FIRECLASS

FC501 Addressable Fire Control Panels Installation Manual

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FC501 Addressable Fire Control Panels

You have the option to program the fire control panel manually, or through a USB key, or by using the Software FireClass FC500 (FC501_FC503_FC506) Console release 01.00.01 or higher. Use control panel FW version 1.14 or higher.

Johnson Controls assumes no responsibility for damage to products resulting from improper application or misuse.

Installation of this control panel must take place strictly in accordance with the instructions in this manual and in compliance with the local laws and bylaws in force.

The FC501-L, FC501-H and FC501-HK fire control panels comply with the essential requirements of standards EN54-2, EN54-4 and EN54-21.

ⓘ **Note:** The FC501-L, FC501-H and FC501-HK fire control panels support several addressable devices such as detectors, modules, and manual call points. This manual includes the instructions for the programming of the fire control panels. For further information on these devices and their accessories, visit http://www.fireclass.com and log into the Reserved Area, under Installation Manuals.

The manufacturer reserves the right to change the technical specifications of these products without prior notice.

Box contents

The control panel is contained in a box. See the contents of the box in the list below:

- A plastic cabinet and plastic cover with an assembled motherboard and power supply switching.
- The Quick Start Guide.
- A transparent plastic bag containing a USB consisting of the installation manual, user manual, the PC Programming manual, two 3.9 kOhm resistors, a 320 mm red and a black cable with a faston terminal to connect batteries with the main board, and a 320 mm black cable with two faston terminals to connect batteries.

Proceed carefully to unpack the contents and dispose recyclable materials in accordance with local laws.

Waste Electrical and Electronic Equipment (WEEE) Directive

In the European Union, you must dispose of this product separately to household waste at an appropriate facility to enable recovery and recycling.

Keywords and symbols

In this manual, symbols used in the margin indicate warnings. These symbols are explained in Table 1.

Table 1: Keywords and symbols

Keyword	Symbol	Explanation
DANGER		Imminent danger.Death or severe injury when disregarded.
WARNING		Potentially dangerous situation. Death or severe injury possible when disregarded.
CAUTION		Potentially dangerous situation. Minor injury possible when disregarded.

Introduction

FC501 fire control panels

The FC501 fire control panels follow Johnson Controls' highest standards of quality and performance.

The FC501 series consists of the following models.

FC501-L: Analogue addressable Fire Control Panel with one loop incorporating three sub-loops. The panel can support up to 128 addressable devices and 32 zones. The user interface uses icons to identify function buttons and indicators.

Powered: **BAW50T24** switching power supply (1.8 A @ 27.6 V). Suitable batteries include two 12 V/ 7 Ah or two 12 V/ 12 Ah.

FC501-H: Analogue addressable Fire Control Panel with one loop incorporating three sub-loops. The panel can support up to 128 addressable devices and 32 zones. The user interface uses text descriptions to identify function buttons and indicators.

Powered: **BAW75T24** switched mode power supply (2.7 A @ 27.6 V). Suitable batteries include two 12 V/ 12 Ah or two 12 V/ 38 Ah.

FC501-HK: Analogue addressable Fire Control Panel with one loop incorporating three sub-loops. The panel can support up to 128 addressable devices and 32 zones. The user interface uses icons to identify function buttons and indicators.

Powered: **BAW75T24** switched mode power supply (2.7 A @ 27.6 V). Suitable batteries include two 12 V/ 12 Ah or two 12 V/ 38 Ah.

In this manual, the term FC501 is used to describe the characteristics common to all versions while the version name is used to describe the differences between the versions listed above. The components of these Control panels operate as intended when the external ambient conditions comply with the requirements of class EN 60721-3-3:1995.

The FC501 control panel has a 4-line, 40 characters per line LCD module with a backlight, which provides written information regarding the system status and for programming the control panel.

Accessories

FC500 repeater

Use this fully functional repeater panel to connect to FC500 control panels with four wires. The repeater panel provides all the visible and audible warnings generated by the control panel. The repeater panel also allows end users to manage the system remotely up to 1000 m with double twist unshielded cable. The FC501 control panel supports a maximum of four repeater panels.

FC500-MFI

This is a programmable, multifunctional module for connecting to a real time printer. In addition, you can connect a standard interface with terminal blocks to remotely control and supervise a set of inputs and outputs to manage the control panel.

FC500IP

FC500IP is a module that connects the control panel to a LAN. See Installing the FC500IP board.

FireClass FC500 (FC501_FC503_FC506) Console

This is a user-friendly software application. It uses Microsoft Windows 7 and higher. The console offers easy ways to program the control panel and also provides event log functions.

Connected Services Gateway

The Connected Services Gateway (CSG) is a comprehensive interface card that supports central station communication and enables SafeLINC cloud services. You can connect the gateway to the SafeLINC cloud platform by Internet or cellular connection. To connect directly to the panel, use the serial interface of the gateway card.

Description

Inputs

The three loops manage up to 128 devices.

Outputs

This section describes how the control panel outputs operate.

Supervised outputs

With this output, the control panel can detect and signal short circuits and power supply interruptions.

Disabled outputs

You can disable this type of output by using a specific key.

Silenceable outputs

To stop this type of output, you can use the Silence/ Resound Sounders key. You can silence the outputs for an indefinite period during Day Mode or for a programmed silence time during Night Mode.

Operating features

You can program the control panel to provide WARNING or DELAY TO ALARM status before ALARM status.

Warning

The WARNING display signals the WARNING status. If a detector exceeds its warning threshold, the control panel generates a warning. The input module also generates a warning state; a useful feature for implementing the Systems Supervision capability. The Warning status signals are:

- Control panel buzzer; 2 seconds of sound at 440 Hz and then a 2 second pause.
- A WARNING message on the LCD display
- The WARNING output points if you enable the Delay to Alarm option.

Delay to Alarm

If a zone generates an alarm during Day Mode, the control panel starts the Delay to Alarm Time. The Delay to Alarm status signals are:

- Control panel buzzer; 0.5 seconds of sound at 880 Hz and then a 0.5 second pause.
- Blinking on the **Delay to Alarm** LED for the first eight zones only.
- Message ALARM+DLYTIME on the LCD display.
- Activation of the respective outputs, if the user enables the Delay to Alarm option.

ⓘ **Note:** If the control panel detects alarm conditions during Night Mode or from a callpoint, the control panel generates an instant alarm.

Take the following actions during the Delay to Alarm status; see Access to signaling and commands.

- **Access Level L1:** to activate an Evacuation Alarm, press and hold the **Evacuate** Key.
- **Access Level L2:** to stop the Silence disable outputs and interrupt the Delay to Alarm Time, press the **Silence** key.

When the Silence LED is on during Silence status, press the **Silence** key to release the Silenceable outputs, or press the **Reset** key to restore standby status.

If the control panel operates in Night Mode, the control panel exits from Silence status automatically when the programmed Silence time expires.

Alarm

When the Delay to Alarm time expires, the control panel generates an alarm. The Alarm status signals are:

- Control panel buzzer; 0.2 seconds of sound at 3300 Hz and then 0.2 seconds of pause.
- Alarm LED is on.
- An alarm message on the LCD display.
- Activation of the Fire and SC1 outputs.
- Activation of other outputs including SC2, OC1, or OC2 if programmed.

During the Alarm status, the following can occur:

- At Access Level L2 you can stop the Silenceable outputs by pressing the **Silence** key.
- At Access Level L2 you can press the **Reset** key and Silence Buzzer.

ⓘ **Note:** Refer to Access to signaling and commands for further information.

During the Silence status when the Silence LED is on, use the **Silence** key to release the Silenceable outputs. The **Reset** key restores the standby status.

When the programmed Night Mode Silence time expires, the control panels exits Silence status.

Day and night mode

The control panel can operate in Day or Night Mode. See the relevant section in the Programming from the Panel chapter.

If you silence the system in Day Mode, the Silence status remains until you unmute the system, provided that no other alarm incidents occur. If you silence the system during Night Mode, the Silence status remains until the Night Mode Silence time expires.

At default, the system is set to Day Mode. During Day Mode, silenced alarms are not unmuted automatically.

Fault

This control panel can detect and signal the faults shown in Table 2.

