to 1.5 mm²)
- Three user levels for different operation authority. Each user level is accessed by a pre-defined and changeable password.
- Convenient pluggable terminals with clear marks for field wiring.
- Auto-mapping function to support on commissioning task.
- Detection algorithm can be adjusted from controller according to different environment, to provide high reliability of alarm and reduce false alarm.
- Programming can be done either directly on controller or through computer.
- “Sticker Method” easy for commissioning on site.

2. TECHNICAL DATA

Item	Parameter		
	FC1820	FC1840	FC1840C
No. of line modules	1	2	2
No. of points	252	504	504
LCD screen	320×240 pixels, backlit		
No. of programmable input/output on mainboard	2		
No. of zone of interlocking panel	8		0
No. of NAC (0.5mA @24VDC)	1		
Max. history records	10000		
Max. distance between controllers within FC18-BUS	1,000 m		
Max. No. of controllers connected within FC18-BUS	32		
Max. distance between a controller and a FRT within FR18-BUS	1,000 m		
Max. No of FRT connected to a controller	32		
Auto-mapping function	Operation from terminal		
Battery(not included)	Depends on local regulation		
Communication interface	Special converter module		
Input voltage	220 V@1.5 A, 110V@3 A 220 VAC (-15%...+10%) / 50 Hz (-5 Hz...+5 Hz) 110 VAC (-15%...+10%) / 60 Hz (-10 Hz...+6 Hz)		
Power supply capacity	5 A@24 VDC		
External power output	1 A@24 VDC		
Size (mm)	437×408×197		
Weight (without battery)	10.35 Kg		
Power fuse	1.5 A		
Battery fuse	5.0 A		
Operating temperature	0 ~ +40 °C		
Storage temperature	-10 ~ +50 °C		
Relative humidity	≤95% (40±2 °C)		
Protection category	IP30		
Environment requirement	Indoor / Clean		

3. DIMENSIONS



Fig. 1-1 FC18 Appearance

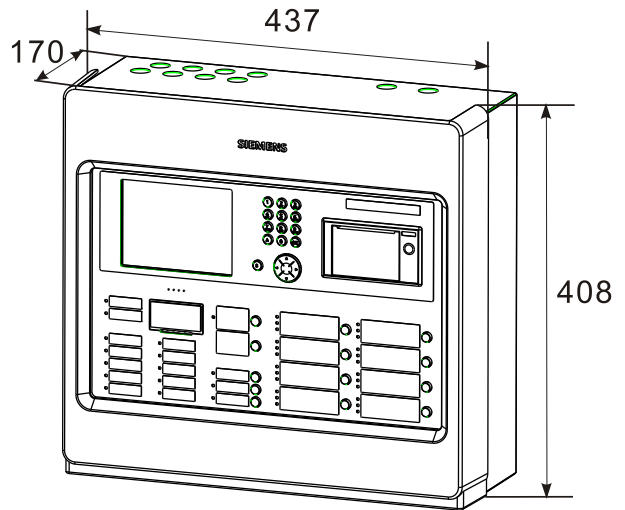


Fig. 1-2 FC18 Dimensions (mm)

4. COMPATIBLE LIST

No.	Type	Description
1.	FDT181	Addressable heat detector
2.	FDO181	Addressable smoke detector
3.	FDM181	Addressable manual call point
4.	FDCI181-2	Addressable input module
5.	FDCIO181-2	Addressable input/output module
6.	FDCI181-1	Addressable input module
7.	FDCIO181-1	Addressable input/output module
8.	FT1810	Addressable floor repeater display
9.	FDCL181	Isolator
10.	FT1811	Addressable mimic drive
11.	FTM1811	Addressable mimic display board
12.	FDCAI181	Addressable alarm indicator

5. SYSTEM STRUCTURE

- Up to 32 FC1820/40(C) controllers can be networked together. Any controller can be set as master controller to supervise devices connected with its slave controller and its own.

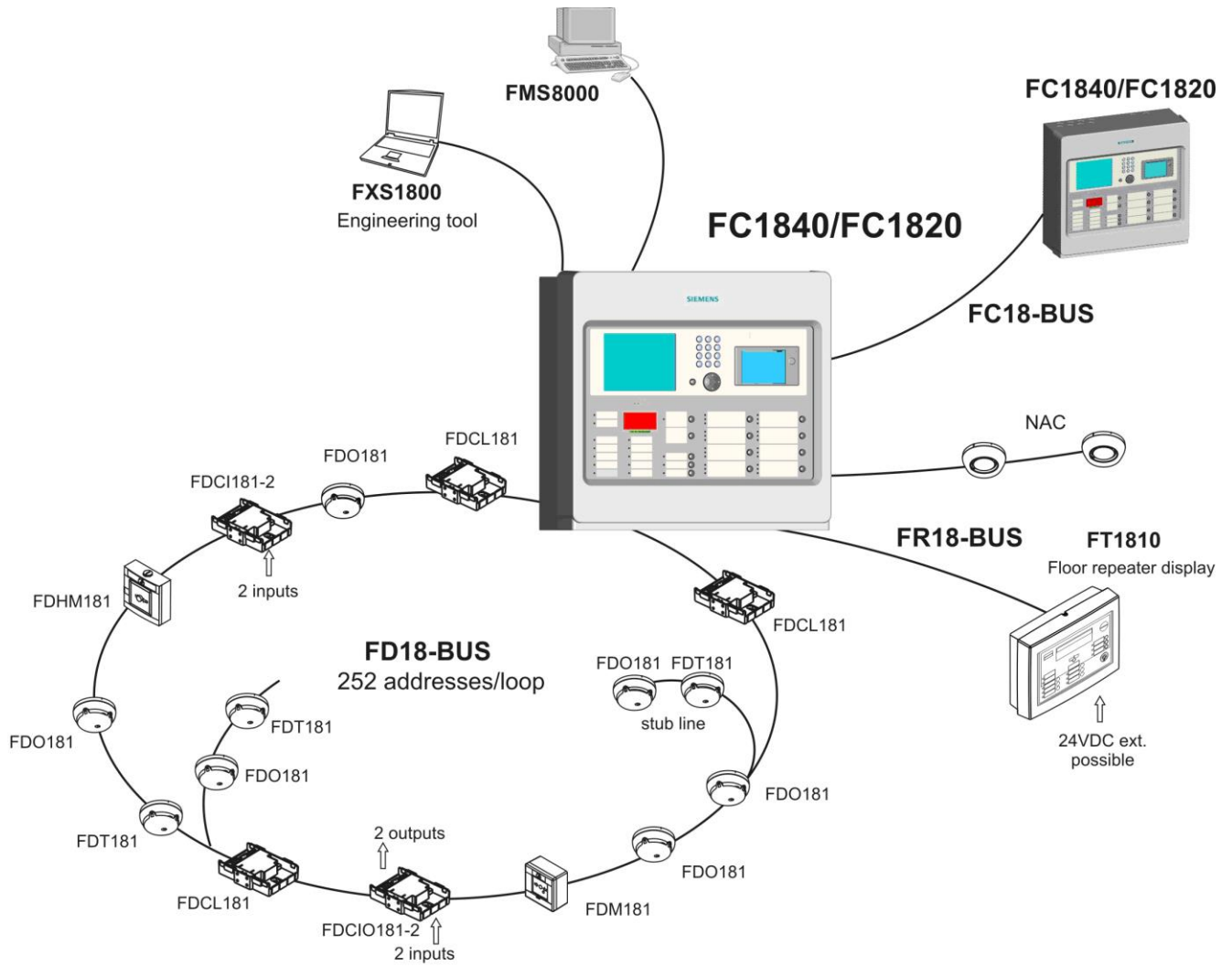


Fig. 1-3 System structure

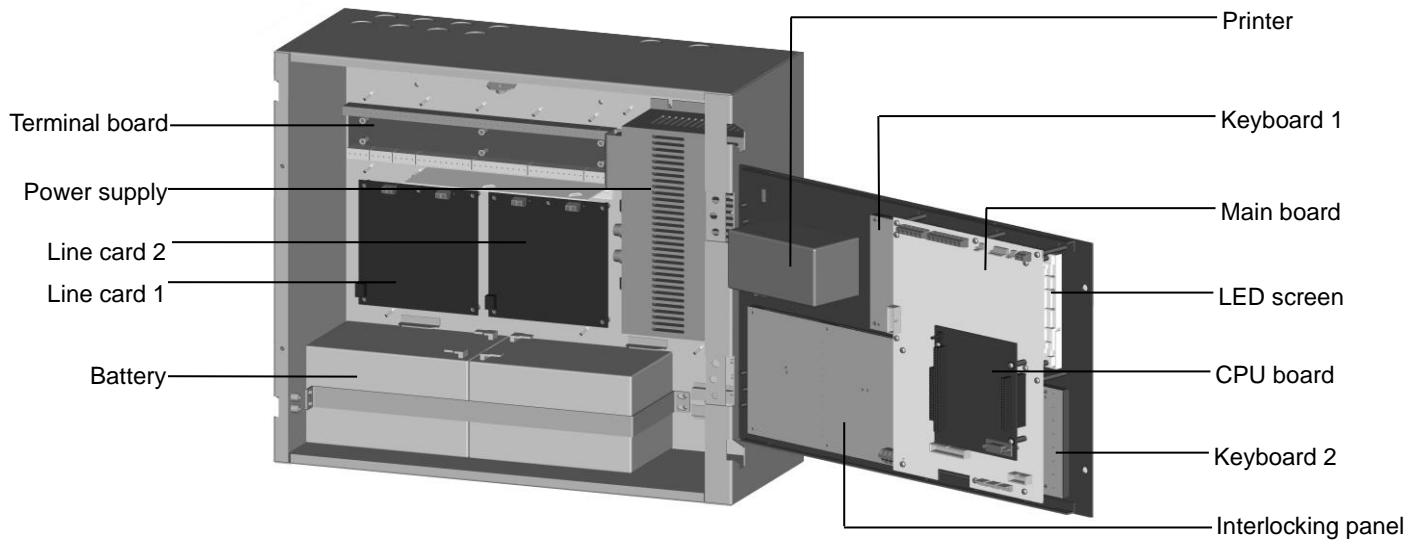


Fig. 1-4 Internal structure

CHAPTER 2 INSTALLATION

1. INSTALLATION

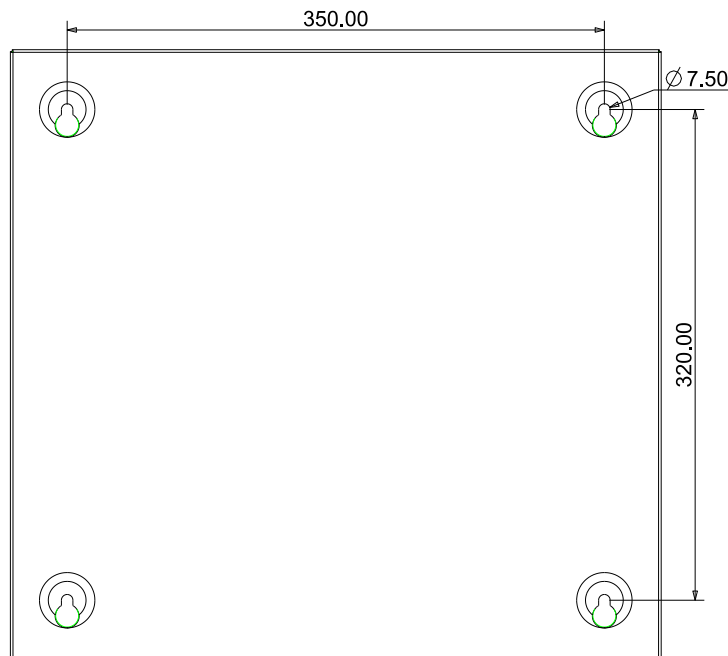


Fig. 2-1 Dimensions (mm)

Installation must comply with the local regulation!

1. Ensure the wall is dry, clean, flat and firm in which the controller is installed.
2. Chose a proper installation location to make sure the front door can be opened smoothly.
3. Mark the drillings for 4 installation holes on the wall. (Fig. 2-1)
4. Drill the holes, put expansion bolts in and insert the M6 screws.
5. Break the cable entries on the controller.
6. Hang the controller over those screws.
7. Insert cables into the controller.
8. Open the front panel and tighten the screws to fix the controller on the wall.
9. Connect cables to the terminals according to Fig. 2-2, 2-3, 2-4, 2-5, 2-6, 2-7, 2-8.
10. Install and secure the batteries properly.
11. Close the front panel. Lock it with special tools and store the tools in safe place.

2. CONNECTION DIAGRAM

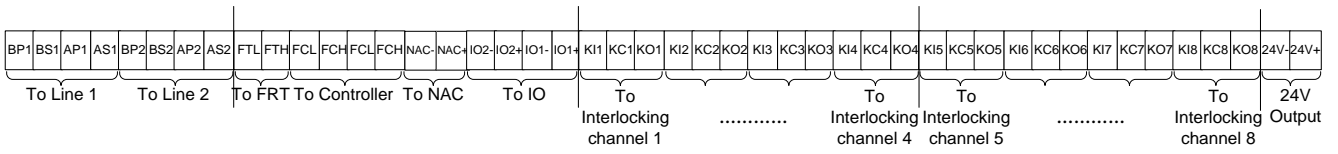
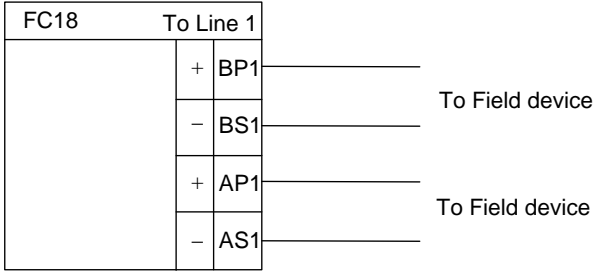


Fig. 2-2 Terminal line



Note: In loop mode, wires from BP1 must end at AP1; wires from BS1 must end at AS1. The connection of field devices (except FDCL181 isolator) is polarity free.

Fig. 2-3 Line card connection diagram (the same for Line 2)

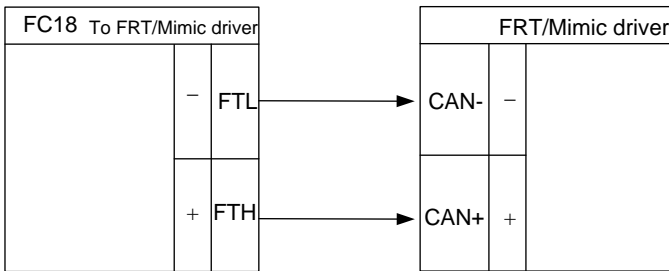
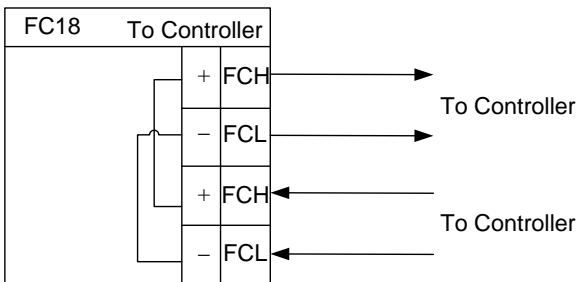


Fig. 2-4 FRT/Mimic driver connection diagram



Note: Ensure positive and negative connections are properly in place; FC18-BUS is polarity sensitive. Connect a 120Ω resistor as monitoring resistor. It must be connected to the end of the line. (It can be set by the two-digit Dip-switch on the main board, see “Dip-switch connection configuration”)

Fig. 2-5 Network connection diagram

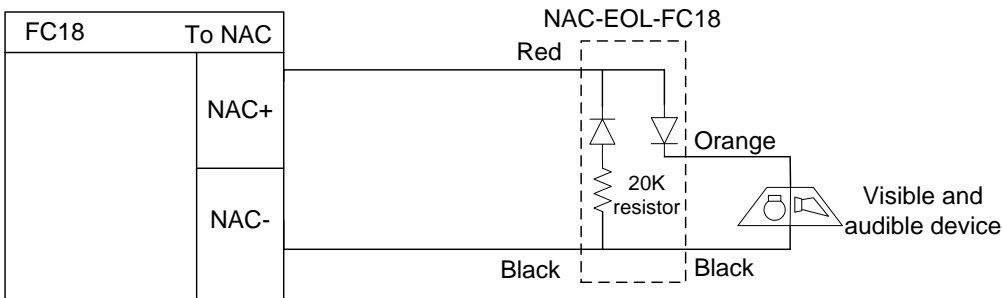


Fig. 2-6 NAC connection diagram

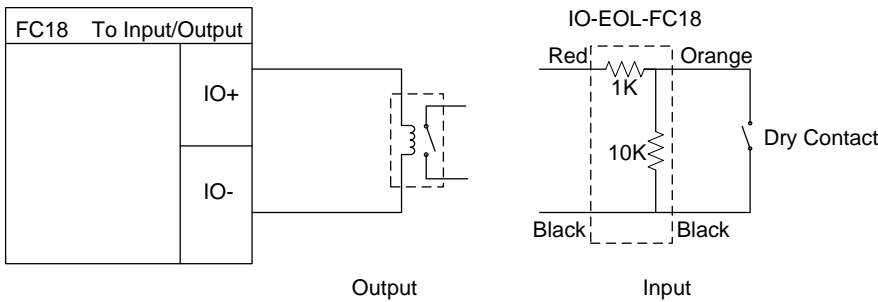


Fig. 2-7 Main board input/output connection diagram

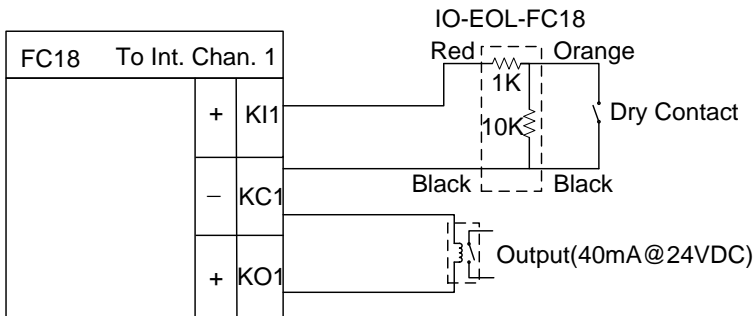


Fig. 2-8 Interlocking panel connection diagram (the same for other channels)

Note: the load range of each output is 24VDC, 600 Ω – 1.2k Ω

3. DIP-SWITCH

Each controller/interlocking panel has an eight-digit Dip-switch for address setting. Each Dip-switch can set address 1-32 within its first 6 digits.