Table 2: Description of Faults

Message	Problem
Mains fault	The control panel is not powered from the mains
Unusable Base	Detector head is not fitted correctly or missing from the base correctly or missing from the base
Battery	The control panel's batteries charger is not working correctly
Low battery	The control panel batteries are empty
Earth	Leakage to earth
24A Output	Shorted 24A Output
24R Output	Shorted 24R Output
Firmware main contr.	Checksum fault
Not programmed dev	Loop device without address
Loop return open	Loop negative signal open
Loop signal open	Loop positive signal open
Loop local short	Local short on loop controller
Loop right short	Right side loop short
Loop left short	Left side loop short
No answer	Loop device does not answer
Dirty level	Smoke detector only; the dirty threshold has been exceeded
Short circuit	Short circuit on input module
Open circuit	Open circuit on input module
Power supply	Main fault
Wrong value	A loop device has an incorrect value
Stuck output	An output module relay is not switched

Table 2: Description of Faults

Message	Problem
Same address	Several loop devices have the same address
Wrong Type	Different loop device from that programmed in the panel
IP Communicator	Communication lost with IP controller
IP receiver	Communication lost with IP receiver
PSTN communicator	The communication with PSTN controller is lost
GATEWAY COMMUNICAT.	The CSG is installed but it is not communicating with the panel
PRIMARY PATH	The CSG primary path is down
SECONDARY PATH	The CSG secondary path is down
FIRE SIGNAL FAULT	Both the CSG paths are down
FIRE SIGNAL NOT ACK	The fire signal is not acknowledged from the central station. This fault is latched.
Telephone line	Telephone line fault
LOG Full	LOG fault
PSTN Action not Ack.	A PSTN action not acknowledged
SC X short	SC x = (1 or 2) short circuit
SC X open	SC x = (1 or 2) open terminal
Prog.data main cont	Data programming checksum fault
Prog.data tel.board	Aux Controller data programming checksum fault
Loop Communication	Communication loop fault controller
Display communication	Communication fault on display controller

Table 2: Description of Faults

Message	Problem
LOOP x NOISY	The devices on the loop x = (1, 2 or 3) do not communicate properly with the panel. Check the quality of wiring.
REPEATER COMMUNIC.	A repeater on the RS485 does not respond
MFI x COMMUNIC.	(x from 1 to 4)
PRINTER x FAULT	(x from 1 to 4)
PRINTER x ABSENT	(x from 1 to 4)
MFI x SERIAL CHANN.	(x from 1 to 4)
MFI x INy SHORT	(x from 1 to 4; y from 1 to 5)
DEFAULT DATA	The fire panel resets to default data

Fault conditions signals are as follows:

- Control panel buzzer; 1 second of sound at 660 Hz and a 1 second pause.
- The Fault LED and relative Fault LED is on.
- A Fault message on the LCD display.
- Activation of the Fault output.
- Activation of other outputs including SC2, OC1 or OC2 if programmed.

The Fault output and any additional programmed fault outputs automatically return to standby status when the fault conditions clear.

Under certain circumstances, fault conditions may clear spontaneously. If this occurs, the memory stores the event until you reset the control panel. Blinking on the Fault LED indicates stored fault events.

To resolve the 24 A output fault, you must reset the gateway. Any time the panel is configured through the FireClass Console, a PC PROGRAMMING event is transmitted to SafeLINC.

Silence

This control panel provides a **Silence** key that can restore the Silenceable outputs to Standby status.

When the Silence LED is on, this indicates the Silence status.

The Silence status remains until one of the following occurs:

- You press the Silence key again
- The programmed Night Mode Silence time expires when the control panel operates in Night Mode.
- A new alarm condition is detected.

ⓘ **Note:** You need access level L2 or L3 permissions to mute the silenceable outputs manually.

Disabled

This control panel can disable the devices on the loop, SC2 output, OC1 and OC2 outputs, the software zones, the RS485 network devices such as the repeaters and the MFI modules.

DISABLED zones cannot generate alarms or warnings of any kind, and DISABLED outputs cannot be activated.

When the Disabled LED is on, this indicates the Disabled status.

ⓘ **Note:** The Disable facility is available at access level L2 or L3.

Reset

Resetting the control panel restores the outputs to standby status, clears the memory, and disconnects the power supply to terminal 24R for 2 seconds.

ⓘ **Note:** You need access level L2 or L3 permissions to reset the panel.

Interface

Visual signaling

The system status signals on the control panel LEDs are as follows:

- Green indicates that the power is ON.
- Amber indicates specific operating modes, for example Day or Night Mode, and Fault conditions.
- RED indicates alarm conditions.

Memory

The control panel indicates Fault events with a blinking FAULT LED until the system resets, even if the event clears before the reset.

Audible Signaling

The buzzer signals the control panel status as shown in Table 3.

ⓘ **Note:** When the control panel mutes an alarm and detects a new fault, the control panel resounds the previous silenced alarm.

Table 3: Audible Signaling

Status	Sound	Pause	Frequency
SYSTEM FAULT (Main processor fail)	2.5 s	2.8 s	1300 Hz
SYSTEM FAULT (Programming data corrupted)	1 s	1 s	660 Hz
Warning	2 s	2 s	440 Hz
Delay to Alarm	0.5 s	0.5 s	880 Hz
Alarm	0.2 s	0.2 s	3300 Hz
Fault	1 s	1 s	660 Hz

LAMP TEST:

This key allows you to test the control panel buzzer and the LEDs.

Access to indicators and commands

There are four access levels, in compliance with Fire Safety Regulations.

Access Level L1 Viewing:

All users can view the control panel status without a password.

Access Level L2 Operating the system (PIN code entered):

Password code users can operate the system at user level.

Access Level L3 Programming and Opening the Control Panel (Password Code entered):

This level of access is for installers. Therefore, only qualified, authorised users are allowed to open the control panel door. This requires removal of the cover screws, for maintenance or to replace a battery.

Access Level L4 Repairing or replacing the PCB:

Only the manufacturer can repair or replace the PCB. This requires removal of the cover screws.

Users and installers features

The panel can recognize and manage up to eight users and two installers. At each login of any user or installer, the panel logs the login event and the user or installer label, see Table 4. The panel also logs the return to access level L1 to indicate the end of the user or installer session.

Table 4: Users and installers passwords

Users and installers	Default password
USER 1	11111
USER 2	Not set
USER 3	Not set
USER 4	Not set
USER 5	Not set
USER 6	Not set
USER 7	Not set
USER 8	Not set
INSTALLER 1	00000
INSTALLER 2	Not set

By default, only USER 1 works with its default password. The other users are unavailable.

By default, only INSTALLER 1 works with its default password. INSTALLER 2 is not available.

Only the INSTALLER 1 can make available USER 2 to USER 8, and the INSTALLER 2.

The INSTALLER 2 can also modify all passwords.

For more information, see 2 Key - Add and modify passwords, 0 Key - Add and modify installer passwords, and refer to the console instructions.

Each installer and each user can modify their own password.

If INSTALLER 1 forgets its password, they can enter a new password using the following procedure:

1. Open the control panel, and remove the jumper J5 on the main board.
2. Access the installer menu screen.
3. Access the programming screen of the installer password and enter the new password.
4. The system stores the new password as the current password for INSTALLER 1. The user interface returns to the main screen, indicating local programming, followed by a panel reset.
5. Replace the J5 jumper to restore the normal program menu screen functionality.

Power supply and batteries

The power supply system of the FC501 control panels complies with EN54-4.

All models are powered by the mains.

- The FC501-L has a switching power supply which supplies up to 1.8 A at 27.6 V.

- The FC501-H has a switching power supply which supplies up to 2.7 A at 27.6 V.
- The FC501-HK has a switching power supply which supplies up to 2.7 A at 27.6 V.

All models can house two 12 V batteries. When these are connected in series, they can supply 24 V to the control panel and peripherals in the event of a power cut.

For suitable batteries, refer to Table 33.

Note:

If necessary, the FC501-H and FC501-HK control panel can be connected to two 12 V, 38 Ah batteries in an external cabinet. See Mounting the 38 Ah battery cabinet.