FC18-BUS address	DIP switches							
	1	2	3	4	5	6	7	8
Idle	Off	Off	Off	Off	Off	Off	Off	Off
1	On	Off	Off	Off	Off	Off	Off	Off
2	Off	On	Off	Off	Off	Off	Off	Off
3	On	On	Off	Off	Off	Off	Off	Off
4	Off	Off	On	Off	Off	Off	Off	Off
5	On	Off	On	Off	Off	Off	Off	Off
⋮								
31	On	On	On	On	On	Off	Off	Off
32	Off	Off	Off	Off	Off	On	Off	Off

The controller has a two-digit Dip-switch for setting terminal resistor of FC18-BUS or FR18-BUS.

1	On: FC18-BUS terminal selected; Off: not selected
2	On: FR18-BUS terminal selected; Off: not selected

4. Power Supply

- Stable and reliable DC output
- Auto switch between main power and battery
- Alternative AC power switch
- Charge and protect battery
- Monitor main power, battery, trouble status
- Auto recoverable current protection circuit for overload and short circuit

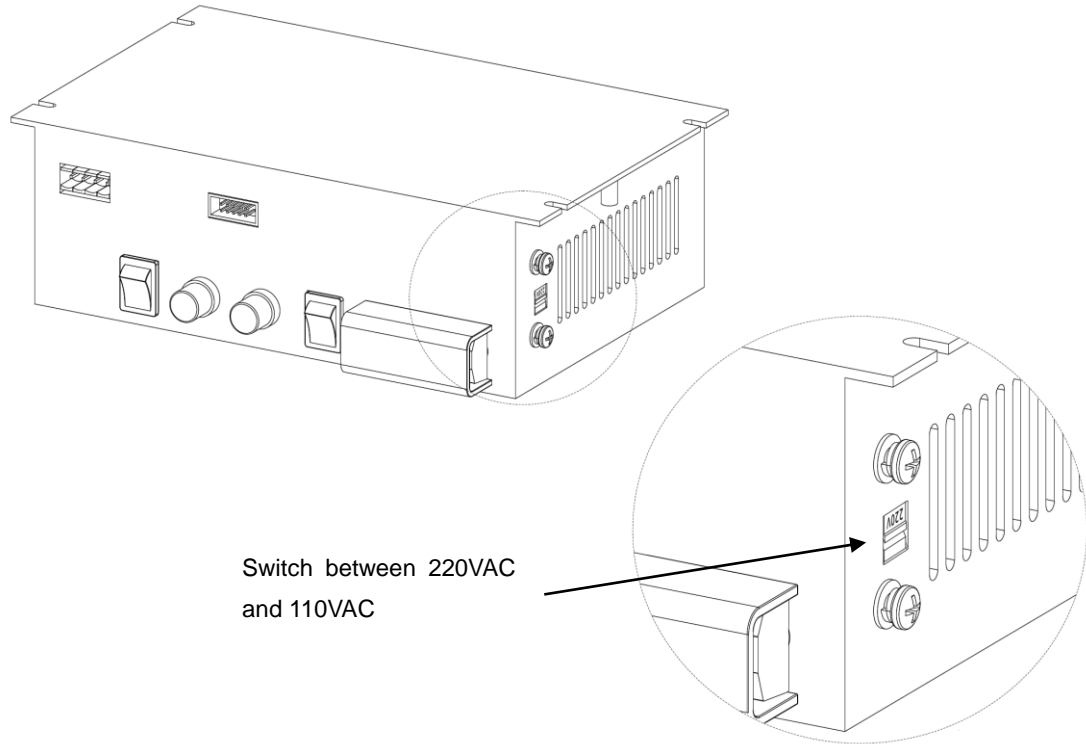


Fig. 2-9 AC Input Switch

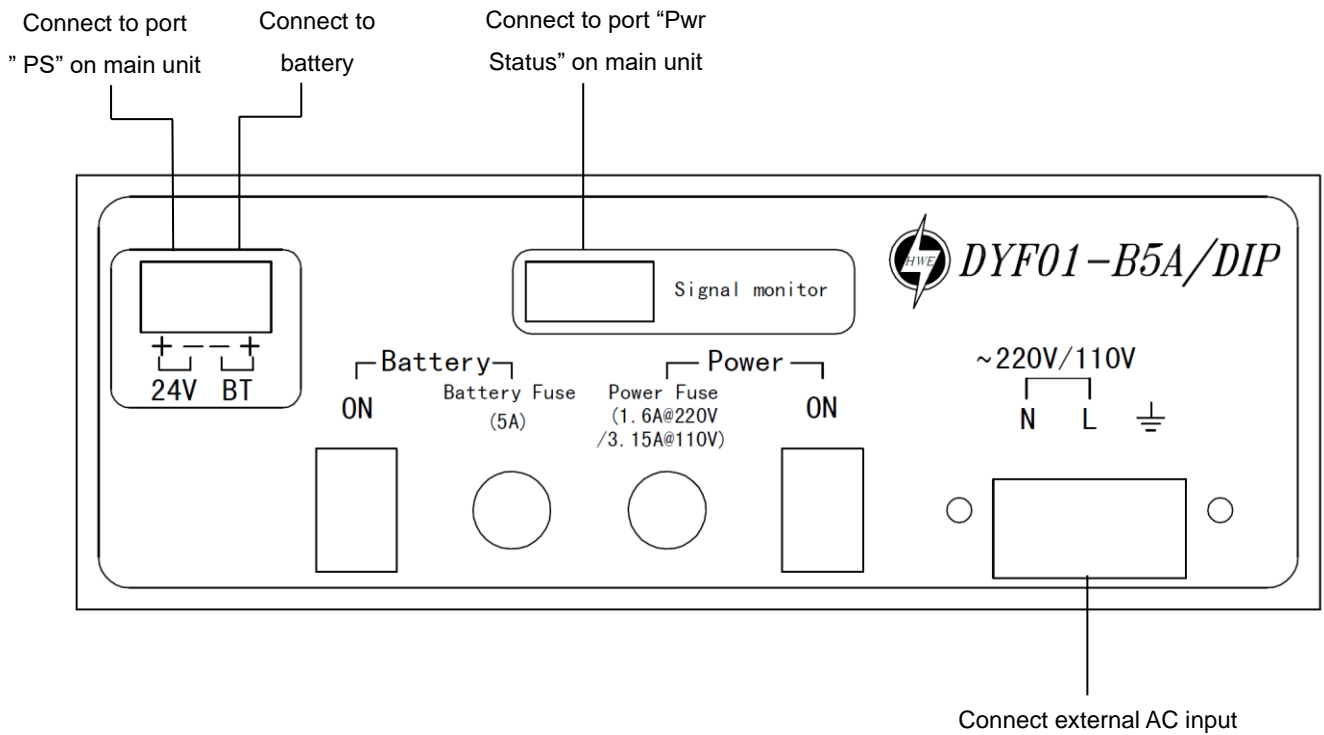


Fig. 2-10 Wire connection

Specification of power supply

Input voltage	110 VAC (-15%...+10%), 220 VAC (-15%...+10%)
Input frequency	60 Hz (-10 Hz...+6 Hz), 50 Hz (-5 Hz...+5 Hz)
Output voltage	24 VDC
Output current	5A
AC fuse capacity	110VAC: 3.15A 220VAC:1.6A
DC fuse capacity	5A
Operating temperature	0 ~ +40°C when it is over 40°C, output power will reduce half
Storage temperature	-20 ~ +60°C
Humidity	≤95% (40±2°C)
Size	220*136*70 mm

CHAPTER 3 OPERATION

1. INTERFACE

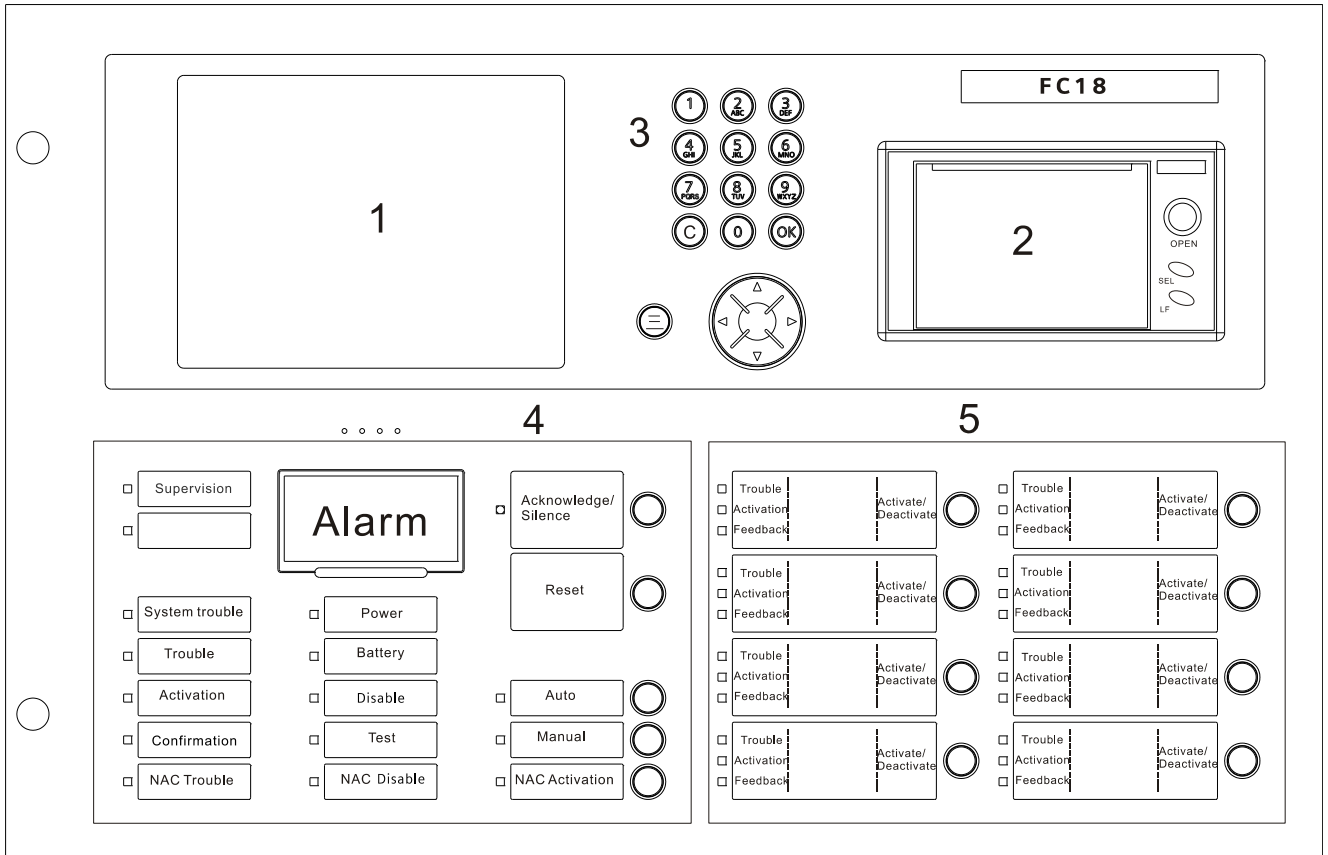


Fig. 3-1 Operation panel



① LCD

The LCD backlight automatically turns off within the preset time in the idle mode; the preset time can be adjusted in the parameter setting. Press any key will turn on the LCD again.

② Printer

There are two indicators and two buttons on the printer panel. Indicator: the green LED indicates power-up state while the red LED for operation state (on: online; off: offline). Button: SEL (set online/offline), LF (line feed).

③ Key board

- ◆ Press number keys to enter numbers and characters.
- ◆ C: Press “C” to cancel or return to the previous menu; Press “OK” to confirm or enter the menu.
- ◆ : Menu button, press “” to show menu.
- ◆ Press “↓”/“↑” to move the cursor.
- ◆ Press “←” to delete the previous input.
- ◆ Press “→” as shortcut key to show the function menu. The operation items of the selected equipment are listed in the menu according to operator’s user level.

④ Indicators and operation keys

- ◆ Alarm: Off when there is no fire; on when fire detected; off again when all alarms are cleared and "reset" is pressed.
- ◆ Supervision: On when supervision signal is detected; off when the event disappears and “reset” is pressed.

- ◇ System trouble: On when system hardware/software is faulty.
- ◇ Trouble: On when trouble occurs; off when trouble is resolved.
- ◇ Activation: On when some equipment (such as output module or main board output port) is activated; off when activation signal disappears and “reset” is pressed.
- ◇ Confirmation: On when controller receives confirmation signal; off when the signal disappears.
- ◇ NAC trouble: On when trouble occurs on NAC line; off when trouble disappears.
- ◇ Main Power: On when main power supply is working; off when the AC supply is disconnected.
- ◇ Battery: On when backup batteries are working; off when the Main power are working and the backup batteries are not working.
- ◇ Disable: On when some equipment is disable; off when no equipment is disable; Flashing when system is in startup status.
- ◇ Test: On when some equipment is at test/walk-test mode; off when no equipment is being tested.
- ◇ NAC disable: On when NAC line is disable; off when it’s enable.
- ◇ Auto: Only level 2&3 users can access. At auto mode all interlocking equipment can be activated automatically by controller according to interlocking expressions. Manual operations have high priority at auto mode.
- ◇ Manual: Only level 2&3 can access. At manual mode all interlocking equipment can only be activated manually.
- ◇ Acknowledge/Silence: Only level 2&3 users can access. Press “Acknowledge/Silence” to turn off the buzzer (except when battery is under voltage).
 - Flashing when there are events and “Acknowledge/Silence” is not pressed. OR when there are events and “Acknowledge/Silence” is pressed while new event occurs.
 - Off when there are events and “Acknowledge/Silence” is pressed, OR when there are no events.

Sound elimination in a network,

- Press “Acknowledge/Silence” on master controller: internal sounder will turn off for both master and slaves, also indicator will turn off.
- Press “Acknowledge/Silence” on slave controller: internal sounder will turn off slave itself, indicator will turn off, but master remains unaffected.
- ◇ NAC activation: Only level 2&3 users can access. When fire is detected, NAC is activated and the LED is on. Press “NAC activation” to deactivate NAC devices and the LED is off. Press it again, NAC device is activated again and the LED is on. So on and so forth.
 - “NAC activation” is used to activate/deactivate NAC devices.
 - NAC device can be disabled through the menu.
 - NAC device cannot be activated neither the alarm nor the key when NAC device is disable.
 - When NAC device is activated, it can be disable. But when it is enable again, its status will be normal (no matter there is fire alarm or not).
 - The LED status is consistent with NAC device status (no matter there is fire alarm or not). That means when NAC device is activated, the LED is on; when NAC device is deactivated, the LED is off.
- ◇ Reset: Only level 2&3 users can access. It is used to reset the system to normal status. Any event can be reset by pressing this key no matter it’s silence or not. It’s different to reset fire alarm events from resetting other events in a network.
 - Non-fire alarm event:
 - If master is reset, events in both master and slaves are reset.
 - If a slave is reset, events in the slave are reset, and the same events in master are also reset.
 - Fire alarm event:
 - If master is reset, events in both master and slaves are reset.
 - If a slave is reset, events in the slave are reset while the same events in master will not reset

until master is reset.

⑤ **Interlocking panel**

The interlocking panel has 8 output channels. Each channel has indicators to indicate trouble, activation and confirmation status. Each channel can be controlled manually with Activation/Deactivation button. Only level 2&3 user can access. Press the button to activate it and press it again to deactivate it, so on and so forth.

- ◆ Trouble: On when there is trouble; off when trouble is solved.
- ◆ Activation: On when output channel is activated; flashing when there's no confirmation; off when the output channel resume normal.
- ◆ Confirmation: On when confirmation is received; off when confirmation signal disappears.

Note: FC1840C doesn't have interlocking panel and printer.

2. LCD WINDOW

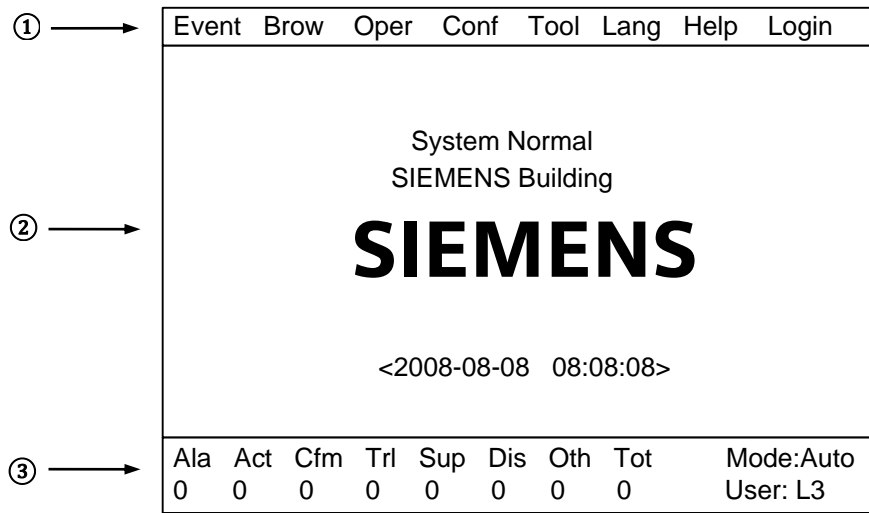
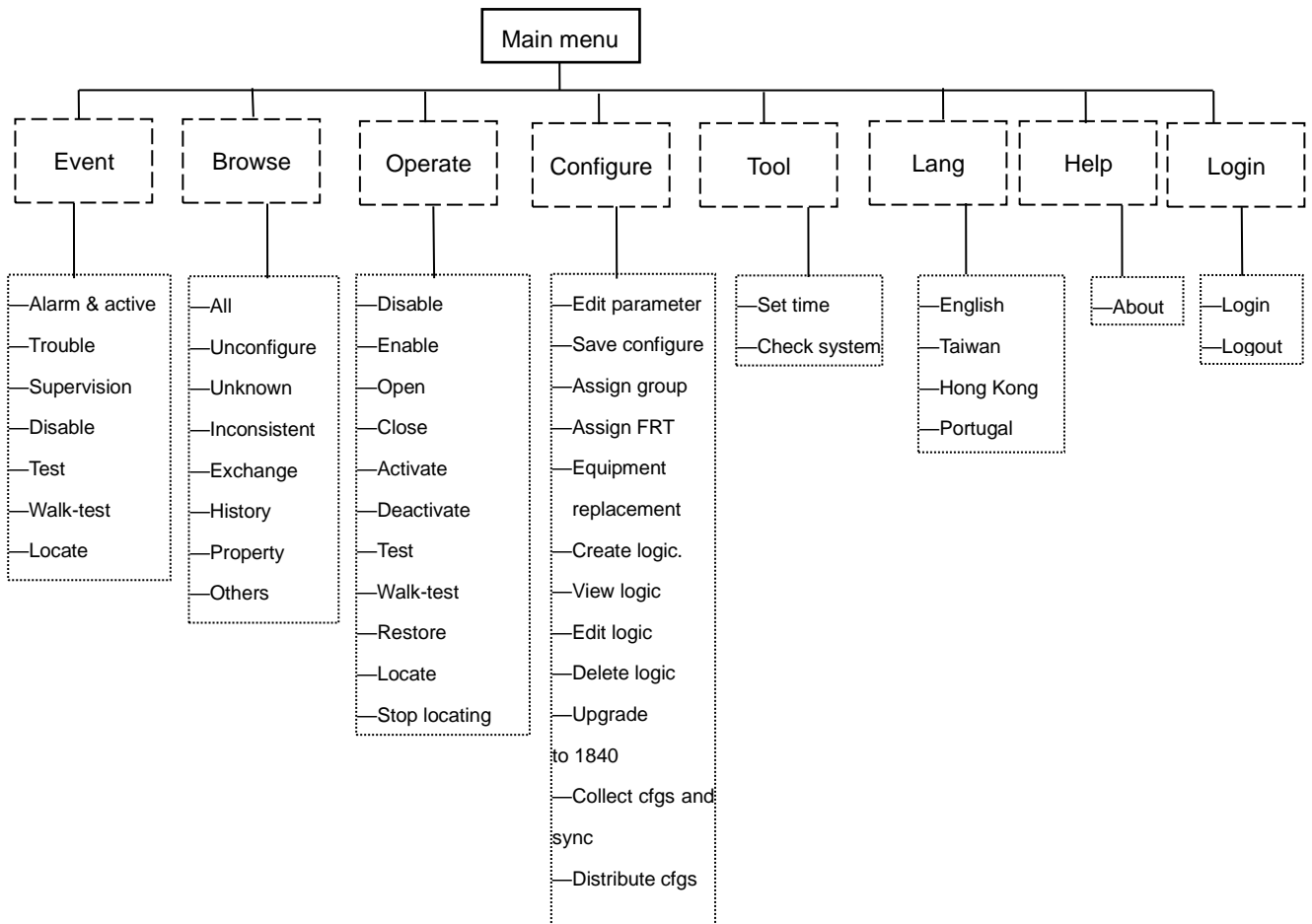


Fig. 3-2 Display screen

FC18 controller has 3 windows which are menu window (1), browser window (2) and statistics window (3).