This control panel can detect, signal and store in memory the following power faults:

- Shorted 24A or 24R outputs
- Low battery
- Battery fault
- Battery disconnected
- Battery trouble
- Earth fault
- Mains failure power supply fault

The battery fault may be signaled with a delay up to 1 minute. The mains fault is signaled when the programmed delay expires.

The control panel monitors the batteries status at all times, through static tests and dynamic tests.

Static Test: The static test monitors the battery charge during mains failure. In the event of low battery voltage, below 22.8 V, the Low Battery LED turns ON. If this occurs, you must restore the mains power before the batteries empty, otherwise, the system will shutdown.

Dynamic Test: The dynamic test monitors the operating capacity of the batteries. If the batteries do not meet the test requirements, the No Battery LED turns ON. If this occurs, you must replace the backup battery immediately, otherwise the system will be unable to function in the event of mains failure.

Note:

In case of mains failure and batteries failure, the control panel non-volatile memory holds the programmed data.

Description of the control keys

Table 5 describes the control panel and repeater keys. For more information about the SILENCE/ RESOUND SOUNDERS key, see SILENCE/RESOUND SOUNDERS key. For more information about the RESET key, see RESET key.

Table 5: Description of the control panel and repeater keys

Key		Description
	**SILENCE/ RESOUND SOUNDERS**	Restores the Silenceable outputs and the loop devices to standby status. **Note:** The silence status remains until you press the SILENCE key again in day mode; or until the night mode silence time expires in night mode; or until the system detects a new alarm condition.
	**RESET**	Resets the fire detectors and restores all outputs to standby status
	**INVESTIGATION DELAY**	Refreshes the delay to alarm time **Note:** If you press this key during delay to alarm, the remaining delay to alarm time increases with the programmed investigation delay.
	**EVAC**	Activates the evacuation **Note:** If you press this key, the system generates an alarm.
	**SILENCE BUZZER**	Silences the local buzzer on the control panel **Note:** The buzzer operates every time a new event is activated.

Table 5: Description of the control panel and repeater keys

Key		Description
	LAMP TEST	Tests the buzzer and the LEDs **Note:** If you press this key when the control panel is functioning as intended, all LEDs will be on and the buzzer emits a continuous beep.
?	**HELP**	Explains the information on the LCD display in the different screens **Note:** An embedded help feature is present on the panel LCD display. The HELP key is disabled on the repeater.

SILENCE/RESOUND SOUNDERS key

This control panel provides a Silence key that can restore the Silenceable outputs to Standby status.

When the Silence LED is on, this indicates the Silence status.

The Silence status remains until one of the following occurs:

- You press the Silence key again
- The programmed Night Mode Silence time
- The programmed Night Mode Silence time expires when the control panel operates in Night Mode.
- A new alarm condition is detected.

RESET key

You can only enable the **Reset** key at access level L2 with a PIN as the fire panel returns to standby status after the Alarm, Delay to Alarm, Warning and Fault conditions stop. At the end of the Reset time, the system reprocesses any Alarm, Delay to Alarm, Warning or Fault signal that Reset operations did not clear.

When Reset is running, the command keys are inoperative.

Any repeater connected to the panel can perform a reset of the panel. It is necessary to use a PIN to access level L2 or higher.

Description of status LEDs

Table 6 describes how the control panel and repeater LEDs operate. During standby status, only the green POWER ON LED and the DAY MODE LED should be on if the control panel is in day mode.

Table 6: Description of control panel and repeater status LEDs

LED		Description
	FIRE (Red)	**ON** indicates the alarm status. In the event of an alarm, the control panel activates the not-disabled alarm outputs.
	GENERAL FAULT (Amber)	**ON** indicates the presence of a fault on the loop or RS485 or outputs. The following LEDs or the screen display indicates the type of fault. OFF indicates no fault.

Table 6: Description of control panel and repeater status LEDs

LED		Description
	**SYSTEM FAULT (Amber)**	**ON** indicates a blocked control panel. ** The LCD display on the panel displays "SYSTEM FAULT LATCHED" on the screen indicating the watchdog on the panel was reset or the panel was reset manually. Remove this fault before proceeding to use the panel. Indicates the control panel restart. *** **IMPORTANT**: Maintenance required. **Flashing** indicates that the control panel programming data is corrupted. *** ⓘ **Note:** Further notes are included beneath this table.
	**FIRE SIGNAL FAULT (Amber)**	**ON** indicates that the communicator is disabled. **Blinking** indicates that the communicator is faulty.
	**POWER SUPPLY FAULT (Amber)**	**ON** indicates a mains failure (230 V). **Blinking** indicates a Switching Power supply fault. During this condition, the control panel is powered by the batteries.
	**EARTH FAULT (Amber)**	**ON** indicates a voltage leakage to Earth. ➧ **Important:** Check wiring insulation.
	**BATTERY TROUBLE (Amber)**	**ON** indicates that the batteries are empty or faulty. If this condition persists, the batteries are unable to function as intended in the event of a power cut. ➧ **Important:** New batteries are required.
	**POWER ON (Green)**	**ON** indicates that the panel is supplied with power. **OFF** indicates a mains failure whereby both mains and battery power is lost (the battery disconnect threshold is 19.2 V). Power must be restored before the batteries reach the disconnect threshold.
	**MORE INFO (Amber)**	**ON** indicates that there is hidden information with lower priority. **View List** shows the hidden information. **OFF** indicates no hidden information is available.
	**SOUNDERS SILENCED (Amber)**	**ON** indicates that the silenceable outputs and loop device have been forced into standby by means of the **SILENCE/ RESOUND SOUNDERS** key. In day mode, the silence status remains until the **SILENCE/RESOUND SOUNDER** key is pressed again. In night mode, the silence status remains until the night mode silence time expires or until the system detects a new alarm or a new trouble condition.
	**FIRE SIGNAL ON (Red)**	**ON** indicates that the transmission was successful. **Blinking** indicates that the transmission is in progress. On the control panel screen, the connection type, such as PSTN, GSM, or LAN network, is displayed.

Table 6: Description of control panel and repeater status LEDs

LED		Description
	SOUNDERS FAULTS/DIS (Amber)	**ON** indicates that the output is disabled or outputs configured to "act as SC1" are disabled. **Blinking** indicates that the SC1 is in fault or outputs configured to "act as SC1" are in fault. **OFF** indicates that all the main sounder outputs (EN54-1, TYPE "C" outputs) function properly.
	DISABLED (Amber)	**ON** indicates that at least one control panel item is disabled.
	TEST (Amber)	**ON** indicates the test conditions on at least one zone.
	DAY MODE (Amber)	**ON** indicates that the control panel is operating in day mode. **OFF** indicates that the control panel is operating in night mode.
1-8	**SOFTWARE ZONES (Red)**	**ON** indicates that the corresponding software zones are in Alarm status *. **Blinking** indicates that the corresponding software zones are in Delay to Alarm status.
	CONTROLS ON (Amber)	**ON** indicates that the control panel is at least at level 2 so the **SILENCE/RESOUND SOUNDERS, RESET** and **INVESTIGATION DELAY** keys are enabled.

Note: * The zone outside the 1 to 8 range does not have a related LED, its alarm status is displayed only by the LCD.

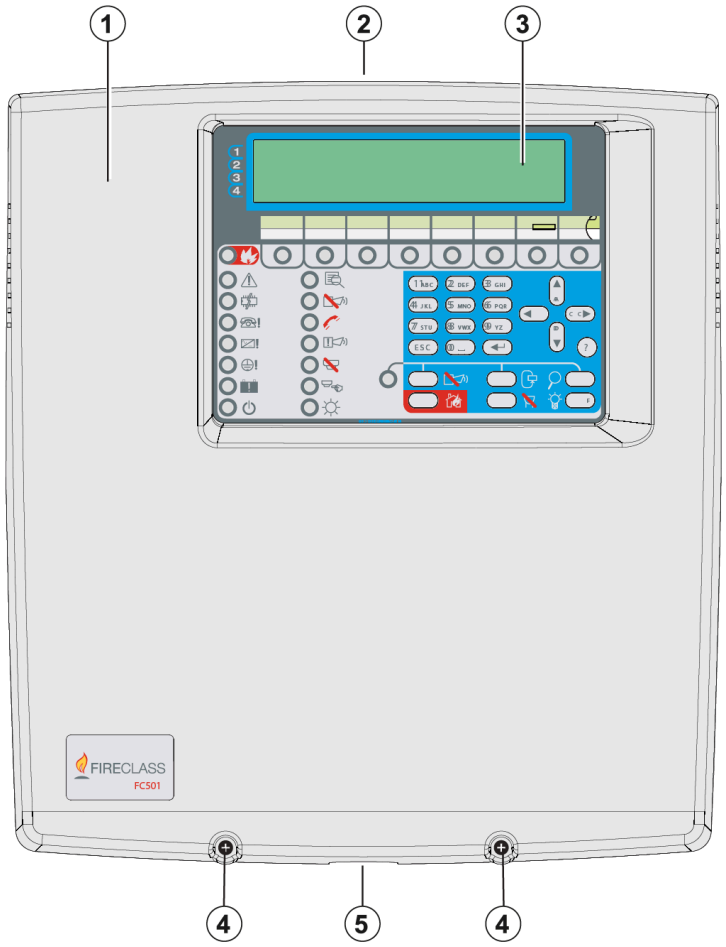
Note: For SYSTEM FAULT (Amber), note the following:

- When the control panel is switched on for the first time, this LED blinks until a reset has been performed.
- ** indicates that the buzzer sounds the system fault pattern; *** indicates that the buzzer sounds the fault pattern.
- The buzzer turns ON and the System fault LED also turns ON if one of the below conditions occurs:
  - The system resets itself (watchdog reset) when any internal logical fault occurs.
  - System is powered ON after a complete panel shut down.

Parts identification

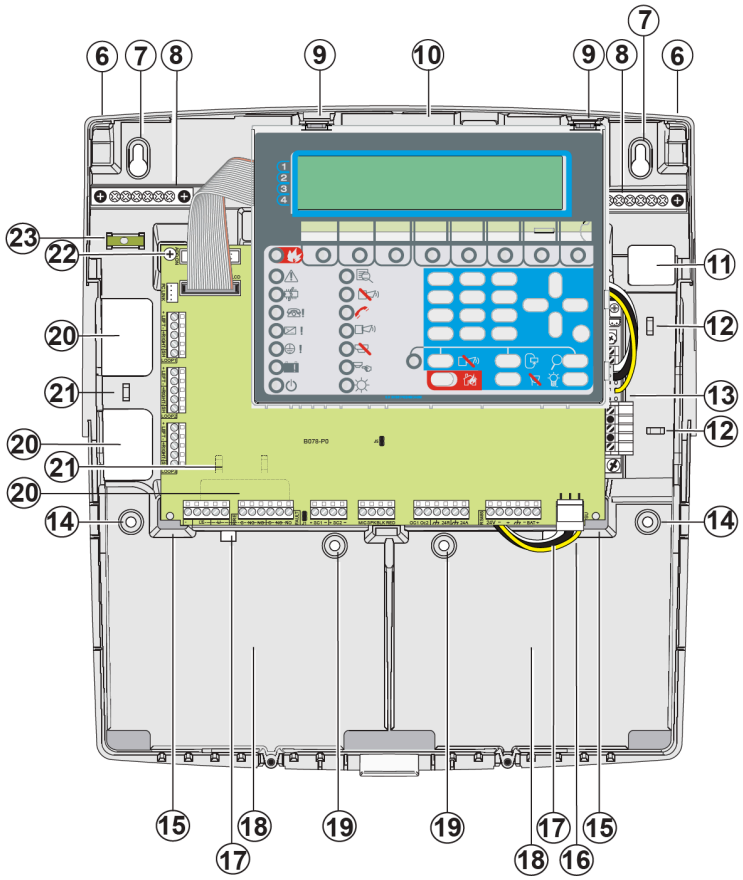
Control panel parts

Figure 1: Control panel parts: External view



Callout	Description
1	Control panel cover
2	Knockouts for cables ducted externally (18)
3	Display
4	Two screws to close the cover on the panel
5	Knockout for connection of control panel with battery cabinet (accessory item)

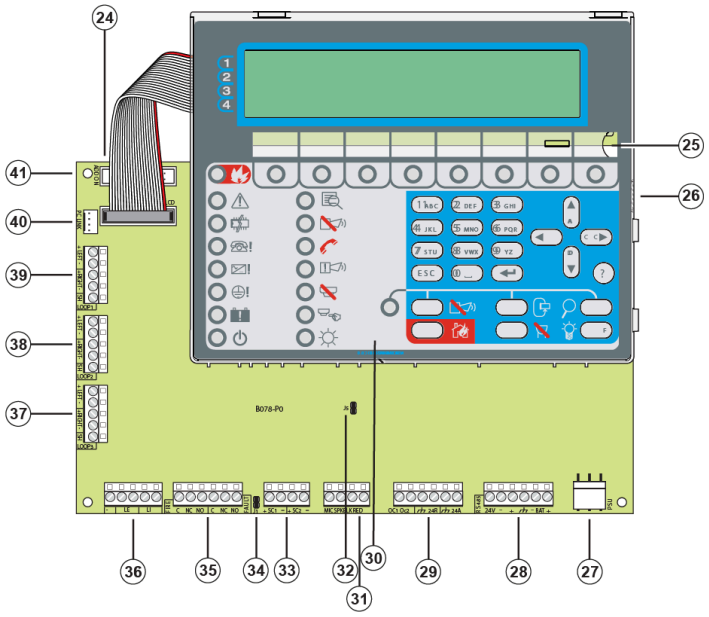
Figure 2: Control panel parts: Internal view



Callout	Description	Callout	Description
6	Hooks to secure the cover on the backplate	15	Two main module supports
7	Backplate anchor screw locations	16	Power cable for main module
8	Two terminals for the earth connection wires	17	Two openings to secure batteries
9	Two hooks to secure main module on the backplate	18	Location for two batteries 12 V, 7 Ah or 12 Ah
10	Main module: See Main module parts	19	Two backplate auxiliary anchor screw locations
11	Cable entry for channeled undertrack cables: Power cable	20	Three cable entries or channeled undertrack cables
12	Two anchors for power cable	21	Three cable anchors
13	Switching power supply: See Power supply parts	22	Screw to secure main module
14	Backplate anchor screw locations	23	Tubular spirit level

Main module parts

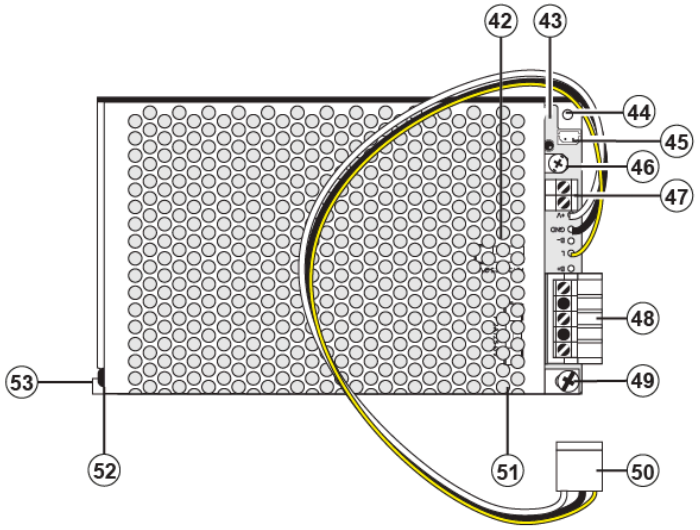
Figure 3: Main module parts



Callout	Description
24	Connector for IP Module
25	Opening to insert the zone location text strip
26	USB port
27	Power supply main module connector
28	RS485 serial port and battery connection terminals
29	Programmable outputs and auxiliary power supply terminals
30	Buzzer (not visible)
31	Terminals for future use
32	Jumper J5 to reset the installer PIN n. 1 to the factory default (00000)
33	SC outputs
34	Jumper for the exclusion of the Earth Fault:  = Earth Fault detected (Default)  = Earth Fault ignored
35	FIRE and FAULT relay outputs
36	Terminals for phone line connection
37	Loop1
38	Loop2
39	Loop3
40	RS232 Serial (PC link)
41	Hole for main module fixing

Power supply parts

Figure 4: Power supply parts



Callout	Component
42	Protection fuse
43	Main Power LED
44	Hole for switching power supply fixing
45	Thermal probe connector
46	Fine trimmer for the switching power supply output voltage
47	Auxiliary power-supply terminals (27.6 VDC)
48	Mains power terminals
49	Switching power supply fixing screw
50	Cable for connecting main module
51	Protection fuse
52	Switching power supply closure plastic rivet
53	Switching power supply anchor

Mounting the components

Important: Installation of this system must be carried out in accordance with the instructions in this section, and in compliance with the local safety regulations in force.