① Menu window:


◆ Display different operation menus according to different user levels. Items for Level 3 are shown as follows.



② **Browser window:**

- ◆ Display real-time events: fire alarm, activation & confirmation, trouble, supervision, disable, test and walk-test.
- ◆ Display node tree.
- ◆ Priority of display: fire alarm→ activation & confirmation→ supervision→ disable→ trouble→ test/walk-test→ normal.

③ **Statistics window:**

- ◆ Display total number of real-time events including fire alarm, activation, confirmation, trouble, supervision and disable.
- ◆ Display the level of the present user as well as the system mode.
- ◆  icon is displayed when system clock is wrong, possible reason is : the button battery on main board is used or clock chip cannot work normally.

3. USER LEVEL

- FC18 has 3 user levels. User level is displayed at the lower right corner of the screen (Fig. 3-2)
- Users of different levels have their own matching privileges and interfaces.

Table 3-1 user privilege list

Item	Level 1	Level 2	Level 3
Login	√		
Logout		√	√
Real-time event query	√	√	√
History query	√	√	√
Property query	√	√	√
Disable/Enable devices		√	√
Activation/Deactivation devices		√	√
Test		√	√
Walk-test		√	√
Restore		√	√
Locate		√	√
Stop locating		√	√
Login time setting			√
Buzzer level setting			√
LCD closing time setting			√
System time setting			√
Auto/manual mode setting		√	√
Edit parameter			√
Create logic			√
Delete logic			√
Edit logic			√
View logic			√
Print events	√	√	√
Save configure			√
Operate interlocking panel		√	√
System check			√
Acknowledge/Silence		√	√
NAC		√	√
Group assignment			√
FRT assignment			√
Change language			√
Reset		√	√

3.1 Login

1. Press "Menu" to browse the main menu.
Display main menu.
2. Press "→" to select "Login", and then press "OK".
Password entry window pops out.

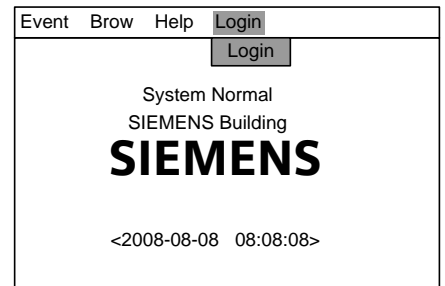


Fig. 3-3

3. Enter the password for Level2/3 and press "OK".
Login as a Level 2/3 user if the password entered is correct.
(Press "←" to delete previous input.)

Note:

Default password for Level 2 is 1234, for Level 3 is 4321. Default password can be changed by FXS1800 software tool.
System logout automatically after 3 times of invalid entries.

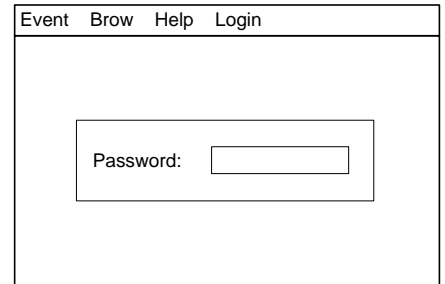


Fig. 3-4

3.2 Logout

There are two ways to logout:

- System logout automatically: System automatically logs out to Level 1 if no operations during a preset login time. (System login time can be set by modifying station parameters.)
- Use the menu to logout:
 1. Press "Menu" to browse the main menu.
Display event menu.
 2. Press "→" to select "Login", and then press "OK".
Logout window pops out.

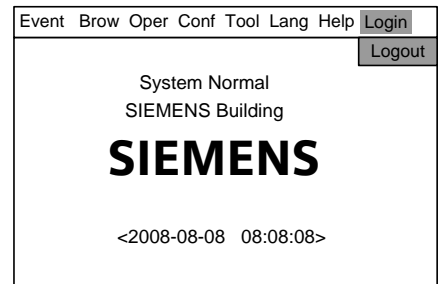


Fig. 3-5

3. Press "OK" to return back to Level 1 interface; press "C" to cancel the logout operation.

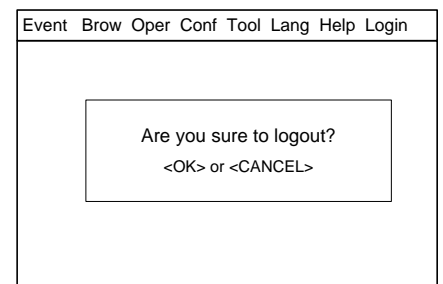


Fig. 3-6

Note:

Users can directly login Level 2/3 interface under Level 1 interface; Users need to return back to Level 1 interface before logging in Level 2 from Level 3 interface, also same from Level 2 to Level 3.

4. STATUS TYPES

FC18 controller contains 8 status types: normal, fire alarm/activation, trouble, supervision, disable, test/walk-test and locate.

Normal:

- Main power supply indicator on
- Auto/Manual indicator on
- No events taken place such as fire alarm/activation, trouble, supervision, disable, test, walk-test etc.
- LCD shown as the figure

The screen shall show "System Normal" and project name.

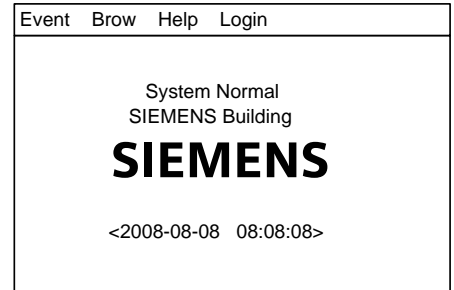


Fig. 4-1

Fire alarm status:

- Fire alarm indicator on
- LCD shown as the figure
- Acknowledge/Silence indicator flashing
- NAC activation indicator on
- Buzzer ringing
- NAC device activated

Alarm & Active		
0001	Auto Alarm	2008-08-08 10:10:10 Room 1001, Building 1 / 01.005.001
0002	Auto Alarm	2008-08-08 10:10:11 Room 1008, Building 1 / 01.005.008
0001	Active	2008-08-08 10:10:11 Output 1 / 01.005.008

Fig. 4-2

Trouble status:

- Trouble indicator on
- LCD shown as the figure
- Acknowledge/Silence indicator flashing
- Buzzer ringing

Trouble		
0002	COMM trouble	2008-08-08 10:10:10 Interlocking Line / 01.005
0001	Other	2008-08-08 10:10:08 Room 1008, Building 1 / 01.001.291

Fig. 4-3

Supervision status:

- Supervision indicator on
- LCD shown as the figure
- Acknowledge/Silence indicator flashing
- Buzzer ringing

Supervision		
0001	Supervision	2008-08-08 10:10:15 Supervision 1 / 01.005.010

Fig. 4-4

Activation status:

- Activation indicator on (flashing when there is no confirmation)
- LCD shown as the figure
- Acknowledge/Silence indicator flashing
- Buzzer ringing

Activation		
0001	Activation	2008-08-08 10:10:13
Output 1 / 01.005.008		

Fig. 4-5

Confirmation status:

- Confirmation indicator on
- LCD shown as the figure
- Acknowledge/Silence indicator flashing
- Buzzer ringing

Confirmation		
0001	Confirmation	2008-08-08 10:10:11
Output 1 / 01.005.008		

Fig. 4-6

Disable status:

- Disable indicator on
- LCD shown as the figure

Disable		
0002	Disable	2008-08-08 10:10:10
Room 1001, Building 1 / 01.005.001		
0001	Disable	2008-08-08 10:08:10
Room 1008, Building 1 / 01.001.291		

Fig. 4-7

Test/Walk-test status:

- Test indicator on
- LCD shown as the figure

Test		
0001	Test	2008-08-08 10:10:11
Room 1008, Building 1 / 01.005.008		

Fig. 4-8

Locate status:

- No indication
- No interface, it only can be found in equipment properties.

5. FIRE ALARM EVENT HANDLING

Fire alarm status:

- Fire alarm indicator turns on
- Fire event with customer information shown in the LCD as the figure
- Acknowledge/Silence indicator flashing
- NAC activation indicator turns on
- Buzzer turns on
- NAC devices activated

How to handle:

1. Press Acknowledge/Silence to silence the buzzer:
 - Under Level 1 interface, a login interface pops out automatically. Enter Level 2/3 password and press "OK" to return back to fire alarm window then press "Acknowledge/Silence". Now,
 - Buzzer is mute
 - The Acknowledge/Silence indicator turns off
 - NAC devices still in activation status
 - Under Level 2/3 interface,
 - Buzzer is mute
 - The Acknowledge/Silence indicator turns off
 - NAC devices still in activation status
2. Press "NAC Activation" to deactivate NAC devices and the indicator turns off. Press it again to reactivate NAC devices and the indicator turns on. So on and so forth.
3. Find out fire location from LCD.
4. Go to the site to investigate the situation.
5. Call the firemen immediately if it's an emergency. If it's controllable, press "Reset" after handling the fire to remove the fire alarm event and the fire alarm indicator turns off.

Alarm & Active	
0001 Auto Alarm Room 1001, Building 1 / 01.005.001	2008-08-08 10:10:10
0002 Auto Alarm Room 1008, Building 1 / 01.005.008	2008-08-08 10:10:11
0001 Active Output 1 / 01.005.008	2008-08-08 10:10:11

Fig. 5-1 fire alarm interface

Handling multi-fire alarm:

- Information of multi-fire alarm is displayed.
- The cursor stays on the first alarm. Other alarms are displayed repeatedly in a reverse order.
- Browsing each item by pressing "↓" / "↑"

Note: There are 2 kinds of fire alarms namely "auto alarm" and "manual alarm".

6. TROUBLE EVENT HANDLING

Trouble status:

- Trouble indicator turns on
- Trouble events are shown on the LCD as the figure
- Acknowledge/Silence indicator flashing
- Buzzer turns on

How to handle:

1. Press "Acknowledge/Silence" to silence the buzzer:
 - Under Level 1 interface, a login interface pops out automatically. Enter Level 2/3 password and press "OK" to return back to fire alarm window then press "Acknowledge/Silence". Now,
 - Buzzer is mute.
 - The Acknowledge/Silence indicator turns off.
 - Under Level 2/3 interface,
 - Buzzer is mute
 - The Acknowledge/Silence indicator turns off.
2. Find out the trouble location from LCD.
3. Go to the site to trouble-shoot.
4. The trouble indicator turns off when problems are solved. If you cannot solve the problem, please call local Siemens service center.

Trouble		
0002	COMM trouble Interlocking Line / 01.005	2008-08-08 10:10:10
0001	Other Room 1008, Building 1 / 01.001.291	2008-08-08 10:10:08

Fig. 6-1

Note:

When a trouble occurs together with another event of higher priority, trouble event cannot be displayed automatically. Enter the trouble window manually (see "real-time query" function) to handle trouble.

CPU trouble:

When application software in trouble or CPU hardware trouble occurs, system trouble indicator turns on. In such case, system cannot operate normally and no key is available. Now you should disconnect the power supply and contact with Siemens service center.

7. SUPERVISION EVENT HANDLING

Supervision status:

- Supervision indicator on
- Supervision events are shown on the LCD as the figure
- Acknowledge/Silence indicator flashing
- Buzzer turns on

How to handle:

1. Press “Acknowledge/Silence” to silence the buzzer:
 - Under Level 1 interface, a login interface pops out automatically. Enter Level 2/3 password and press “OK” to return back to fire alarm window then press “Acknowledge/Silence”. Now,
 - Buzzer is mute.
 - The Acknowledge/Silence indicator turns off.
 - Under Level 2/3 interface,
 - Buzzer is mute
 - The Acknowledge/Silence indicator turns off.
2. Find out the supervision location from LCD.
3. Go to the site to handle it if necessary.
4. The supervision event will disappear when supervision signal disappears. Press “Reset” to turn off the supervision indicator and the controller return to normal.

Supervision	
0001 Supervision	2008-08-08 10:10:15
Supervision input 1 / 01.005.010	

Fig.7-1

Note:

When a supervision event occurs together with another event of higher priority, supervision event cannot be displayed automatically. Enter the supervision window manually (see “real-time query” function) to handle it.

8. ACTIVATION/CONFIRMATION EVENT HANDLING

Activation status:

- Activation indicator on (flashing if there is no confirmation)
- Confirmation indicator on (only if there is confirmation signal)
- Activation events are shown on the LCD as the figure
- Acknowledge/Silence indicator flashing
- Buzzer turns on

How to handle:

1. Press Acknowledge/Silence to silence the buzzer:
 - Under Level 1 interface, a login interface pops out automatically. Enter Level 2/3 password and press “OK” to return back to fire alarm window then press “Acknowledge/Silence”. Now,
 - Buzzer is mute.
 - The Acknowledge/Silence indicator turns off.
 - Under Level 2/3 interface,
 - Buzzer is mute
 - The Acknowledge/Silence indicator turns off.
2. Find out the activation/confirmation location from LCD.
3. Go to the site to handle it if necessary.
4. Confirmation indicator turns off when confirmation signal disappears. When activation signal disappears, press “Reset” to turn off the activation indicator and the controller return to normal.

Note:

- When an activation/confirmation event occurs together with another event of higher priority, activation/confirmation event cannot be displayed automatically. Enter the activation/confirmation window manually (see “real-time query” function) to handle it.
- Press “←” to switch between fire alarm window and activation window.

Alarm & Active	
0001 Auto Alarm Room 1001, Building 1 / 01.005.001	2008-08-08 10:10:10
0002 Auto Alarm Room 1008, Building 1 / 01.005.008	2008-08-08 10:10:11
0001 Active Output 1 / 01.005.008	2008-08-08 10:10:11

Fig.8-1activation interface

9. REAL-TIME QUERY

FC18 fire alarm controller (interlocking) contains ten types of real-time events:

Table 3-2

Types of real-time events	Priority
Fire alarm/activation	1
Supervision	2
Disable	3
Trouble	4
Test	5
Walk-test	5
Locate	5
Unconfigure equipment	6
Unknown equipment	7
Inconsistent equipment	8
Exchange equipment	9

Unconfigure equipment: Equipments not on the engineering document list.

Unknown equipment: Equipments not listed by Table 1-2.

Inconsistent equipment: The type of installed equipment on site is inconsistent with engineering document.

Exchange equipment: Dirty smoke detector.

Steps:

1. Press "Menu" to browse the main menu. (Fig. 9-1)

Main menu displayed.

2. Press "↓" to select an event type to query then press "OK".

All the events meeting the requirements will be displayed in the window. Use "↓" / "↑" to browse items.

When an event is selected, press "→" to pop out a shortcut menu (Fig. 9-2). All operable items will be listed according to user's level. Use "↓" / "↑" to select an operation then press "OK" to take the operation.

Note:

- "0001": Order of an event
- "COMM trouble": Type of an event
- "2008-08-08 10:10:10": Date and time when an event takes place
- "Interlocking line / 01.0005": Text message and equipment address of an event
- "Interlocking group": text message of the group which this interlocking equipment belongs to. (If the equipment does not belong to any group, only text message of the event and equipment address are displayed.)

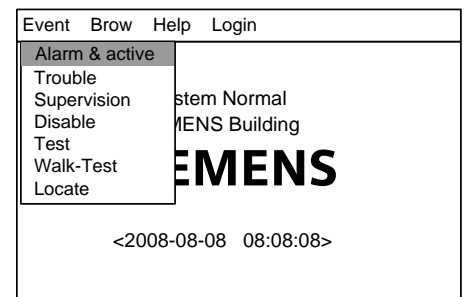


Fig. 9-1

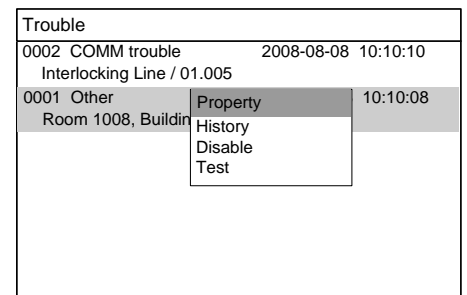


Fig. 9-2

10. HOW TO QUERY EQUIPMENT PROPERTY

Steps:

1. Select a station, a line or a point and press “→” to pop out a shortcut menu (Fig. 10-1), then select “Property” and press “OK” to pop out a property window. (Fig. 10-2)

Trouble		
0002 COMM trouble	2008-08-08	10:10:10
Interlocking Line / 01.005		
0001 Other	Property	10:10:08
Room 1008, Building 1	History	

Fig.10-1

2. Press “C” to quit equipment property query.

Property	
Station ID:	1
Line ID:	1
Point ID:	3
Text:	Room 1008, Building 1
Type:	Heat detectot
Status:	Normal

Fig.10-2

11. HOW TO QUERY HISTORY

FC18 fire alarm controller (interlocking) contains 11 types of history records which are fire alarm, trouble, supervision, activation/confirmation, disable, test and walk-test, unconfigure equipment, unknown equipment, inconsistent equipment, exchange equipment. The first six types support advanced query.