Note: Install the control panel to a maximum height of 2 m.

Prior to commencing the installation of the control panel, ensure that adequate precautions are taken to prevent damage to the sensitive electronic components on the display board and the control board due to electrostatic discharge. You should discharge any static electricity you may have accumulated by touching a convenient earthed object such as an unpainted copper radiator pipe. You should repeat the process at regular intervals during the installation process.

To install the control panel, follow these steps:

1. Choose suitable mounting locations for the control panel, detectors, firewarning and fire control devices.

   The panel must be located in a clean, dry position that is not subject to shock or vibration and at least 2 metres away from pager systems or any other radio transmitting equipment.
2. Lay the cables between the control panel and the system peripherals.

Fire alarm cables must be separated from all other wiring that is not related to the fire alarm system.

3. If necessary, install any accessory modules.
4. Carry out the necessary connections, leaving the power-supply connection until last.
5. Program the control panel in accordance with the instructions in the Programming from the panel section.
6. Test the entire system (control panel, detectors, fire warning, and fire control devices).

The IP module should be installed before mounting the control panel as described in Mounting the IP module.

⚠ **CAUTION:**

Ensure that the control panel power supply (mains and batteries) has been disconnected before installing any accessory module.

Mounting the control panel

Work carefully through the following steps. See Figure 1 and Figure 2 for further information. Install the IP module before mounting the control panel as described in Mounting the IP module.

ⓘ **Note:** To fix the control panel, use 4 anchors. If you intend to use the 12 Ah batteries, to fix the control panel use 6 anchors. The anchors must be at least 8 mm diameter and suitable for the type of fixing wall material.

1. Remove the two screws and open the control panel, see callout **4**.
2. Drill the anchor screw holes, see callouts **7** and **14**.

   ⓘ **Note:**
   - When using 12 Ah batteries, use mounting holes to provide additional support, see callout **19**.
   - Use the tubular spirit level for leveling the panel backplate, see callout **23**.

   ⚠ **CAUTION:**

   Check for water pipes and electrical wiring before drilling.

3. If necessary, remove the surface conduit wire knockouts, see callout **2**.

   ⓘ **Note:** The cable conduit union with the cabinet must be secured by HB Flame Class (or higher) lock nuts.

4. Pull the channeled undertrack cables through the cable entries. Then, using the anchor screws locations, secure the backplate to the wall. For the power supply cable entry, see callout **11**; for entry of the other cables, see callouts **20**.

   ⓘ **Note:** Use anchors **12** to secure the power supply cable, and anchors **21** to secure the other cables through the cable ties.

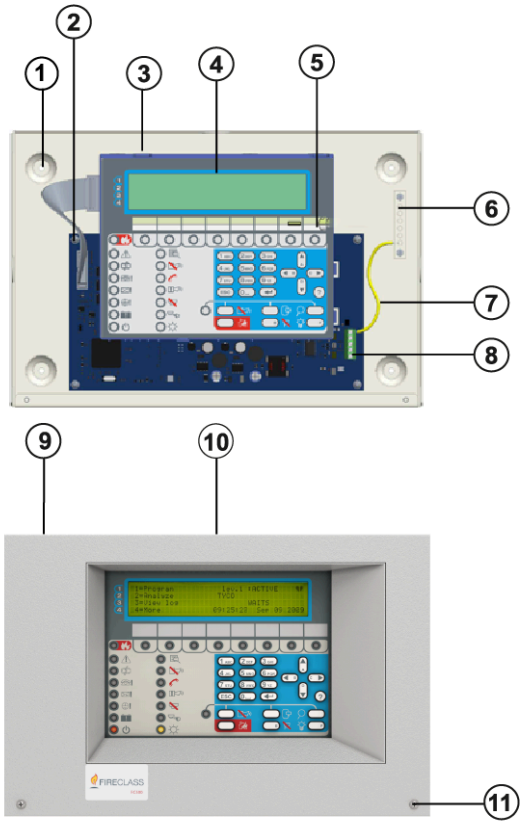
To close the control panel, complete the following steps:

1. Attach the cover to the hooks and then rotate the cover down. See callout **6**.
2. Use the screws to secure the cover on the backplate. See callout **4**.

Mounting the repeater

Follow these steps when installing the repeater. See Figure 5.

Figure 5: Repeater parts



Callout	Description
1	Four holes for cabinet mounting
2	Four screws to secure main module
3	Four knockouts for cables ducted externally (one on each side)
4	User interface repeater board
5	LED label slot
6	Terminal for the earth connection wires
7	Earthing cable
8	Connector for the repeater RS485 interface
9	Two hooks to secure the cover on the panel
10	Repeater panel cover
11	Two screws to secure cover

1. Lay the connection cables. See Connecting the repeater.
2. Remove the screws and open the repeater. See callout **11**.
3. Drill the anchor screw holes. See callout **1**.
4. Pull the wires through the wire entry, then using the anchor screws, secure the repeater to the wall. See callout **3**.
5. Complete the connections to the terminal board of the RS485 interface, as described in Connecting the repeater. See callout **8**.
6. Connect the earth wire to the threaded support on the board, as shown in Figure 5. See callout **7**.

Repeater addressing

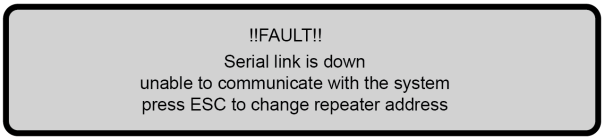
You can connect up to four repeaters to the control panel.

You have to assign a different address to each repeater, from 1 to 4.

The default repeater address is 1.

If you connect more than one repeater to the control panel, when you power up the repeaters their display show the message in Figure 6 , because all repeater have the same address: the address 1.

Figure 6: Serial link is down



To change the repeater address, complete the following steps:

1. Press the repeater's ESC key.
2. Use the repeater's alphanumeric keypad to enter the repeater address: from 2 to 4.
3. To confirm the repeater address, press the repeater's ENTER key.

Mounting the IP module

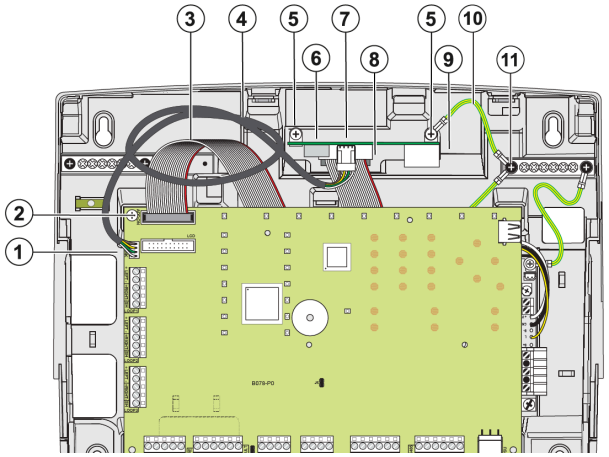
Install the IP module into the base of the control panel, as shown in Figure 7.

⚠ **CAUTION:**

- Before installing the IP module, disconnect the control panel from its power supply, the mains, and the batteries.
- You must connect the IP module to the earth of the electricity supply system.
- You must insert the earth cable (item 10) between the fixing bracket of the module, the screw (item 5) and the earth terminal (item 11).

ⓘ **Note:** Do not remove the wiring already present on the screw (callout 11).

Figure 7: IP module parts



Callout	Description
1	Serial port RS 232 (PC LINK)
2	IP Module connector (ADD ON)
3	Flat cable for the connection with IP Module
4	PC Link cable
5	IP Module fixing screws (2)
6	IP Module board
7	PC Link connector
8	Flat cable connector
9	Ethernet connector
10	Cable for earth wiring of the IP Module
11	Earth terminals

To install the IP module, complete the following steps.

1. Open the control panel by unscrewing the two screws, then lift the cover from the bottom to separate it from the chassis. See Figure 1, item 4.
2. Remove the fastening screw between the main module and the chassis. See Figure 2, item 22.
3. Unlock the main module using a flat screwdriver. See Figure 2, item 9.
4. Lift the main module from the base.
5. Insert the IP module below the chassis and align the mounting holes given.
6. Put the IP module screws through the holes on the chassis. See Figure 7, item 5.
7. Connect the IP module connector (Figure 7, item 8) to the control panel connector (item 2) using the supplied flat cable (item 3).
8. If you need to manage the control panel through the IP, connect the IP module connector (Figure 7, item 7) to the control panel connector (item 1) using the supplied PC link cable (item 4).
9. Connect the cable (item 10) between the screws (item 5) and (item 11). See Figure 7.
10. Connect the Ethernet connector (Figure 7, item 9) to the LAN using an Ethernet cable. **Note:** Use a category 5 or greater Ethernet cable, STP, or FTP.
11. Assemble the main module again in place with the help of the screw. See Figure 2, item 22.
12. Reconnect the control panel to the power supply.
13. Program the IP Module.

Mounting the 38 Ah battery cabinet

ⓘ **Note:**

Install the battery cabinet to a maximum height of 2 m.

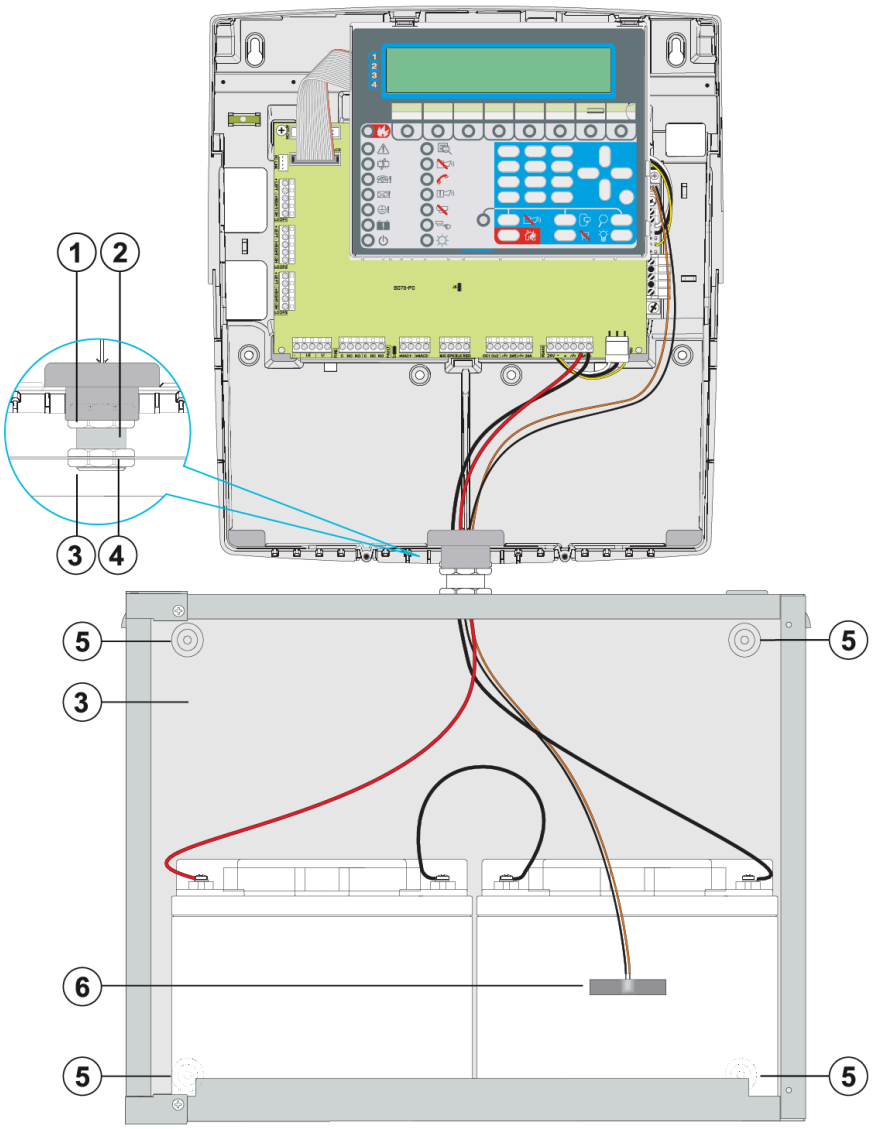
To fix the battery cabinet, use 4 anchors. The anchors must be at least 8 mm diameter, and suitable for the type of material of the fixing wall.

To install the 38 Ah battery cabinet, complete the following steps. See Figure 8.

1. Remove the two screws on the cover and open the cabinet.
2. Drill the anchor screw holes. Check for water pipes and electrical wiring before drilling.

3. If necessary remove the surface conduit wire knockouts of the cabinet, using a hammer or similar tool.
4. Secure the cabinet to the wall.
5. Secure the cable conduit union with the cabinet using HB Flame Class or higher lock nuts. See Figure 8.
6. Pull the wires through the cable entry and connect them as shown in Figure 8. See the Connecting the mains supply section.

Figure 8: Control panel and 38 Ah batteries cabinet connection



Callout	Description
1	Nuts on control panel backplate
2	Connecting threaded tube
3	38 Ah batteries cabinet
4	Nuts on 38 Ah batteries cabinet

Callout	Description
5	Four holes for cabinet mounting
6	Thermal probe

Mounting the thermal probe

The control panel supports the KST thermal probe. The probe optimizes the battery charging process by regulating the charge voltage in accordance with the battery temperature.

The panel comes with a KST thermal probe in a bag. To mount the thermal probe, complete the following steps.

1. Make sure that the batteries are not connected to the main board.
2. Connect the thermal probe to the connector **45** on Figure 4.
3. Use the trimmer **46** in Figure 4 to adjust the power supply output voltage. Refer to the graph in Figure 9 and the table in Figure 10.

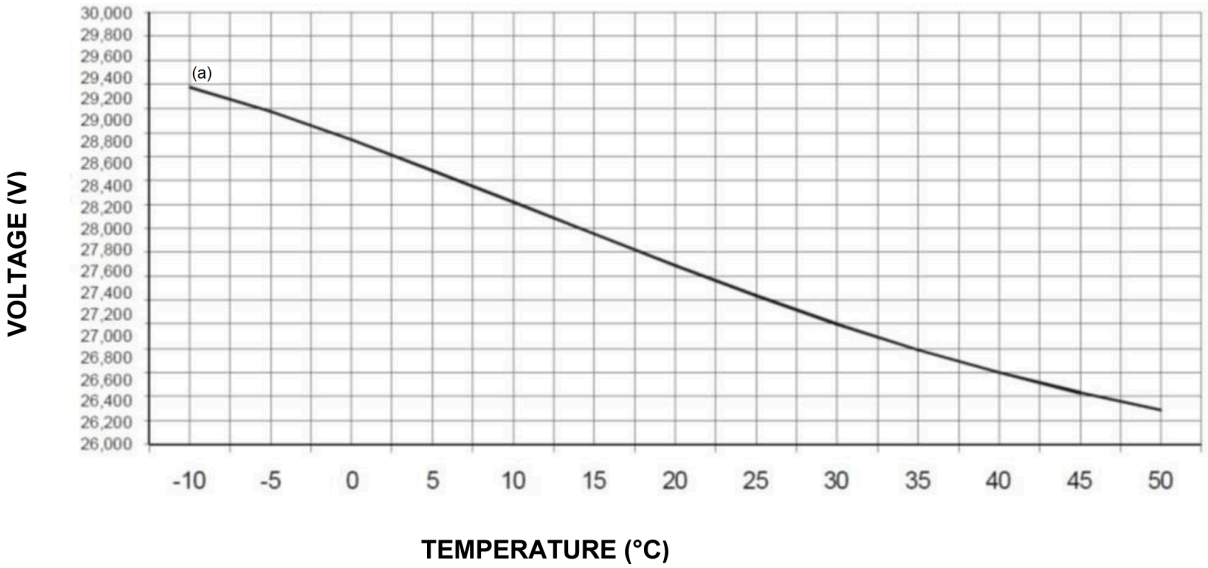
   Important: The probe temperature must be considered during voltage adjustment.