Steps:

1. Select a station, a line or a point and press “→” to pop out a shortcut menu, and then press “↓” to “History” (Fig. 11-1). Press “OK” to pop out the record window. All the history records will be displayed. (Fig. 11-2)

Note:

If a system is selected, all the history records of all the stations, lines and points belonging to this system are displayed.

If a station is selected, all the history records of this station and the line and equipment which belongs to this station will be displayed.

If a line is selected, all the history records of this line will be displayed.

If a point is selected, all the history records of this point will be displayed.

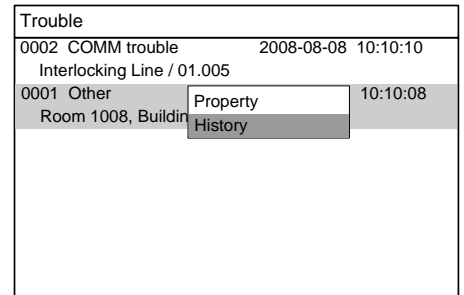


Fig.11-1

2. Press “Menu” to pop out the record menu, select “Advanced Query” (Fig.11-3), and then press “OK” to pop out advanced query window (Fig.11-4).

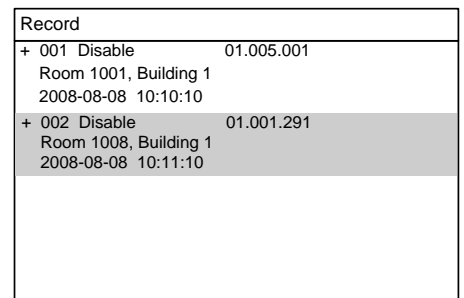


Fig.11-2

3. Select a type and input query time period then press “OK”. All the events meet the requirements will be displayed in the window. Use “↓” / “↑” to browse items then press “Menu”:

Select “Print” to print all the history records displayed.

Select “Quit” to return back to initial interface.

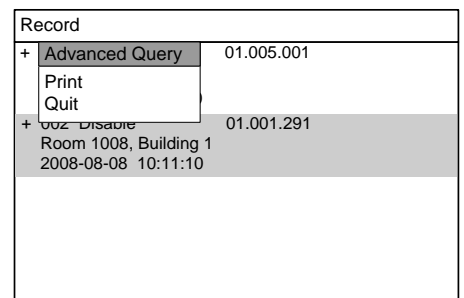


Fig.11-3

Note:

Use “↓” / “↑” to switch active window.

Use “→” to activate the dropdown menu of types.

Use “←” to clear wrong input.

Date format: YYYY-MM-DD; time format: HH-MM-SS.

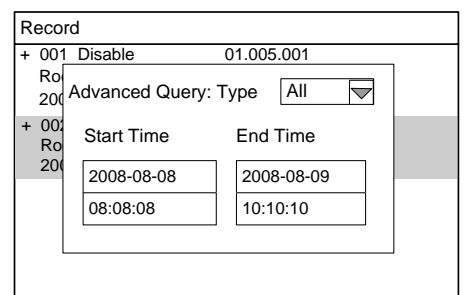


Fig.11-4

至 日期 2005-09-05 小时 16

图 3-19

选择	记录
小写	
大写	
拼音	
确认	
取消	

图 3-20

12. HOW TO DISABLE/ENABLE

Function: The controller should be disabled when the house is being decorated or there are equipment damages or failure. It should be resumed to normal state as soon as the decorating work or equipment repair is finished.

Note: Disabled equipment cannot send any message to controller.
Equipment cannot be disabled when being replaced.

Steps to disable:

1. Press “Menu” to browse the main menu (Fig.12-1).
Main menu displayed.
2. Press “→” to select “Brow” submenu (Fig. 12-2). Press “↓” to select the item which contains the equipment to be disabled, and then press “OK”.
Now the equipment will be displayed directly in the window.
If you don’t know which type the equipment to be disabled belongs to, please select “All equipments”, then press “OK” to display the tree (Fig. 12-3). Search down level by level through stations, lines and points until you find the equipment you are looking for.
3. Press “→” to pop out the shortcut menu (Fig.12-4). Use “↓” to select “Disable” and press “OK” to disable the selected equipment.

Steps to enable (two ways):

The first way: the same as the steps to disable. The only difference is that select “Enable” instead of “Disable” in step 3.

The second way: it’s easier to find the disable equipment through real-time disable query (see real-time query). Press “→” to pop out the shortcut menu (Fig. 12-5) and press “↓” to select “Enable”, then press “OK” to enable the selected equipment.

Disable indicator goes off when all the disable equipments are enabled.

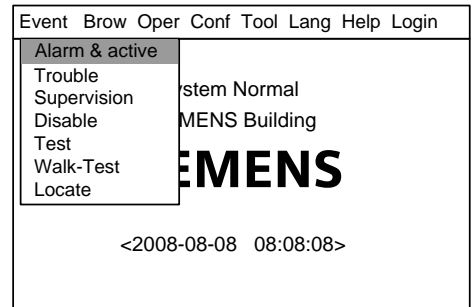


Fig.12-1

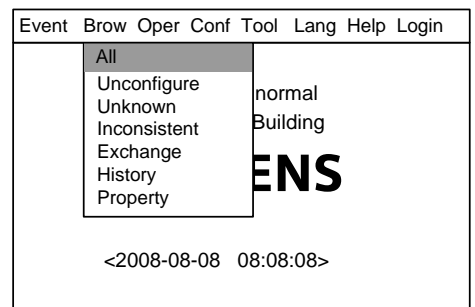


Fig.12-2

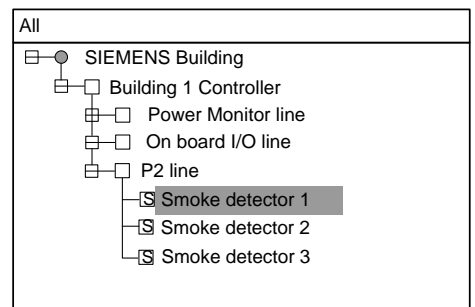


Fig.12-3

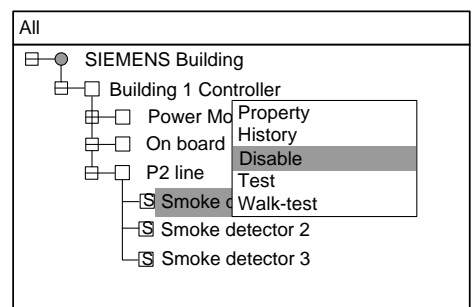


Fig.12-4

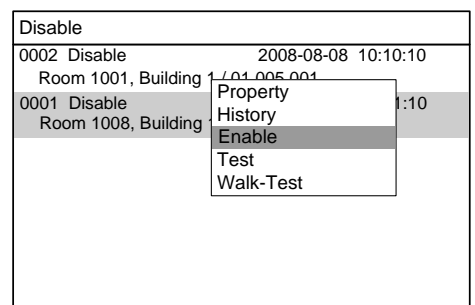


Fig.12-5

13. HOW TO ACTIVATE/DEACTIVATE THE CONTROLLER

Function: Through controller, manually activation/deactivation mainboard output, output module, interlocking panel output and NAC devices etc.

Steps to activation:

1. Press “Menu” to browse the main menu (Fig. 13-1).
Main menu displayed.

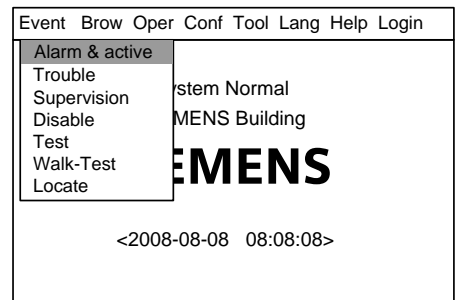


Fig.13-1

2. Press “→” to select “Brow” submenu (Fig. 13-2). Press “↓” to select “All”, then press “OK” to display the tree diagram (Fig. 13-3). Search down level by level through stations, lines and points until you find the equipment you are looking for.

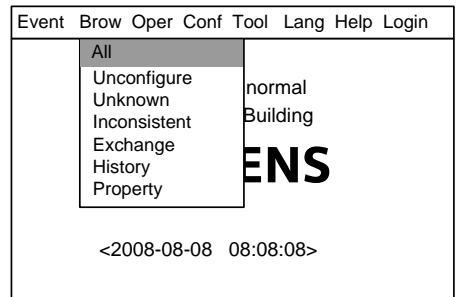


Fig.13-2

3. Press “→” to pop out a shortcut menu (Fig.13-4). Use “↓” to select “Activate” and press “OK” to activate the selected equipment.

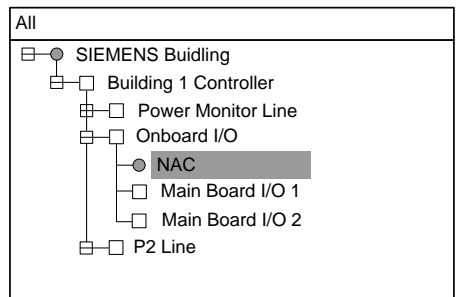


Fig.13-3

4. Press “Acknowledge/Silence” to silence the buzzer and to turn off the flashing “Acknowledge/Silence” indicator.

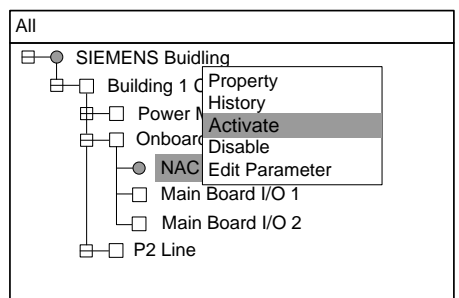


Fig.13-4

Steps to deactivate (two ways):

The first way: the same as the first 2 steps to activation. The only difference is that select “Deactivate” instead of “Activate” in step 3.

The second way: It’s easier to find the activated equipment through real-time activation query (see real-time query). Press “→” to pop out a shortcut menu (Fig. 13-5) and press “↓” to select “Deactivate”, then press “OK” to deactivate the selected equipment.

Activation indicator turns off when all the activated equipments are deactivated.

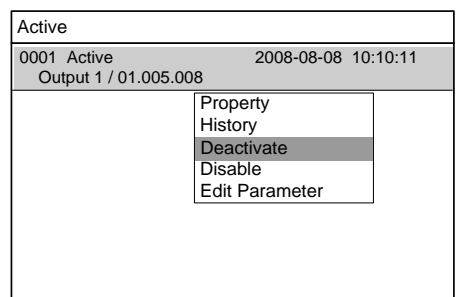


Fig.13-5

14. HOW TO TEST/WALK-TEST

Function: To test whether the alarm device is in normal status. Under test/walk-test mode, an alarm will be triggered when there is an alarm event while the interlocking equipment will not be activated. Make sure the controller is back to normal after the test.

Difference between test and walk-test:

Test: Fire alarms cannot reset automatically under test mode. Controller need to be resumed back to normal status by manual reset.

Walk-test: Controller can resume back to normal status automatically after the preset walk-test time (which can be set by editing the controller parameters).

Steps to test/walk-test:

1. Press “Menu” to browse the main menu (Fig. 14-1).
Main menu displayed.
2. Press “→” to select “Brow” submenu (Fig. 14-2). Press “↓” to select “All”, then press “OK” to display the tree diagram (Fig. 14-3). Search down level by level through stations, lines and points until you find the equipment you are looking for.
3. Press “→” to pop out the shortcut menu (Fig.14-4). Use “↓” to select “Test/Walk-Test” and press “OK” to test the selected equipment.

How to restore to normal: two ways

The first way: the same as the first 2 steps to conduct a test/walk-test. The only difference is that select “Restore” instead of “Test/Walk-Test” in step 3.

The second way: It’s easier to find the tested equipment through real-time test/walk-test query (see real-time query). Press “→” to pop out the shortcut menu (Fig. 14-5) and press “↓” to select “Restore”, then press “OK” to restore the selected equipment.

Test/walk-test indicator turns off when all the tested equipments are restored to normal.

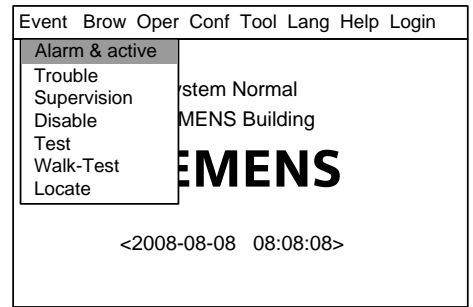


Fig.14-1

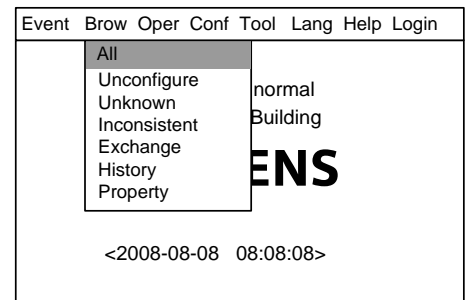


Fig.14-2

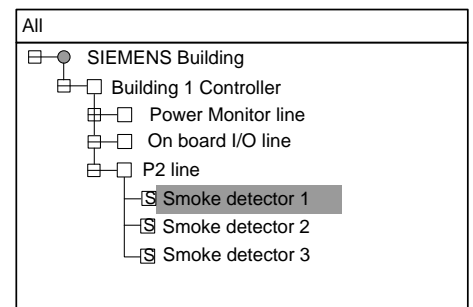


Fig.14-3

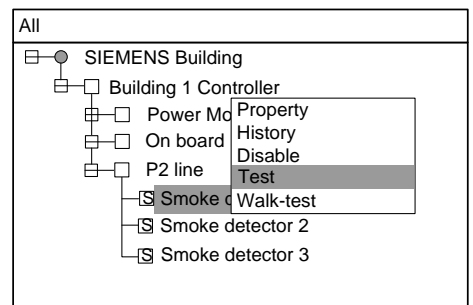


Fig.14-4

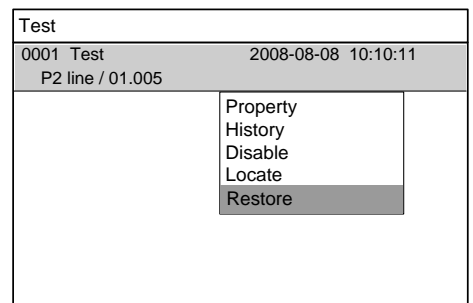


Fig.14-5

15. HOW TO LOCATE/STOP LOCATING

Function: To locate equipment.

Steps to locate:

1. Press “Menu” to browse the main menu (Fig. 15-1)
Main menu displayed.

2. Press “→” to select “Brow” submenu (Fig. 15-2). Press “↓” to select “All”, then press “OK” to display the tree diagram (Fig. 15-3). Search down level by level through stations, lines and points until you find the equipment you are looking for.

3. Press “→” to pop out the shortcut menu (Fig.15-4). Use “↓” to select “Locate” and press “OK” to locate the selected equipment. Now the test indicator is flashing.

Steps to stop locating:

The same as the first 2 steps to conduct a remote test. The only difference is that select “Stop locating” instead of “Locate” in step 3. Then press "OK" to reset the selected equipment and turn off the flashing indicator.

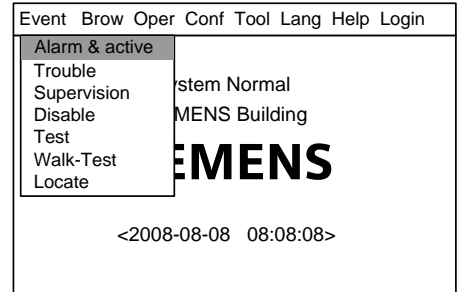


Fig.15-1

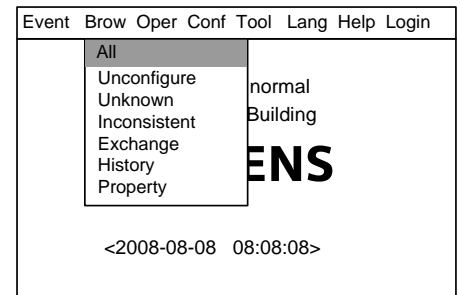


Fig.15-2

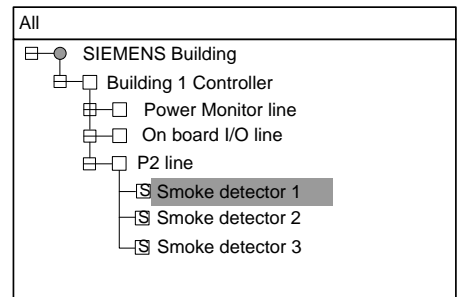


Fig.15-3

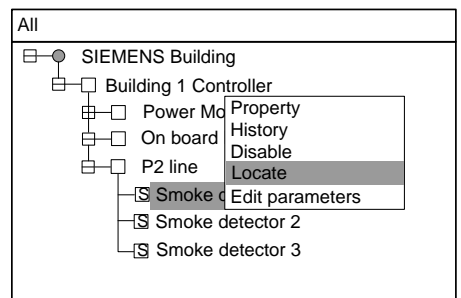


Fig.15-4

16. HOW TO ADJUST BUZZER LEVEL

Function: Turn up or down the buzzer between level 0-7. Level 0 is mute mode.

Steps:

- Press "Menu" to browse the main menu (Fig. 16-1)
Main menu displayed.
- Press "→" to select "Brow" submenu (Fig. 16-2). Select "All" and then press "OK". Now the tree diagram will be displayed in the window (Fig.16-3).
- Use "↓" / "↑" to select the controller you are looking for.
- Press "→" to pop out the shortcut menu (Fig.16-4). Use "↓" to select "Edit Parameter" and press "OK" to enter the parameter editing interface (Fig.16-5).
- Press "↓" to select "Buzzer Level" window. Press "←" to delete the previous number and enter the expected one.
- After the change, press "Menu" and press "↓" to select "Confirm", then press "OK" to save the change and quit. A dialog box will pop out to remind you to save the change (Fig. 22-3). Press "OK" to save the change permanently or press "C" to save the change temporarily. (The change will be lost if the system is restarted.)
Select "Cancel" and press "OK" if you don't want to save the change.

Note:

- The saved changes take effect immediately.
- These operations can only be applied to the selected controller.