   For example: if the probe is located in an ambient temperature of 20°C, the output voltage must be 27.489 V.
4. When the voltage adjustment is complete, attach the thermal probe to the battery. Refer to Verifying the functionality of the circuit. This will provide an optimum level of thermal conductibility.
5. Connect the batteries to the battery terminals on the panel main board.

CAUTION: Before removing the probe, disconnect the battery from the main board. Removing the thermal probe causes the switching power supply voltage to rise to 27.6 V or greater. This damages the battery.

If you are disconnecting the battery and you are required to work without the thermal probe (EN54 approval will be lost), adjust the switching power supply output voltage using the trimmer **46** to 27.6 Vdc. Reconnect the batteries only if their voltage equates to 27.6 Vdc or less.

Figure 9: Switching power supply output voltage graph



Finding the output voltage using the graph

1. Indicate the probe temperature on the TEMPERATURE (°C) axis.
2. Draw a line from the temperature value point up to the curve **(a)** and draw a line from the intersection point across to the VOLTAGE (V) axis.

3. Adjust the output voltage of the switching power supply to the resultant value. For example, if the probe temperature is 22°C, the output voltage of the switching power supply must be set at 27.4 V.

Figure 10: Switching power supply output voltage chart

TEMPERATURE (°C)	-10	-5	0	5	10	15	20	25	30	35	40	45	50
VOLTAGE (V)	29.980	28.770	28.537	28.283	28.018	27.752	27.489	27.240	27.002	26.788	26.597	26.428	26.282

Finding the output voltage using the chart

1. Select the nearest value to the probe temperature on the TEMPERATURE (°C) row.
2. Read the respective value on the VOLTAGE (V) row.
3. Adjust the output voltage of the switching power supply to the indicated value. For example, if the probe temperature is 22 °C, the output voltage of the switching power supply must be set at 27.4 V.

Power supply replacement

The power supply spare part comes with wires for battery connection.

Note: Do not use the wires on the power supply for battery connection. Cut those wire before install the new power supply.

System wiring

Note: If you use conductors with a total cross-sectional area of 0.5 mm^2 or greater, use the procedure in the IEC 60332-1-2 and IEC 60332-1-3 standards.

If you use conductors with a total cross-sectional area of less than 0.5 mm^2, use the IEC60332-2-2 standard.

CAUTION: Bunch high voltage leads (230 V) separately from low voltage leads (24 V). Bunch leads in a way that avoids contact with other wiring and components.

Note: Use only shielded cable for all connections, with one end connected to the SH terminal of the control panel and the other one left free.

Terminals description

This section describes the control panel terminals.

LOOP terminals

The control panel has one loop split into three sub loops:

- LOOP1 are the terminals relative to sub loop 1
- LOOP2 are the terminals relative to sub loop 2
- LOOP3 are the terminals relative to sub loop 3

Use the LOOP terminals to connect the addressable devices. The following is the description of the LOOP terminals.

- +LEFT: Positive signal
- - LEFT: Negative signal (return)
- +RIGHT: Positive signal
- - RIGHT: Negative signal (return)
- SH: Cable shield terminal

Notes

- The three sub loops of the panel can manage up to 128 addressable devices.
- The maximum current load for the three loops must not exceed 500 mA +25%.
- The total length of the cables connected to the three sub loops must not exceed 2000 m.

LE and LI terminals

Use terminals LI, LE, and earth for the telephone line connection, as outlined in the following section.

LE: Terminals for connecting the external telephone line.

LI: Terminals for connecting the internal telephone line. Connect these terminals to other telephone devices that need to share the same phone line as the fire panel.

Earth symbol: Terminal for connecting the earth wire.

FIRE terminals

The FIRE terminals C, NC, and NO, are related to the fire output.

The following features describe the fire output:

- This is a non-supervised fire output; a dry contact relay for non-supervised devices.
- The fire output activates by default when the first fire event occurs.
- Deactivation of the fire output occurs during the panel reset.
- The fire output may be muted; see the default programmable option=NOT silenceable.
- It is not possible to disable the fire output.
- The fire output may be programmed to work differently, only with the FC501_FC503_FC506 Console software.
- During standby status, terminal [C] closes to terminal [NC].
- In the event of fire, terminal [C] closes to terminal [NO].

ⓘ **Note:** EN54-2 certification applies only when the fire output is not C or J or G (EN 54-1) type. Therefore, you must not use this output to manage fire alarm devices, fire or fault transmission devices, or an automatic fire alarm system.

FAULT terminals

The FAULT terminals C, NC, and NO are related to the fault output.

This is a non-supervised output; a dry contact relay for non-supervised devices.

The fault output activates when:

- The first fault event occurs.
- In the case of a logic fault.
- In the case of a total loss of power.

Other features of this fault output include:

- Deactivation of this fault occurs during the panel reset.
- It is not possible to silence the fault output.
- It is not possible to disable the fault output.
- The fault output may not be programmed to work differently.
- During standby status, terminal [C] closes to terminal [NC].
- In the event of fault, terminal [C] closes to terminal [NO].

ⓘ **Note:** EN54-2 certification applies only when the fault output is not J (EN 54-1) type. Therefore, you must not use this output to manage fault transmission devices.

SC1 and SC2 terminals

Use the SC1 and SC2 terminals for connection of signaling devices that operate at 27.6 V and that need supervision.

The SC1 output activates when the control panel goes into alarm status.

You can program the SC2 output to activate for alarm, delay to alarm, warning, fault status of the panel, zones, and points.

Terminal + and – of SC1 and SC2 outputs operate as outlined in the following points:

- When the output is on standby status, negative is present on terminal + and positive is present on terminal –.
- When the output activates, positive is present on terminal +, and negative is present on terminal –.

You can silence SC1 and SC2 outputs by means of the SILENCE/RESOUND SOUNDERS key:

- When the panel is operating in day mode, the SC1 and SC2 outputs are silenced until you press the SILENCE/RESOUND SOUNDERS key again.
- When the panel is operating in night mode, the SC1 and SC2 outputs reactivate if a new activation condition occurs and, if activation conditions are still present at the end of silence time.

You can disable the SC1 and SC2 outputs.

You can force the SC1 and SC2 outputs to standby by means of the RESET key.

Notes

- SC1 and SC2 outputs accept devices that operate within SELV limits only.
- The SC2 output, if programmed as SC1, is type C.

OC1 and OC2 terminals

OC1 and OC2 are open-collector outputs. They connect to ground when the events you set occur, and return to standby status when the events end.

You can setup these outputs to activate when an alarm, delay to alarm, warning, or fault event occurs on the panel, the zones or points.

You can silence and disable these outputs.

You can setup the output OC1 to signal the telephone line failure so it can combine with a relay, for switching from the primary phone line to the backup line.

You can force the OC1 and OC2 outputs to standby by resetting the control panel.

The OC1 and OC2 outputs activate with a delay equal to the delay to alarm time when the programmed event occurs.

Note: EN54-2 certification applies only when OC1 and OC2 outputs are not C or J or G, EN 54-1 type. Therefore, do not utilize this output to manage the fire alarm device or fire or fault transmission devices or automatic fire alarm system.

24R terminals

Resettable auxiliary power supply for devices that operate at 24 V, 0.5 A max:

- Positive (27.6 V) on terminal 24R
- Negative on terminal GND

This power supply disconnects for two seconds when resetting the control panel, so it is suitable for devices that restore when the power supply disconnects.

In the case of a blackout, the backup batteries guarantee the presence of the voltage on these terminals.

24A terminals

Auxiliary power supply for devices that operate at 24 V, 0.5 A max:

- Positive (27.6 V) on terminal 24A
- Negative on terminal GND

The voltage is always present on these terminals, and it is not resettable, unlike the 24R terminal.

In case of a blackout, the backup batteries guarantee the presence of the voltage on these terminals

RS485 terminals

Use these terminals to connect up to four repeaters and four MFI modules:

- + and - are the serial bus terminals
- 24V and GND are the power supply terminals, 27.6 V, 0.5 A max.