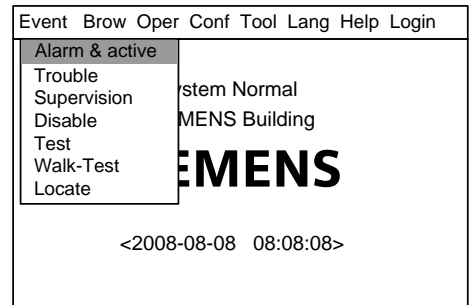


Fig.16-1

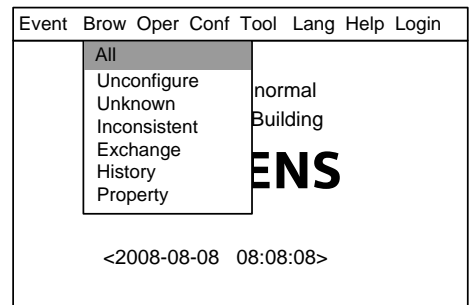


Fig.16-2

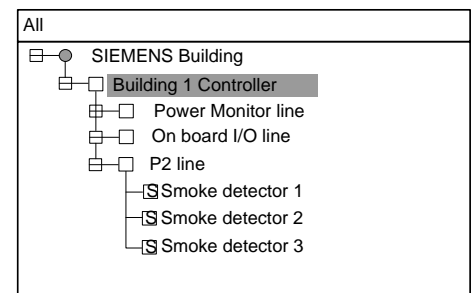


Fig.16-3

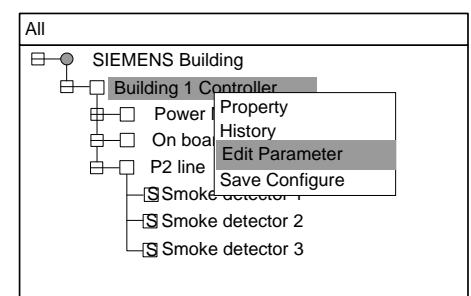


Fig.16-4

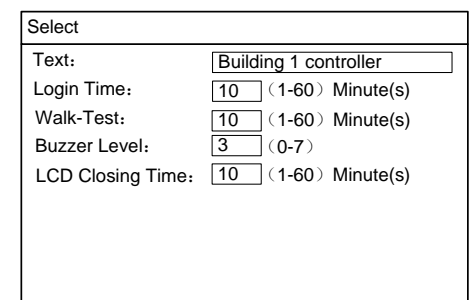


Fig.16-5

17. HOW TO SET LOGIN TIME

Function: Under 2/3 level, if there is no operation in preset login time, controller will automatically log out to 1level. Setting range: 1-60 minutes.

Steps:

1. Press "Menu" to browse the main menu (Fig. 17-1)
Main menu displayed.

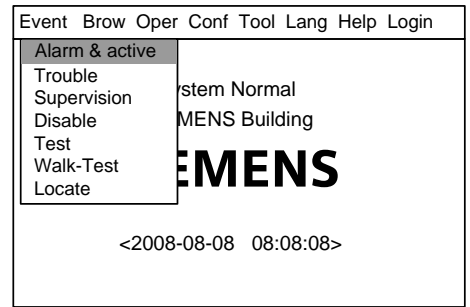


Fig.17-1

2. Press "→" to select "Browse" submenu (Fig. 17-2). Select "All" and then press "OK". Now the tree diagram will be displayed in the window (Fig.17-3).

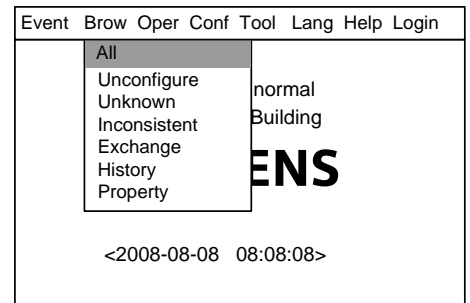


Fig.17-2

3. Use "↓" / "/" / "↑" to select the controller you are looking for.

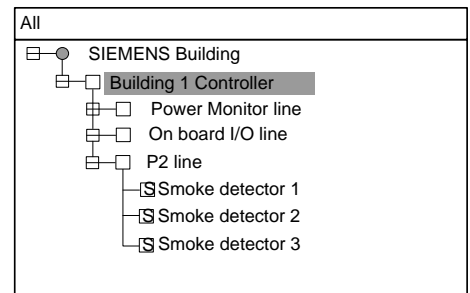


Fig.17-3

4. Press "→" to pop out the shortcut menu (Fig.17-4). Use "↓" to select "Edit Parameter" and press "OK" to enter the parameter editing interface (Fig.17-5).

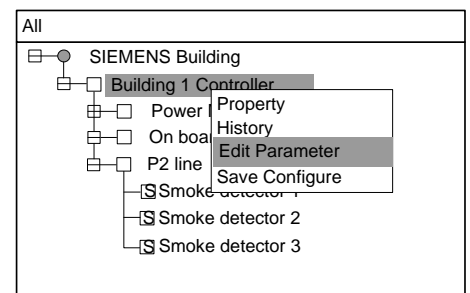


Fig.17-4

5. Press "↓" to select "Login Time" window. Press "←" to delete the previous number and enter the expected one.

6. After the change, press "Menu" and press "↓" to select "Confirm", then press "OK" to save the change and quit. A dialog box will pop out to remind you to save the change (Fig. 22-3). Press "OK" to save the change permanently or press "C" to save the change temporarily. (The change will be lost if the system is restarted.)

Select "Cancel" and press "OK" if you don't want to save the change.

Note: The saved changes take effect immediately.

These operations can only be applied to the selected controller.

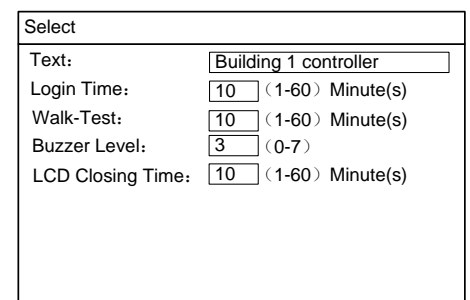


Fig.17-5

18. HOW TO SET WALK-TEST TIME

Function: Controller being tested will restore to normal status automatically after the preset walk-test time. Setting range: 1-60 min.

Steps:

1. Press "Menu" to browse the main menu (Fig. 18-1)
Main menu displayed.
2. Press "→" to select "Brow" submenu (Fig. 18-2). Select "All" and then press "OK". Now the tree diagram will be displayed in the window (Fig.17-3).
3. Use "↓" / "↑" to select the controller you are looking for.
4. Press "→" to pop out the shortcut menu (Fig.18-4). Use "↓" to select "Edit Parameter" and press "OK" to enter the parameter editing interface (Fig.18-5).
5. Press "↓" to select "Walk-Test" window. Press "←" to delete the previous number and enter the expected one.
6. After the change, press "Menu" and press "↓" to select "Confirm", then press "OK" to save the change and quit. A dialog box will pop out to remind you to save the change (Fig. 22-3). Press "OK" to save the change permanently or press "C" to save the change temporarily. (The change will be lost if the system is restarted.)
Select "Cancel" and press "OK" if you don't want to save the change.

Note: The saved changes take effect immediately.

These operations can only be applied to the selected controller.

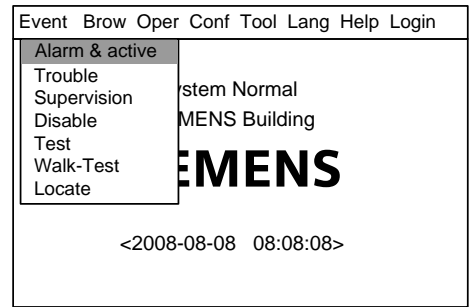


Fig.18-1

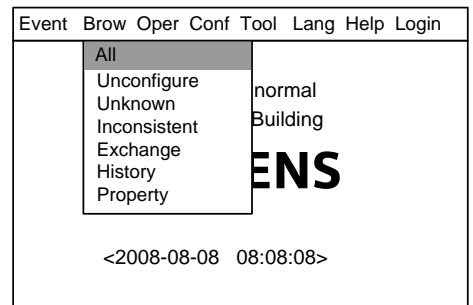


Fig.18-2

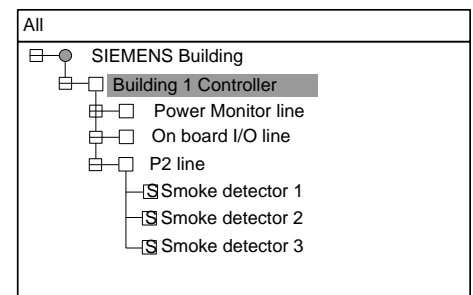


Fig.18-3

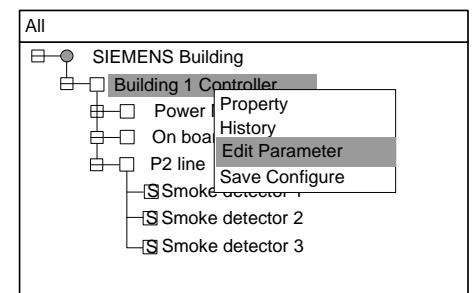


Fig.18-4

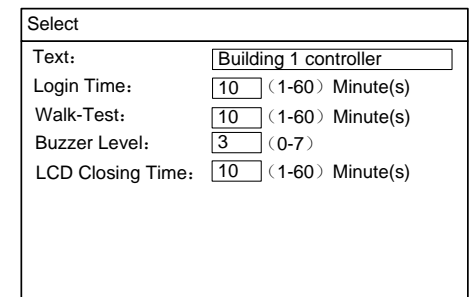


Fig.18-5

19. HOW TO SET LCD CLOSING TIME

Function: LCD turns off its back light if there is no operation or event during the preset LCD closing time. Press any key to turn on the back light. Setting range: 1-60 min.

Steps:

1. Press "Menu" to browse the main menu (Fig. 19-1)
Main menu displayed.

2. Press "→" to select "Browse" submenu (Fig. 19-2). Select "All" and then press "OK". Now the tree diagram will be displayed in the window (Fig.19-3).

3. Use "↓" / "↑" to select the controller you are looking for.

4. Press "→" to pop out the shortcut menu (Fig.19-4). Use "↓" to select "Edit Parameter" and press "OK" to enter the parameter editing interface (Fig.19-5).

5. Press "↓" to select "LCD closing time" window. Press "←" to delete the previous number and enter the expected one.

6. After the change, press "Menu" and press "↓" to select "Confirm", then press "OK" to save the change and quit. A dialog box will pop out to remind you to save the change (Fig. 22-3). Press "OK" to save the change permanently or press "C" to save the change temporarily. (The change will be lost if the system is restarted.)
Select "Cancel" and press "OK" if you don't want to save the change.

Note: The saved changes take effect immediately.

These operations can only be applied to the selected controller.

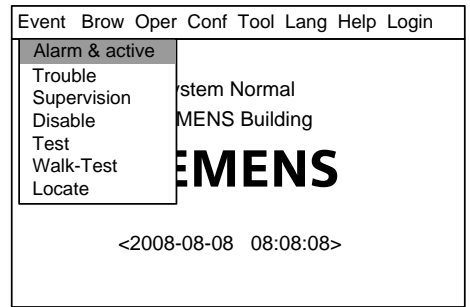


Fig.19-1

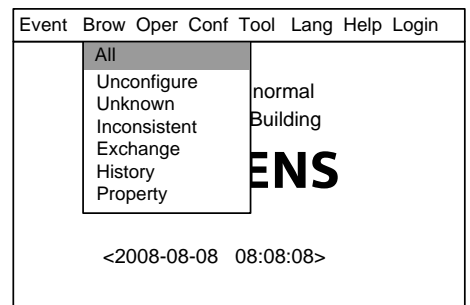


Fig.19-2

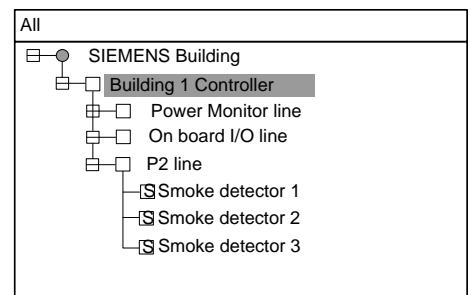


Fig.19-3

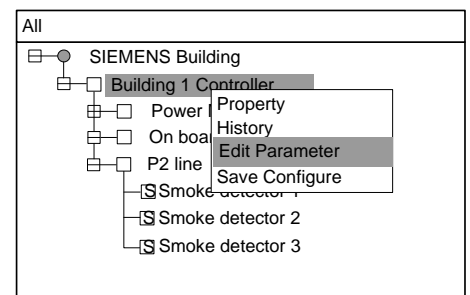


Fig.19-4

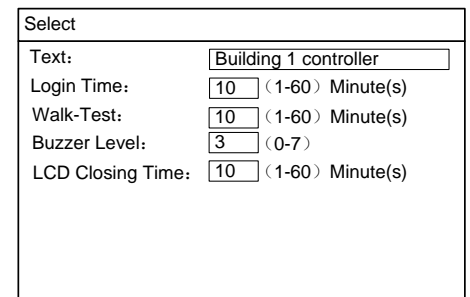


Fig.19-5

20. HOW TO SET TIME

Function: To set system time.

Steps:

1. Press "Menu" to browse the main menu (Fig. 20-1)
Main menu displayed.

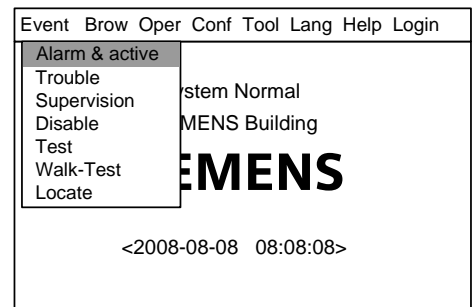


Fig.20-1

2. Press "→" to pop out the "Tool" submenu (Fig.20-2). Select "Set Time" and press "OK" to enter the time setting interface (Fig.20-3).

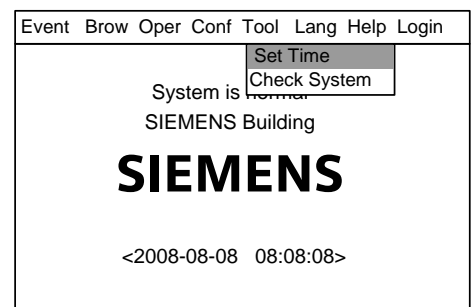


Fig.20-2

3. Press "←" to delete the previous number and enter the exact time and date then press "OK". The change will take effect immediately.

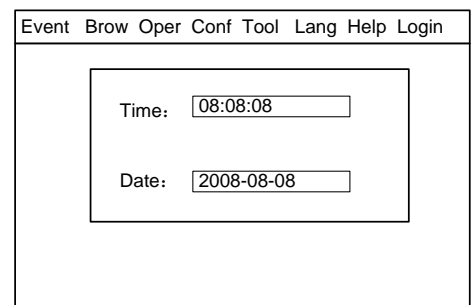


Fig.20-3

Note: A master controller can be set as a time-based controller by FXS1800 engineering tool. The time-based controller synchronizes other slave controller every one hour. Slave controller can not be synchronized when system restarts.

21. HOW TO CHECK SYSTEM

Function: To check whether the LCD, indicators, printer and the buzzer are in normal state.

Steps:

1. Press "Menu" to browse the main menu (Fig. 21-1)
Main menu displayed.

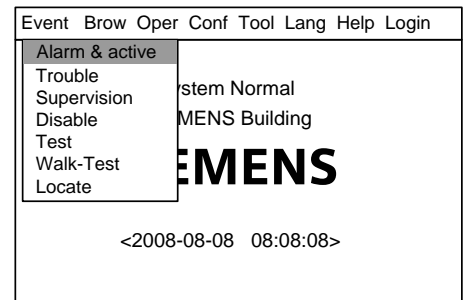


Fig.21-1

2. Press "→" to pop out the "Tool" submenu (Fig.21-2). Press "↓" to select "Check System" and press "OK" to display the checking system window (Fig.21-3). Press "OK" to examine the system.
 - LCD: Flash in white and black once for each. It's normal if there is no blank spot.
 - Indicator: All indicators flashing. Any indicator not flashing is broken.
 - Buzzer: Rings in 4 different sounds. The sound system is abnormal if there is sound missed.
 - Printer: Print "successful test!" automatically. It's broken if it fails to print them.
3. After finishing checking system, it will return to the original interface.

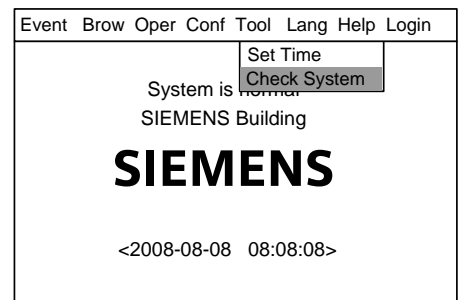


Fig.21-2

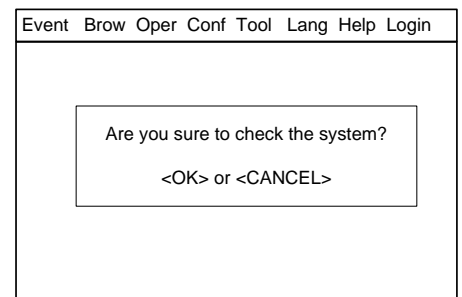


Fig.21-3

22. HOW TO SAVE CONFIGURE

Function: Save changes permanently, otherwise the changes will be lost when the system is restarted.

Steps:

1. Press "Menu" to browse the main menu (Fig. 22-1)
Main menu displayed.

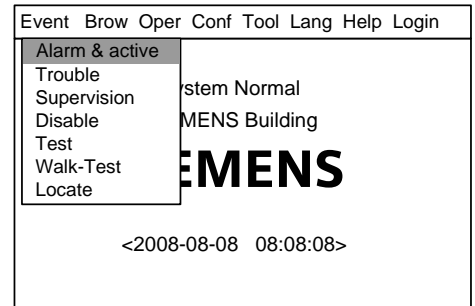


Fig.22-1

2. Press "→" to pop out the "Conf" submenu (Fig.22-2). Press "↓" to select "Save Configure" and press "OK" to display the configuration saving window (Fig.22-3). Press "OK" to save the changes.

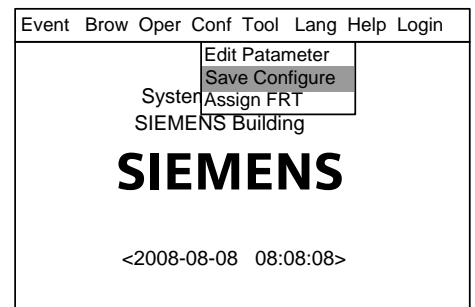


Fig.22-2

3. It will return to the original interface after the changes are saved.

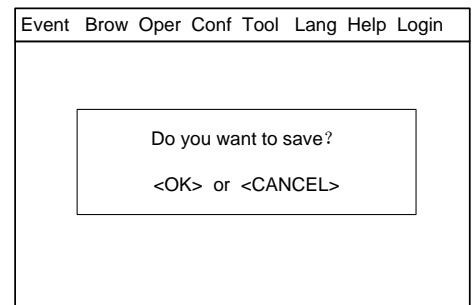


Fig.22-3

23. HOW TO EDIT PARAMETER

Function: To modify parameters in system. See Appendix table 1 for details.

Steps:

1. Press "Menu" to browse the main menu (Fig. 23-1)
Main menu displayed.

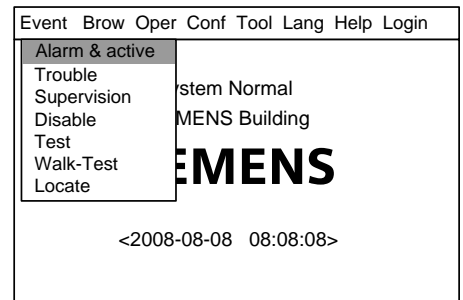


Fig.23-1

2. Press "→" to select "Brow" submenu (Fig. 23-2). Press "↓" to select the item which contains the equipment whose parameters need to be modified, and then press "OK". Now the equipment will be displayed directly in the window.

If you don't know which type the equipment belongs to, please select "All", then press "OK" to display the tree diagram (Fig. 23-3). Search down level by level through stops, loops and points until you find the equipment you are looking for.

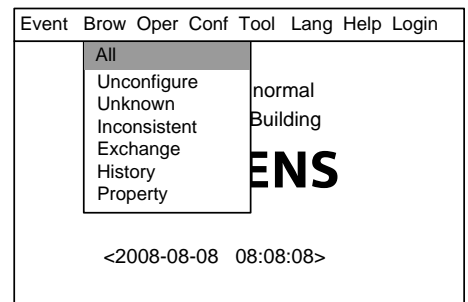


Fig.23-2

3. Press "→" to pop out a shortcut menu (Fig.23-4). Use "↓" to select "Edit Parameters" and press "OK" to enter the parameter modify interface (Fig.23-5).

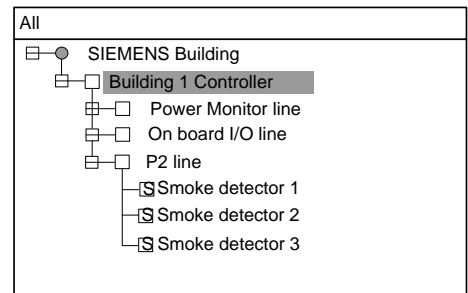


Fig.23-3

4. Operations to modify:
 - Press "↓"/"↑" to switch between windows.
 - If it is numerical value type of item, press "←" to delete the previous number and then enter the expected one.
 - If it is a pull-down menu, press "→" to pop out the pull-down menu, and then press "↓" to choose, then press "OK" to confirm.

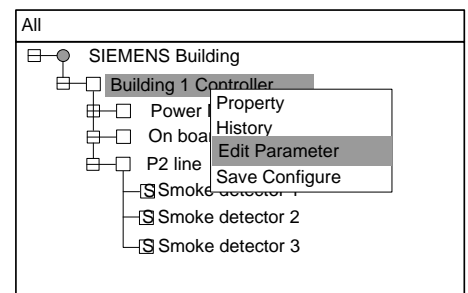


Fig.23-4

5. After the modification, press "Menu" and press "↓" to select "Confirm", then press "OK" to save the change and quit. A dialog box will pop out to remind you to save the change (Fig. 16-6). Press "OK" to save the change for permanence or press "C" to save the change temporarily. (The change will be lost if the system is restarted.)

Select "Cancel" and press "OK" if you don't want to save the change.

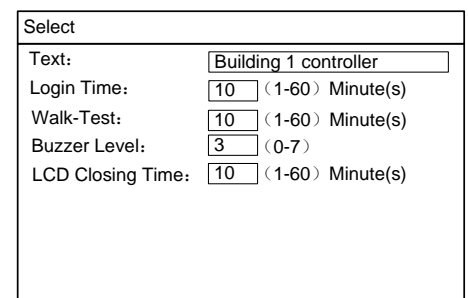


Fig.23-5

Note:

The saved changes take effect immediately.

These operations can only be applied to the selected controller.

24. HOW TO CREATE/VIEW LOGIC

Function: To create/view logic among detection group, supervision group and control output group.

Steps:

1. Press "Menu" to browse the main menu (Fig. 24-1)
Main menu displayed.
2. Press "→" to select "Brow" submenu (Fig. 24-2). Select "All" and then press "OK". Now the tree diagram will be displayed in the window (Fig.24-3). Press "↓"/"↑" to find out the group for which you want to build an interlock.
3. Press "→" to pop out the shortcut menu (Fig.24-3). Use "↓" to select "Create Logic" and press "OK" to enter the logic interface (Fig.24-4). The address of the group chosen is shown in the editing window automatically. Users can input an interlocking expression according to "Rules for editing interlocking" (see Appendix table 4).
4. After modification/entering, press "Menu" (Figure 24-5), select "Confirm", and then press "OK" to begin system compiling. If successful, it will display "Logic relations compiled successfully". If not successful, display will indicate error information. If you don't want to save this change, select "Cancel", and press "OK" to quit.
5. After the change, press "Menu" and press "↓" to select "Confirm", then press "OK" to save the change and quit. A dialog box will pop out to remind you to save the change (Fig. 22-3). Press "OK" to save the change for permanence or press "C" to save the change temporarily. (The change will be lost if the system is restarted.)
Select "cancel" and press "OK" if you don't want to save the change.

Note: The saved changes take effect immediately.

**These operations can only be applied to the selected controller.
"0" can be neglected in expressions because the system will add it automatically.**

6. Select "View Logic" in step 3 to enter the view window which includes all the logical expressions of the selected group. You cannot edit interlock in the view window. Press "C" to quit after the view.

Note: These operations can be applied to both host machine and slaves.

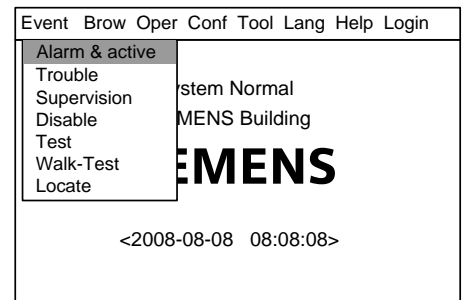


Fig.24-1

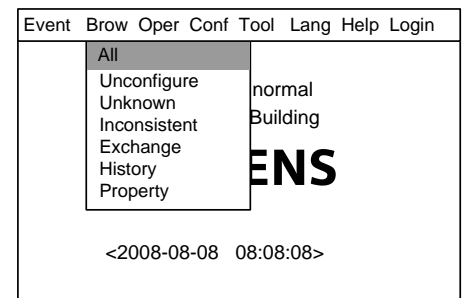


Fig.24-2

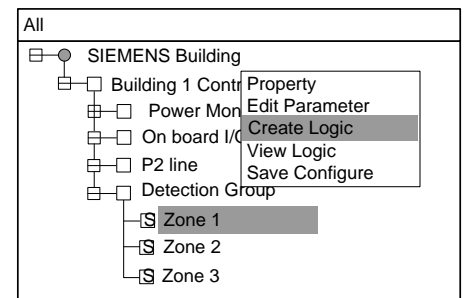


Fig.24-3

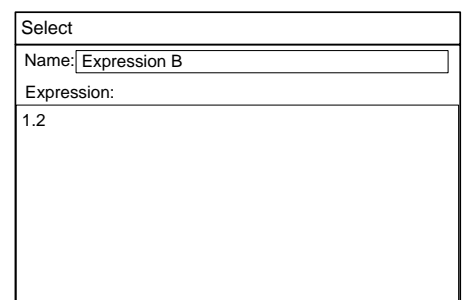


Fig.24-4

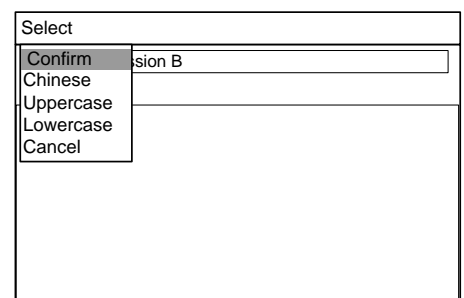


Fig.24-5

25. HOW TO EDIT/DELETE LOGIC

Function: To modify or delete logic.

Steps:

1. Press "Menu" to browse the main menu (Fig. 25-1)
Main menu displayed.

2. Press "→" to select "Browse" submenu (Fig. 25-2). Select "All" and then press "OK". Now the tree diagram will be displayed in the window (Fig.25-3). Press "↓"/"↑" to find out the expression to be modified.

3. Press "→" to pop out the shortcut menu (Fig.25-3). Use "↓" to select "Edit Logic" and press "OK" to enter the logic interface (Fig.25-4). Then users can edit the selected expression.

4. After editing, press "menu" (Figure 25-5), choose "Confirm", and then press "OK" to begin system compiling. If successful, it will display "Logic relations compiled successfully". If not successful, display will indicate error information. If you don't want to save this change, select "Cancel", and press "OK" to quit.

5. A dialog box will pop out to remind you to save the change (Fig. 22-3) after you quit the edit window. Press "OK" to save the change permanently or press "C" to save the change temporarily. (The change will be lost if the system is restarted.)

6. If you select "Delete Logic" in step 3, the system will pop out a remind window (Fig.25-5). Press "OK" to delete the interlock or press "C" to give up.
This operation is temporary. Repeat step 5 to save the change permanently.

Note: The saved changes take effect immediately.

These operations can only be applied to the selected controller.

"0" can be neglected in expressions because the system will add it automatically.

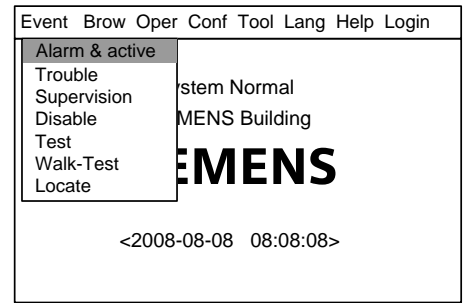


Fig.25-1

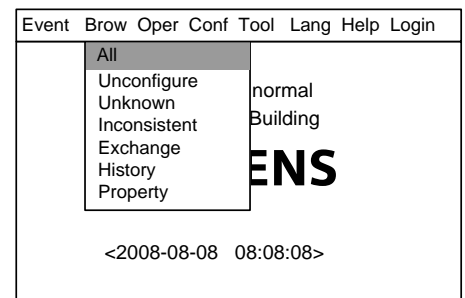


Fig.25-2

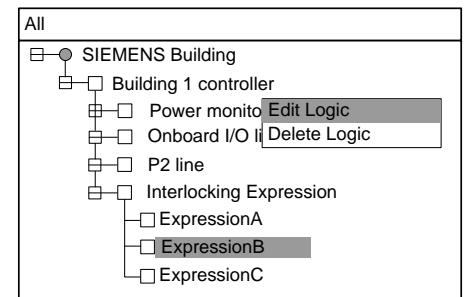


Fig.25-3

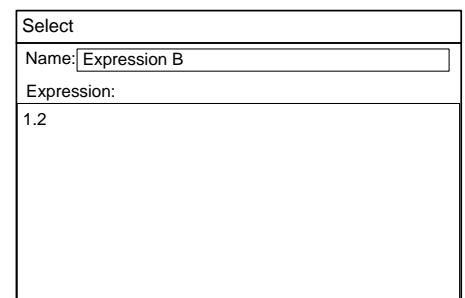


Fig.25-4

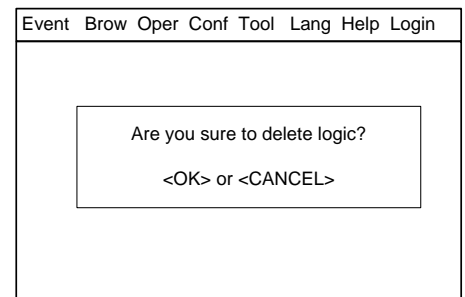


Fig.25-5

26. HOW TO ASSIGN GROUP/ FRT

Function: It's more convenient to edit logic with the concept of "Group". There are four groups in the system: detection group, control output group, supervision group and FRT group. See Appendix table 3 for details.

Steps:

1. Press "Menu" to browse the main menu (Fig. 26-1)
Main menu displayed.

2. Press "→" to select "Brow" submenu (Fig. 26-2). Select "All" and then press "OK". Now the tree diagram will be displayed in the window (Fig.26-3). Press "↓"/"↑" to find out the equipment to be assigned to group.

3. Press "→" to pop out a shortcut menu (Fig.26-3). Use "↓" to select "Assign Group" or "Assign FRT" and press "OK" to enter the grouping interface (Fig.26-4).

4. Press "→" to popup pull-down menu of groups that can be assigned to, choose expected group, press "OK", and system will save and return to the original window. But the save here is just temporary; if the equipment is reloaded, changed data will lost. As a result, for long-term storage, please refer to "how to save configuration". If you don't want to save this change, press "C".

Note:

The saved changes take effect immediately.
These operations can only be applied to the selected controller.

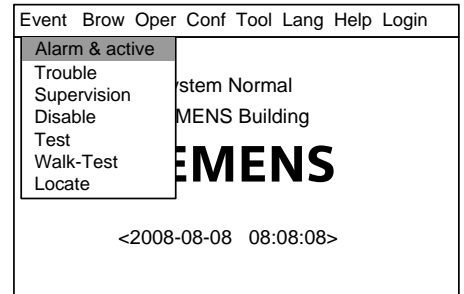


Fig.26-1

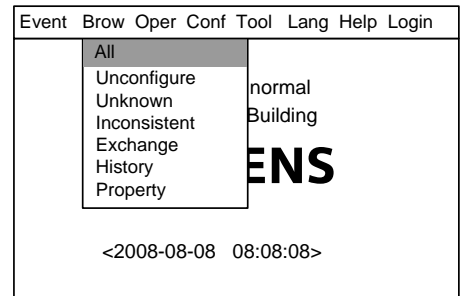


Fig.26-2

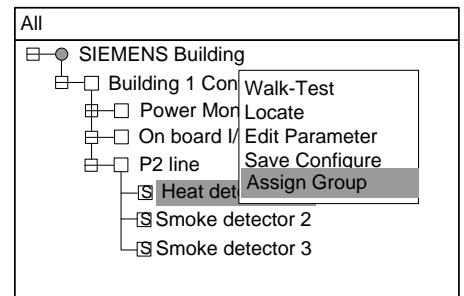


Fig.26-3

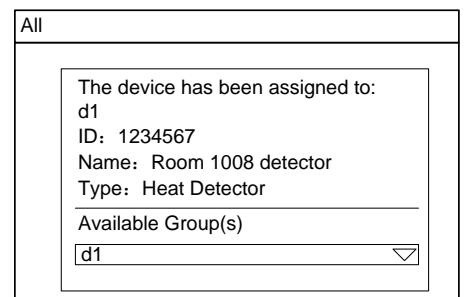


Fig.26-4

27. HOW TO GET HELP

Function: To show the company name, system edition, product series No, download time of configuration file and modification time.

Steps:

1. Press "Menu" to browse the main menu (Fig. 27-1)
Main menu displayed.

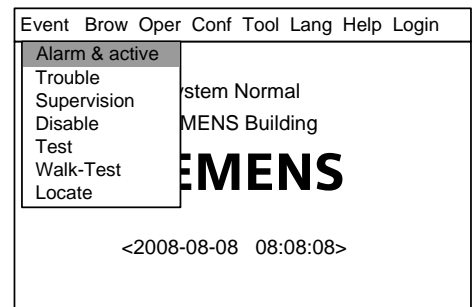


Fig.27-1

2. Press "→" to select "Help" submenu (Fig. 27-2). Press "OK" to display the help information window (Fig.27-3).

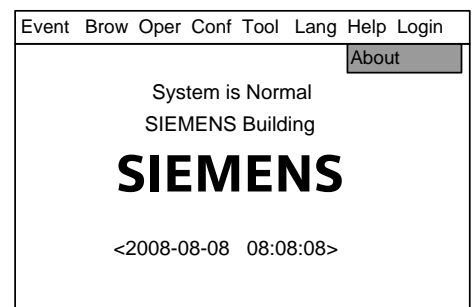


Fig.27-2

3. Press "C" to return to the original window.

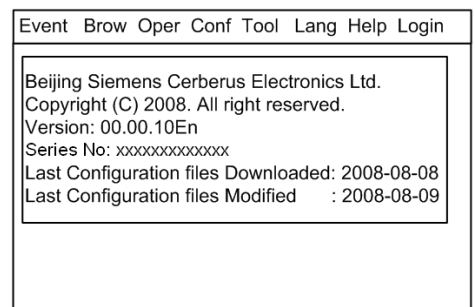


Fig.27-3

28. HOW TO OPERATE INTERLOCKING PANEL

Function: The interlocking panel has 8 channels of input/output. Each of them has indicators of trouble, activation and confirmation to indicate its state, as well as activation/deactivation key for manual control.

Steps:

- ◆ When the controller is in automatic status, the controller can activate spot equipment through logical relation. The "activation" indicator is on when activation order is given. The "confirmation" indicator is on when confirmation signal is received.
- ◆ When the controller is in manual status, spot equipment can be activated/deactivated manually. "Activation" indicator is on when "Activation/Deactivation" key is pressed. "Confirmation" indicator is on when confirmation signal is received. When "Activation/Deactivation" is pressed, "activation" indicator is off and the equipment output stops.
- ◆ Trouble indicator is on when trouble occurs during examination. It is off when the trouble is solved.

29. HOW TO OPEN/CLOSE A PRINTER

Function: When the printer is open, it can print real-time events at any time and print history records if needed (see "History Query"); when it is off, it cannot print anything.

Steps to open printer:

1. Press "Menu" to browse the main menu (Fig. 29-1)
Main menu displayed.

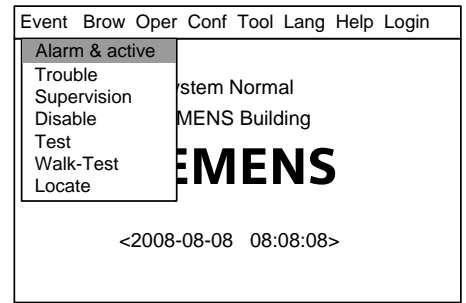


Fig.29-1

2. Press "→" to select "Brow" submenu (Fig. 29-2). Select "All" and then press "OK". Now the tree diagram will be displayed in the window (Fig.29-3). Usually printer is under mainboard port.

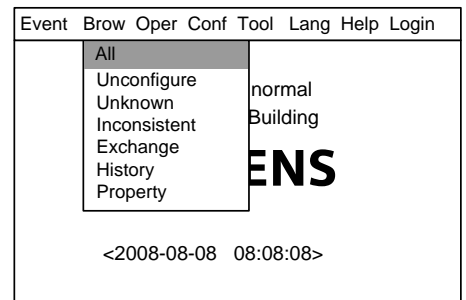


Fig.29-2

3. Press "→" to pop out the shortcut menu (Fig.29-4). Use "↓" to select "Open" and press "OK" to open the printer.

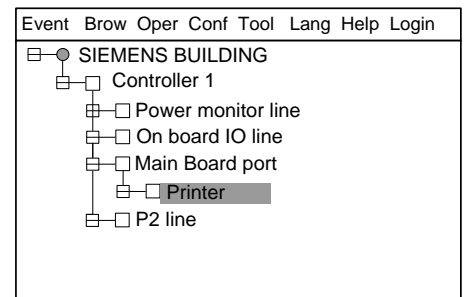


Fig.29-3

Steps to close printer:

The same as the steps to turn it on. The only difference is to select "Close" instead of "Open" in step 3 (Fig.29-5). Then press "OK" to close printer.

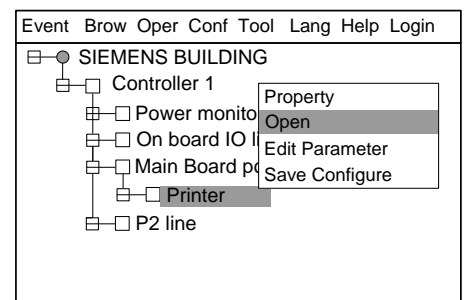


Fig29-4

Note:

Open/close a printer is neither an event nor a history record.

Checking system does not change the status of the printer.

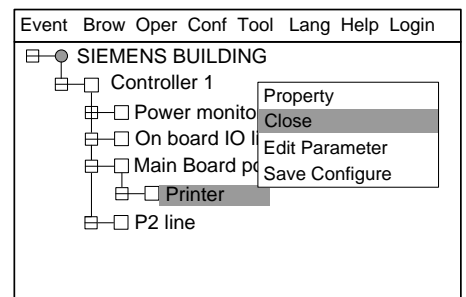


Fig.29-5

Operations of printer:

There are two indicators and two keys. Indicators are under the transparent key.

Indicator:

Green indicator indicates electrifying state of printer; red indicator indicates working state of printer (online/offline).

Green indicator	On	Normal power supply
	Off	No power supply
Red indicator	On	Online
	Off	Offline

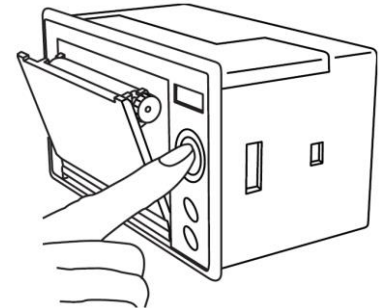


Fig.29-6

Keys:

SEL: Choose online/offline states of printer; LF: Line feed.

Self-examination: To check whether: the printer is normal. Operation steps:

- Before electrified, press SEL and then connect 5V power supply and printer will print "self-examination".
- When printer is electrified, if indicator is on, press SEL to turn it off (if indicator is off, this operation is not necessary). Press LF, and press SEL, then the printer will print self-examination.

Press SEL to stop during self-examination if needed.

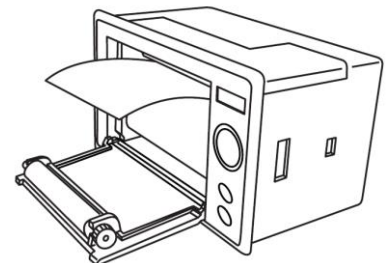


Fig.29-7

Change paper roll:

1. As Fig.29-6, press the key to open the front cover.
2. Take out the left paper roll, and install the new one as Fig.29-7.
3. As Figure 29-8, close the front cover.

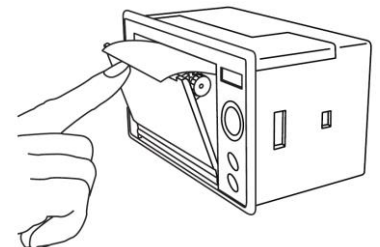


Fig.29-8

Note:

When close the front cover, let some of paper leave out of the exit to make sure the plastic shaft is pressing it tightly.

Make sure heat-sensitive coat of print paper is on the front otherwise nothing can be printed on the paper.

The printer state can be saved when panel power off.

30. HOW TO REPLACE DEVICE

Function: To copy the configuration information to the new equipment when the old one is replaced.

Steps:

1. Press "Menu" to browse the main menu (Fig. 30-1)
Main menu displayed.

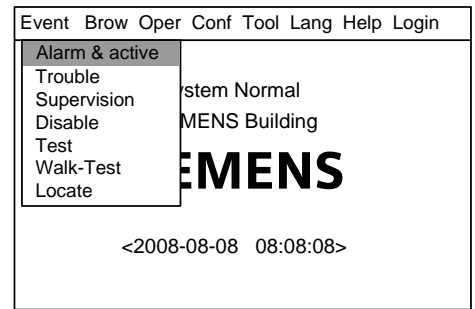


Fig.30-1

2. Press "→" to select "Browse" submenu (Fig. 30-2). Press "↓" to select "Unconfigure" and then press "OK". Now the equipments unconfigure will be displayed in the window (Fig.30-3).

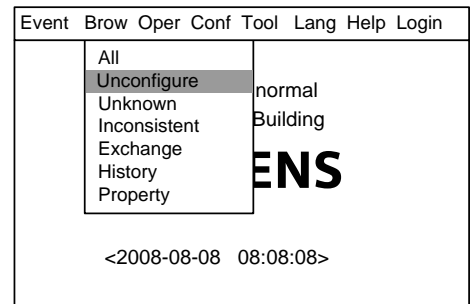


Fig.30-2

3. Press "↓" to select equipment to configure. Press "→" to pop out the shortcut menu (Fig.30-4). Use "↓" to select "Equipment Replacement" and press "OK" to enter the equipment replacement interface.

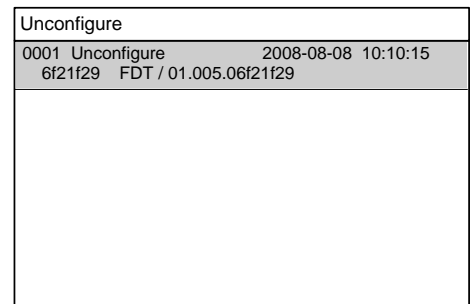


Fig.30-3

4. Press "→" to pop out the pull-down menu (Figure 30-5), and all equipments that can be replaced will be displayed. Press "↓"/"↑" to choose equipments that need to be replaced, and press "OK". System returns to the original window.

But the save here is just temporary; if the equipment is restarted, the change will be lost. For long-term storage, please refer to "how to save configuration". If you don't want to save this change, press "Quit" to quit.

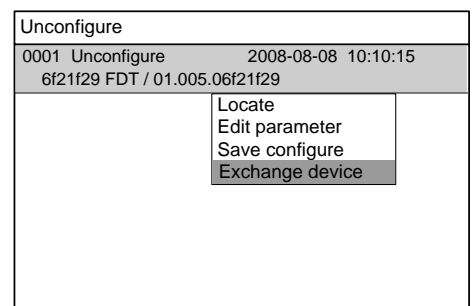


Fig.30-4

Note: The saved change will not take effect until the system is restarted.

Unconfigure				
<p>To be exchanged ID: 06f21f29 Name: 06f21f29 Type: Smoke detector</p> <hr/> <p>Replacment</p> <table border="1"><tr><td>Smoke detector in zone 1</td><td>▼</td></tr><tr><td>Smoke detector in zone 2</td><td></td></tr></table>	Smoke detector in zone 1	▼	Smoke detector in zone 2	
Smoke detector in zone 1	▼			
Smoke detector in zone 2				

Fig.30-5

31. HOW TO UPGRADE TO FC1840

Function: The FC18 wall-mounted controller has two types: the FC1820 and the FC1840. FC1820 can be upgraded to FC 1840 through adding a loop card and conducting the following operations.

Steps:

1. Press "Menu" to browse the main menu (Fig. 31-1)
Main menu displayed.

2. Press "→" to select "Brow" submenu (Fig. 31-2). Select "All" and then press "OK". Now the tree diagram will be displayed in the window (Fig.31-3). Use "↓" / "↑" to select the host machine.

3. Press "Menu" to browse the main menu then press "→" to select "Oper" submenu. Select "upgrade to FC1840" (Fig.31-3) then press "OK".

4. System pop out dialog window to ask user whether to upgrade or not (Fig.31-4). Press "OK" to upgrade to FC1840 or press "C" to give up.

Note:

The saved change will not take effect until the system is reset.
This operation can only be applied to host machine.
This operation can only be applied to FC1820.
FC1840 cannot be degraded to FC1820. If it's needed, it should be done through PC and downloading configuring files.

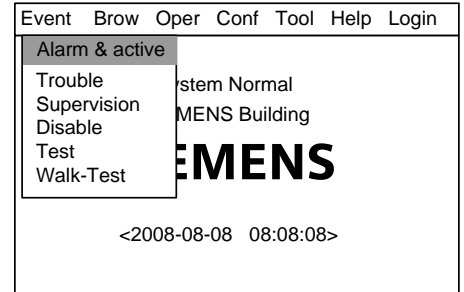


Fig.31-1

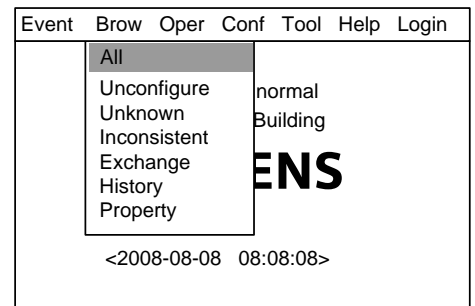


Fig.31-2

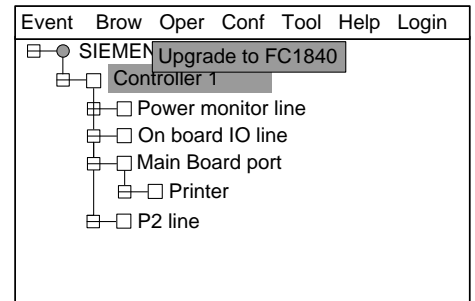


Fig.31-3

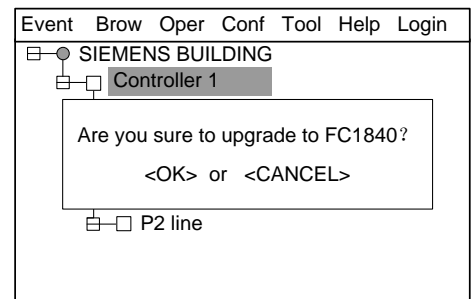


Fig.31-4

32. HOW TO CHANGE LANGUAGE

Function: The system provides four kinds of language: English, Taiwan, Hongkong, and Portuguese. Apply languages as needed.

Steps:

1. Press “Menu” to browse the main menu (Fig. 32-1).
Main menu displayed.

2. Press “→” to select “Lang” submenu (Fig. 32-2). Select a language you need and press “OK”.

3. The system language is changed.

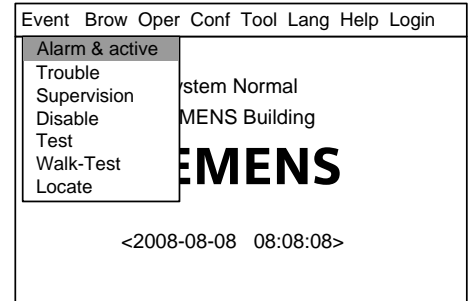


Fig.32-1

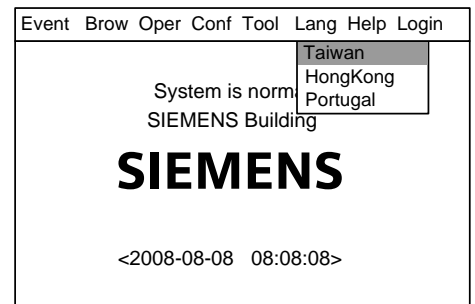


Fig.32-2

Note:

- The saved change will take effect immediately.**
- This operation can only be applied to host machine.**

33. HOW TO QUERY THE INFORMATION OF OTHER EVENTS

Function: Other events include: **Test, Walktest, Locate, Unconfigure, Unknown, Inconsistent, and Exchange.** Through this function, can check the qty for each event.

Step:

1. Press "Menu" to browse the main menu (Fig. 33-1).
Main menu displayed.

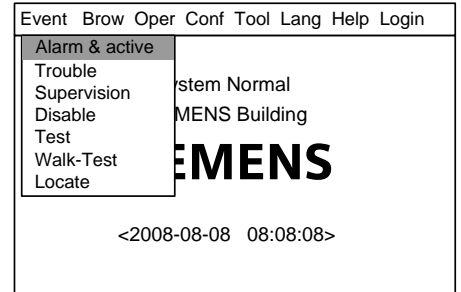


Fig. 33-1

2. Press "→" to select "Brow" submenu (Fig. 33-2). Press "↓" to select "Other", and then press "OK" to display the information (Fig. 33-3).

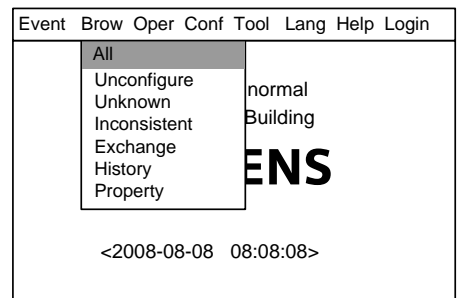


Fig. 33-2

3. Press "C" to return to the original window.

Other	
Test:	0
Walktest:	0
Locate:	0
Unconfigure:	0
Unknown :	0
Inconsistent:	0
Exchange:	0

Fig. 33-3

34. HOW TO EXTEND PRINTER PORT

Function: when the communication port on the main board is occupied by the FMS8000 graphic display device, the debugging port on the CPU board can be configured as the printer port via this operation.

Steps:

1. Press "Menu" to browse the main menu (Fig. 34-1).
Main menu displayed.

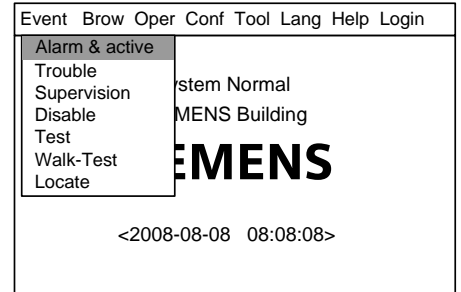


Fig. 34-1

2. Press "→" to pop out the "Tool" submenu (Fig.34-2). Select "→Printer" and press "OK", then this port is configured as a printer port.

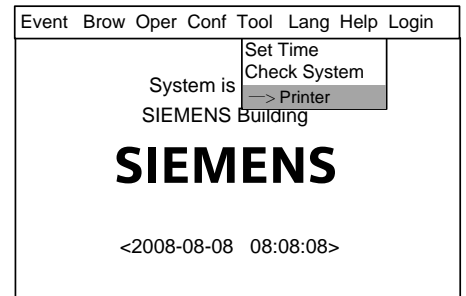


图 34-2

Transfer to debug port

Same as step 1 and 2 described above, just select "→Config" and press "OK", then this port is transferred to configure port.

Note:

The saved change will take effect immediately. Restarting the controller doesn't change the configuration.

This operation can only be applied to the master controller.

35. HOW TO SYNCHRONIZE CONFIGURATION

Function: After the configuration file of the master controller in FS18 automatic fire alarm system is updated, the configuration file is issued through FC18-Bus and the configuration file of each slave controller is updated accordingly.

Steps:

1. Press “Menu” to browse the main menu (Fig. 35-1)
Main menu displayed.

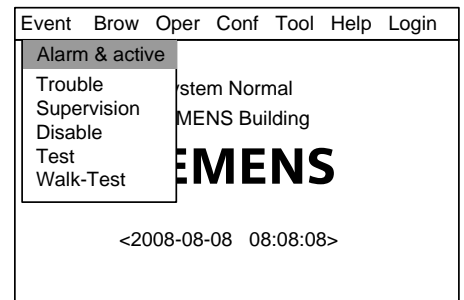


Fig.35-1

2. Press “→” to select “Brow” submenu (Fig. 35-2). Select "All" and then press “OK”. Now the tree diagram will be displayed in the window (Fig.35-3).

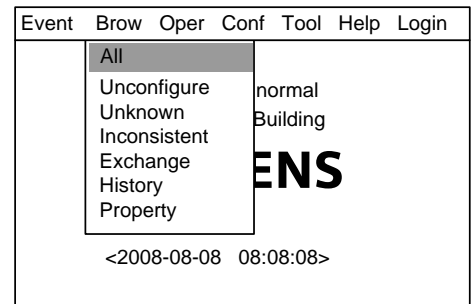


Fig.35-2

3. Select the host machine in the tree diagram, then press “Menu” to browse the main menu, and press “→” to select “Distribute cfgs” (Fig.35-3) submenu to start the configuration distribution.

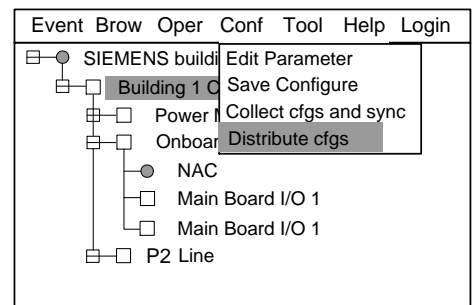


Fig.35-3

Note:

“Distribute cfgs” is available when there’s misconfiguration in the system.

Use the engineering tool FXS1800 to set the master controller. Only the master controller can distribute and update the configuration file of each slave controller.

The configuration distribution takes a long time when there are many controllers in the system or the configuration file is large. The distribution finishes when system is in below status:

- There’s no misconfiguration or distribute cfgs ongoing.
- Each slave controller restarts and completes the initialization

Start “Distribute cfgs” after the system completes startup, which is when the screen indicator stops flashing.

36. HOW TO COLLECT CONFIGURATION AND SYNCHRONIZE

Function: After the configuration file of the slave controllers in FS18 automatic fire alarm system is updated, the master controller collects the updated configuration file of the slaves via FC18-Bus and synchronizes them to each related slave.

Steps:

1. Press “Menu” to browse the main menu (Fig. 36-1)
Main menu displayed.

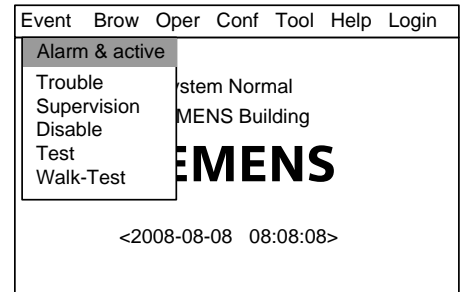


Fig.36-1

2. Press “→” to select “Brow” submenu (Fig. 36-2). Select "All" and then press “OK”. Now the tree diagram will be displayed in the window (Fig.36-3).

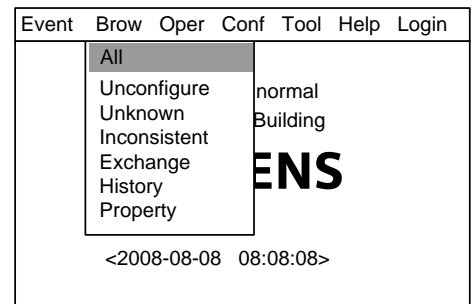


Fig.36-2

4. Select the host machine in the tree diagram, then press “Menu” to browse the main menu, and press “→” to select “Collect cfigs and sync” (Fig.36-3) submenu to start collecting the configuration and sync.

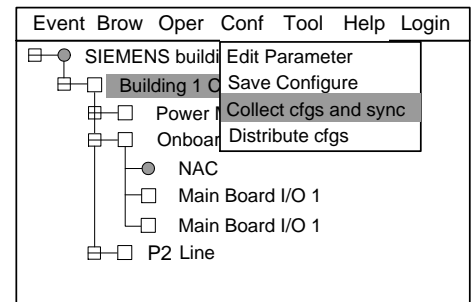


Fig.36-3

Note:

“Collect cfigs and sync” is available when there’s misconfiguration in the system.

Use the engineering tool FXS1800 to set the master controller. Only the master controller can distribute and update the configuration file of each slave controller.

The configuration distribution takes a long time when there are many controllers in the system or the configuration file is large. The distribution finishes when system is in below status:

- There’s no misconfiguration or distribute cfigs ongoing.
 - Each slave controller restarts and completes the initialization
- Start “Distribute cfigs” after the system completes startup, which is when the screen indicator stops flashing.

37. HOW TO CHECK THE SUMMARY OF CONTROLLER AUTO/MANUAL STATUS

Function: The FC18 fire alarm controller can check the summary of auto or manual status for each controller in the network via this operation.

Steps:

1. Press "Menu" to browse the main menu (Fig. 37-1)
Main menu displayed.

2. Press "→" to select "Brow" submenu (Fig. 37-2). Press "↓" to select "Auto-Manual" and then press "OK". The summary of controller's auto/manual status window displays.

3. Press "C" to exit the current window.

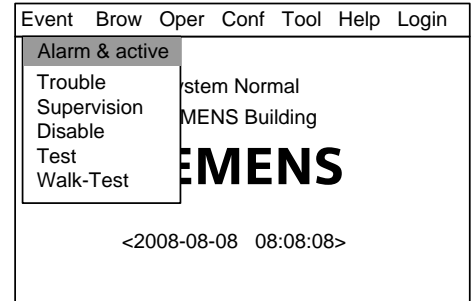


Fig.37-1

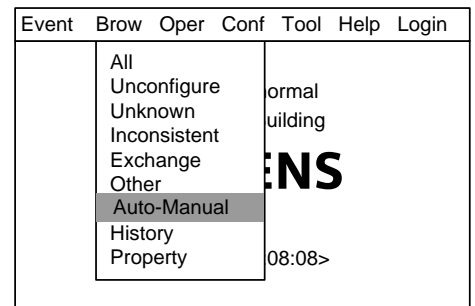


Fig.37-2

CHAPTER 4 MAINTENANCE

1. DAILY EXAMINATION

Operator on duty should examine controllers every day and record status. If there is fire alarm, error or other abnormal status, please follow “Emergency Failure Guideline”; when controller gets normal again, the event should be recorded.

2. EMERGENCY AND TROUBLE HANDLING

Table 4-1

No.	Failure phenomenon	Cause analysis	Solving Method
1.	Failure or damage of function keys, LED, LCD, etc.	Error of signal line, power line Corresponding hardware trouble;	Ensure proper installation of wiring; Change corresponding hardware;
2.	No voltage indication of controller	Whether main and backup power is on; Whether power lines inside controller is firm enough Power trouble;	Ensure proper installation of the power wiring; Check power lines Change power supply;
3.	Controller “black screen” with voltage	No power supply for LCD or power supply component of main board failure; LCD trouble; Wire connection loosening	Check power lines or change main board; Change LCD; Check the wire connection
4.	No display of controller	System software or engineer software lost; CPU trouble;	Change corresponding software; Change CPU;
5.	No sound	No voltage; Not enough sound volume; Beeper trouble;	Change power lines or main board; Adjust sound volume of beeper; Change beeper;
6.	Control station failure	Engineer software not in line with actual equipment; Address not set for main board or not in line with software address; Main board failure; More than 2 controllers check A-BUS communication and software configuration; Examine whether A-Bus terminal resistance connection is reasonable or not;	Change software; Change configuration; Change main board; Examine A-BUS communication line; Reasonable connection;
7.	Interlocking panel failure	Engineer software not in line with actual equipment; Communication line, power supply trouble; Address not set for interlocking panel or not in line with software address; interlocking panel damage; Examine whether B-Bus terminal resistance connection is reasonable or not;	Change software; Correctly connect lines; Change configuration; Change interlocking panel; Reasonable connection;
8.	Main board input/output failure	Software configuration error; Main board input/output interface damage;	Change configuration; Change main board;
9.	Power failure	Engineer software not in line with actual equipment; External voltage exceed power requirement; Battery trouble;	Change software; Adjust external voltage range; Change battery; Change power supply;

No.	Failure phenomenon	Cause analysis	Solving Method
		Power trouble;	
10.	Line card failure	Engineer software configuration not in line with actual equipment; Address not set for circuit card or not in line with software address; Circuit card or part of it damage; Error of FDnet signal line, power line Severe damage of spot component;	Change the software configuration; Change the address configuration; Change circuit card; Check communication, power lines Change damaged spot components;
11.	Spot component failure	Wiring trouble; Engineer software configuration not in line with actual equipment; Address not set for spot component or not in line with software address; Spot component damage;	Examine wire connections; Change configuration; Change software configuration; Change damaged spot components;
12.	Automatic interlocking failure	Controller, interlocking panel not in automatic status; interlocking relation not set for software, or interlocking relation error; interlocking equipment damage; Power, interlocking lines damage;	Change configuration; Set/change interlocking relation; Change damaged spot components; Examine wire connections;
13.	Manual control failure	Not enough operation level; Controller, interlocking panel not in manual status; interlocking equipment damage; Power, interlocking lines damage;	Login higher operation level; Change configuration; Change damaged spot component; Examine wire connections;
14.	Isolation, open failure	Not enough operation level; Operation method trouble; Operation panel damage; Main board damage;	Login higher operation level; Operate correctly; Change operation panel; Change main board;
15.	Test, manually relieve failure	Not enough operation level; Operation method trouble; CPU damage;	Login higher operation level; Operate correctly; Change CPU;
16.	Test, manually relieve failure	Not enough operation level; Operation method trouble; CPU damage;	Login higher operation level; Operate correctly; Change CPU;
17.	Display failure of fire alarm, activation up, error	Software trouble; CPU damage;	Update software; Change CPU;
18.	Query history event failure	Operation method trouble; Part of main board damage;	Operate correctly; Change main board;
19.	Spot program (correction) failure	Not enough operation level; Operation method trouble; CPU damage;	Login higher operation level; Operate correctly; Change CPU;
20.	Printer open/close failure	Not enough operation level; Operation method trouble; Power, signal lines damage; Software configuration trouble; Printer damage;	Login higher operation level; Operate correctly; Connect wires correctly; Update software; Change printer;
21.	Other operations of controller failure	Not enough operation level; Operation method trouble; Software lost or error; Some hardware damage;	Login higher operation level; Operate correctly; Update software; Change corresponding hardware;

APPENDIX 1 PARAMETER LIST

Equipment type	Editable item	Parameter description
System	Text	System name
Station – FC1820 – FC1840	Text	Controller name
	Login time	Under 2nd/3rd level, if there is no operation in preset login time, controller will automatically log out to 1 st level. Effective value: 1-60 minutes.
	Walk-test time	When controller is being tested, it will automatically resume to normal status after preset walk-test time, without the need of manual operation. Effective value: 1-60 minutes.
	Sound level	Setup sound volume of beeper, with effective value of 0-7. When the value is 0, it is silence mode.
	LCD closing time	If there is no operation of controller in preset LCD off time, LCD will shut off back light. Effective value: 1-60 minutes.
Main board input/output	Text	Main board input/output (default)
P2 line	Text	P 2 circuit #
	Topology type	Option 1: Stub Option 2: Loop (default)
Power supply	Text	Power supply (default)
Interlocking panel	Text	Interlocking panel (default)
FDO181 Smoke detector	Text	Equipment location description
	Sensitivity	Option 1: Standard (default) Option 2: Sensitive
FDT181 Heat detector	Text	Equipment location description
	Detector mode	Option 1: A2S (constant temperature) (default) Option 2: A2R (Difference/constant temperature)
FDM181 Manual call point	Text	Equipment location description
FDHM181 Hydrant manual call point	Text	Equipment location description
FDCI181 Input module	Text	Equipment location/function description
FDCIO181 Input/output module	Text	Equipment location/function description
Supervision input (FDCI181&FDCIO181)	Text	Equipment location/function description
	Inversion	Option 1: Normal (Active When NO is closed) (default) Option 2: Inverting (Active when NC is open)
Supervision input (interlocking panel and main board input)	Text	Equipment location/function description
Status input (FDCI181&FDCIO181)	Text	Equipment location/function description
Status input (interlocking panel and main board input)	Text	Equipment location/function description
Fire alarm input (FDCI181&FDCIO181)	Text	Equipment location/function description

Fire alarm input (interlocking panel and main board input)	Text	Equipment location/function description
Output without confirmation (FDCIO181)	Text	Equipment location/function description
	Inversion	Option 1: Normal (Active When NO is closed) (default) Option 2: Inverting (Active when NC is open)
	Signal Shape	Option 1: Static (After activating, the output remains permanently active) (default) Option 2: Pulse (After activating, the output remains active for a certain period of time. Time period can be configured through pulse time)
	Fail safe position	Option 1: Off(remain the same status as failure happened before) Option 2: Deactivation(remain off status) (default) Option 3: Activation (remain activation status)
	Pulse model	Option 1: 1s (default) Option 2: 2s Option 3: 3s Option 4: 4s Option 5: 10s Option 6: 15s Option 7: 20s
	Output style	Option 1: Switched voltage control output. (Default) Option 2: Dry contact
Output without confirmation (interlocking panel and main board output)	Text	Equipment location/function description
Output with confirmation (FDCIO181)	Text	Equipment location/function description
	Supervision time	In preset supervision time, if there is no answer signal received, system defines it as activation without confirmation. Default value is 10 seconds. Effective value: 1-60 seconds.
	Inversion	Option 1: Normal (Active When NO is closed) (default) Option 2: Inverting (Active when NC is open)
	Signal shape	Option 1: Static (After activating, the output remains permanently active) (default) Option 2: Pulse (After activating, the output remains active for a certain period of time. Time period can be configured through pulse time)
	Fail safe position	Option 1: Off (remain the same status as failure happened before) Option 2: Deactivation(remain deactivation status) (default) Option 3: Activation (remain activation status)
	Pulse model	Option 1: 1s (default) Option 2: 2s Option 3: 3s Option 4: 4s Option 5: 10s Option 6: 15s Option 7: 20s

	Output style	Option 1: Switched voltage control output. (Default) Option 2: Dry contact
Output with confirmation (interlocking panel and main board output)	Text	Equipment location description
	Supervision time	In preset supervision time, if there is no confirmation signal received, system defines it as activation without confirmation. Default value is 10 seconds. Effective value: 1-600 seconds.
NAC	Text	Equipment location description
Main power	Text	Main power (default)
Battery	Text	Battery (default)
Charging circuit	Text	Charging circuit
Detection group	Text	Equipment location description
Control output group	Text	Equipment location description
Supervision group	Text	Equipment location description
FRT group	Text	Equipment location description
Printer	Text	Equipment location description
FDCL181 Isolator	Text	Equipment location description

APPENDIX 2 OPERABLE ITEM LIST

Controller:

Controller	Operational item		
	Auto/Manual*	Set time	System Check
FC1820	√	√	√
FC1840	√	√	√

[*] Auto/Manual can only be switched through buttons on controllers.

Line:

Line	Operational item				
	Activation/Deactivation	Disable/Enable	Walk-test/Restore	Test/Restore	Reset
P2 line	-----	-----	√	√	-----
Interlocking panel	-----	-----	-----	-----	√
Main board input/output	-----	-----	-----	-----	-----
Fire extinguishing panel	-----	-----	-----	-----	-----

Point:

Equipment type		Operational item				
		Activation/Deactivation	Disable/Enable	Test/Walk-test/Restore	Locate/Stop Locating	Reset
FDCI181 Input module		-----	-----	-----	√	-----
FDCIO181 Input/output module		-----	-----	-----	√	-----
Auto alarm equipment	FDO181 Smoke detector	-----	√	√	√	√
	FDT181 Heat detector	-----	√	√	√	√
Auto alarm equipment	FDM181 Manual Call Point	-----	√	√	√	√
	FDHM181 Hydrant MCP	-----	√	√	√	√
Supervision output		-----	√	-----	-----	-----
Fire alarm input		-----	√	√	-----	√
Status input		-----	√	-----	-----	-----
Output with confirmation / output without confirmation		√	√	-----	-----	-----
FDCL181 Isolator		-----	√	-----	√	-----
NAC		√ *	√	-----	-----	-----
Interlocking input/output		√	√	-----	-----	-----
Printer		-----	√	(Only for test)	-----	-----

[*] NAC activation not only can be operated through software, but also through <NAC Activation> key on the operation panel.

Group:

Group	Operational item	
	Activation/ Deactivation	Disable/ Enable
Control group	√	-----
Detection group	-----	-----
Supervision group	-----	-----
FRT group	-----	√

“√” indicates operational; “-----” indicates not operational.

APPENDIX 3 EQUIPMENT GROUPING TABLE

Equipment type	Detecting group	Control output group	Supervision group	Fire display panel group
FDO181 Smoke detector	√			√
FDT181 Heat detector	√			√
FDM181 Manual Call Point	√			√
FDHM181 Hydrant Manual Call Point	√			√
FDCI181 Input module				√
FDCIO181 Input/output module				√
Main board supervision input			√	√
Main board confirmation input		√		√
Main board alarm input	√			√
Main board output, interlocking panel output (without confirmation)		√		√
Main board output, interlocking panel output (with confirmation)		√		√
NAC				√
Main power				√
Battery				√
Charging circuit				√
Printer				
FDCL181 Isolator				√
FDCI181 Input module/ FDCIO181 Input/output module supervision input			√	√
FDCI181 Input module/ FDCIO181 Input/output module confirmation input		√		√
FDCI181 Input module/ FDCIO181 Input/output module alarm input	√			√
FDCI181 Input module/ FDCIO181 Input/output module output (without confirmation)		√		√
FDCI181 Input module/ FDCIO181 Input/output module output (with confirmation)		√		√

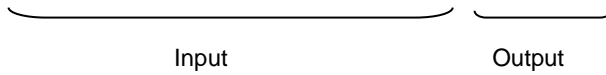
Note:

- One device can be assigned to max. 10 groups AND 6 FRT groups.
- Relations among equipments of control output group is “and” relations. Relations among equipments of supervision and detection group is “or” relations.
- Alarm and trouble information of equipments of fire display panel group can be displayed on the display panel.
- Equipments must be put into groups to participate interlocking relation program.

APPENDIX 4 RULES FOR LOGIC EXPRESSION

1. Logic expression:

$$\frac{01.0001.07+01.0002.07+01.0003.07}{1 \quad 2}=01.0004.10$$



- ① Group No.: xx.xxxx first two numbers express controller No.; last four numbers express group code.
- ② Status code: xx express the status in the logic
- 01: Alarm
 - 02: Supervision
 - 03: Active
 - 04: Confirmation
 - 05: Output with confirmation
 - 06: Output without confirmation
 - 07: Trouble
 - 08: Disable
 - 09: Test
 - 10: Active (only suitable for control group to active the output in this group)
 - 11: Stop (only suitable for control group to stop the output in this group)

2. Format specification:

- “+”: “or” relation;
Example: 01.0001+01.0002+01.0003=01.0004; indicates that alarm of any group of 01.0001, 01.0002, and 01.0003 can activate group 01.0004.
- “*”: “and” relation;
Example: 01.0001*01.0002*01.0003=01.0004; indicates that 01.0001, 01.0002, and 01.0003 simultaneously alarm can activate group 01.0004.
- “ () ”: Priority;
Example: (01.0001+01.0002)*01.0003=01.0004; indicates that any group of 01.0001, 01.0002 and 01.0003 simultaneously alarm can activate group 01.0004.
- “! ”: “Not” relation;
Example: 01.0001!*01.0002=01.0004; indicates that 01.0001alarm, and 01.0002 no alarm, active 01.0004 group.
- “+~+”, “*~*”: Abbreviations, but cannot be used in “[]N”.
Example: 01.0001+~+01.0015=01.0016; indicates that in No. 01 controller, any group of No. 1 to No. 15 alarm can activate No. 16 group.
01.0001*~*01.0006=01.0007; indicates that in No. 01 controller, No. 1 to No. 6 groups simultaneously alarm can activate No. 7 group.
- “[]N”: Total N groups simultaneously alarm; 1≤N≤8 (and N ≤ total groups);
Example: [01.0001, 01.0002, 01.0003]2=01.0004; indicates that any 2 groups of 3 groups alarm can activate group 01.0004.
[01.0001~01.0003, 01.0005]2=01.0004; indicates that any 2 groups of 4 groups (1 to 3 and 5) alarm can activate group 01.0004.
- “;”: End of logic expression;

- “@N”: Union alarm in a group, $2 \leq N \leq$ total device amount;
Example: $01.0001@2=01.0004$; indicates that any 2 devices in group 01.0001 alarm can activate group 01.0004.
Remark: when adding /deleting device in a group, the logic expression needs to be verified.
- When a logic expression need to activate more groups (output) simultaneously, use “,” to separate;
Example: $(01.0001+01.0002)*01.0003=01.0004, 01.0005$; indicates that any group of 01.0001, 01.0002 and 01.0003 simultaneously alarm can activate group 01.0004 and 01.0005.

3. Interlocking across controllers

Just directly input addresses of groups in logic expression;

Example: $01.0001+02.0001=01.0002, 02.0002$;

APPENDIX 5 INPUT METHOD

Letter/Number input:

1. Press down letter/number key, then input content will switch between number and letter.
2. When switched to needed content, relieve the key to complete the input of needed letter/number.

Special character input:

1. Press down number key (1), then input content will switch among '1', '.', '+', '*', '=', ';', '~', '(', ')', '[', ']', '{', '}', '|', ':', 'space', '-'.
2. When switched to needed content, relieve the key to complete the input of needed character.

APPENDIX 6 “STICKER METHOD” EASY FOR COMMISSIONING

In FD18 system, there is an exclusive ID number on each spot component. Engineer debug staffs can tear it down when installing, and fix to the equipment position in engineering drawings, so that after installation of all components, engineer file configuration can be made. Detailed operations are as follows:

1. Open the package.
2. Tear down the machine-readable ID number.
3. Fix it to the corresponding position in engineering drawings.
4. After all installation complete, turn on the system, and controller will find all new equipments.
5. Now the system is “auto configured” able to generate alarms and fault with default settings.
6. Upload the data to PC, and configure through debug tool software in PC:
 - Choose the equipment.
 - Enter text information or choose corresponding technical parameters (such as sensitivity).
7. After configuration, download to controller and complete the configuration job.

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