Note: The maximum cable run allowed is 1000 m.

BAT terminals

Use the BAT terminals to connect to the backup batteries.

Connecting addressable devices

The control panel has 3 loops for addressable analogue devices. You can connect a maximum of 128 addressable devices to the control panel.

Every device connected to the loops must have a unique address. You can use 2 or 4 wires for the loop connections.

Note: If you use a 2-wire connection, the EN54-2 certification only applies when the total number of devices connected on each loop side does not exceed 32.

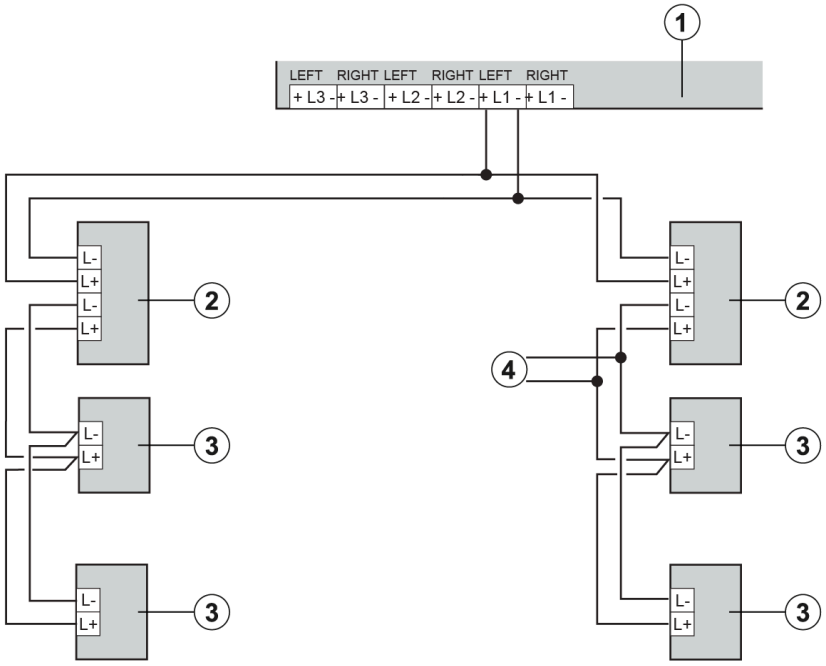
Specify the loop connection type during the programming phase. The following figures illustrate the loop connections:

- Figure 11 illustrates the 2-wire connection to Loop 1.
- Figure 12 illustrates the 4-wire connection to Loop 2.

Whatever the type of connection performed, ensure that any short or open circuit in the wiring does not lead to the loss of more than 32 detectors. It is necessary to fit an isolator every 32 detectors.

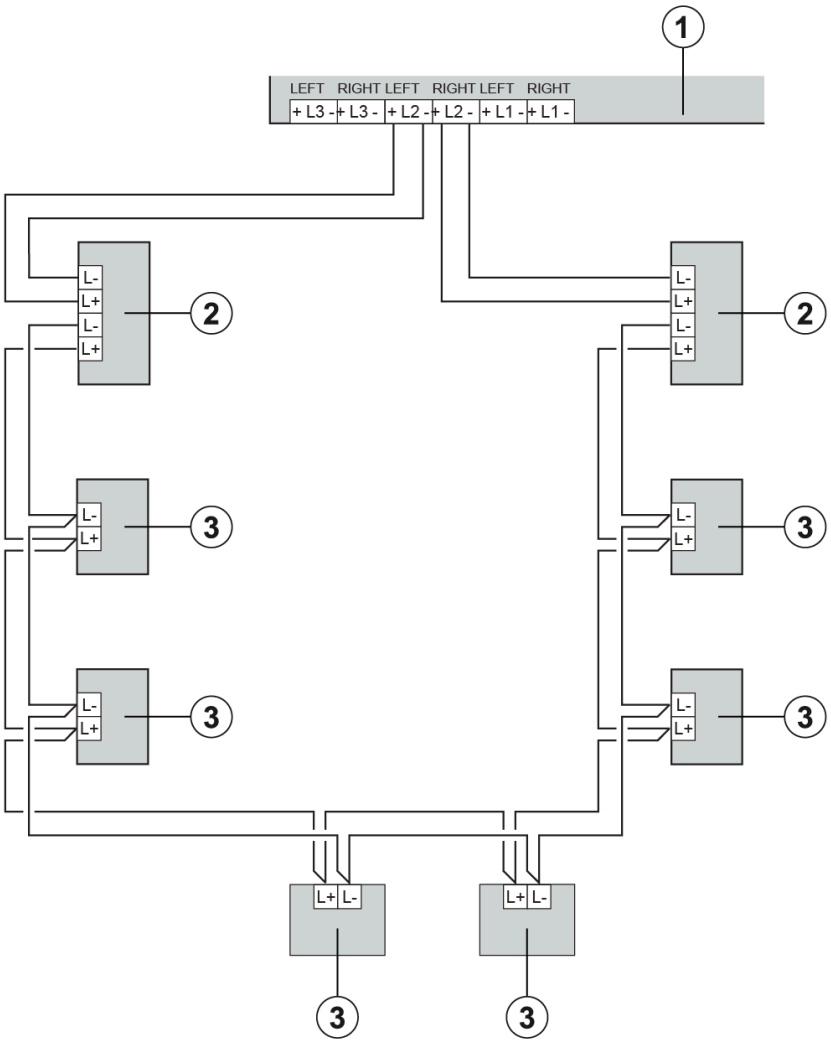
If you use a 2-wire connection type, you must connect the addressable devices on the left side of the loop. Use only shielded cable for all connections, with one end of the shield connected to the SH terminal of the control panel and the other end free.

Figure 11: Wiring diagram of a 2-wire connection



Callout	Description
1	Control panel
2	Isolators
3	Compatible analogue devices (fire detectors, input modules, output modules, manual callpoints)
4	T connection

Figure 12: Wiring diagram of a 4-wire connection



Callout	Description
1	Control panel
2	Isolators
3	Compatible analogue devices (fire detectors, input modules, output modules, and manual callpoints)

Connecting the repeater

For an example of how to connect three repeaters, see Figure 13. The RS485 bus of the control panel, terminals [GND], [+], [-] and [24V], accepts up to four repeaters. Terminals [24V] and [GND] supply the power (27.6 V) to the repeater panels.

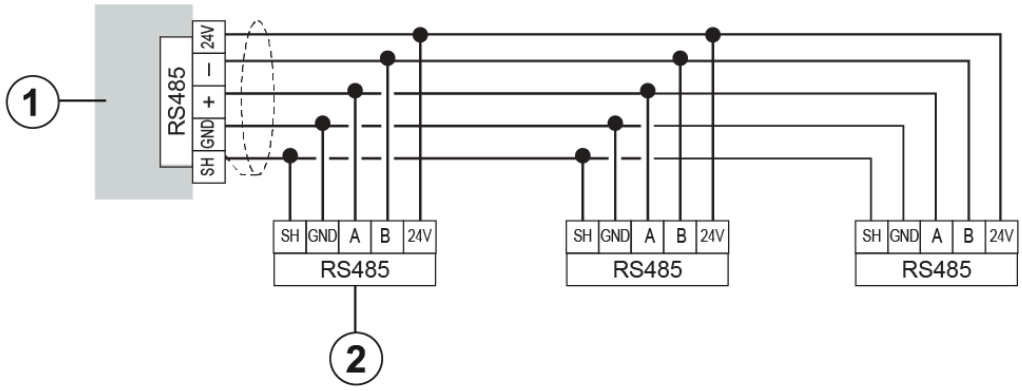
When a mains fault occurs, the repeaters decrease the absorbed power, switching off the LCD display backlighting. By pressing a key, the LCD display backlighting switches on again for 20 seconds. However, the absorption of the repeaters continues to run down the backup batteries and decreases the stand-by supply time of the system.

As there is only one control panel in the system, it must supply the repeaters with power, unless a power supply station is in the system.

Use only shielded cable, with one end connected to the earth terminal of the control panel and other

left free; secure the continuity between several segments of connection.

Figure 13: Wiring diagram of three repeaters connected to the RS485



Callout	Description
1	Control panel
2	Repeater

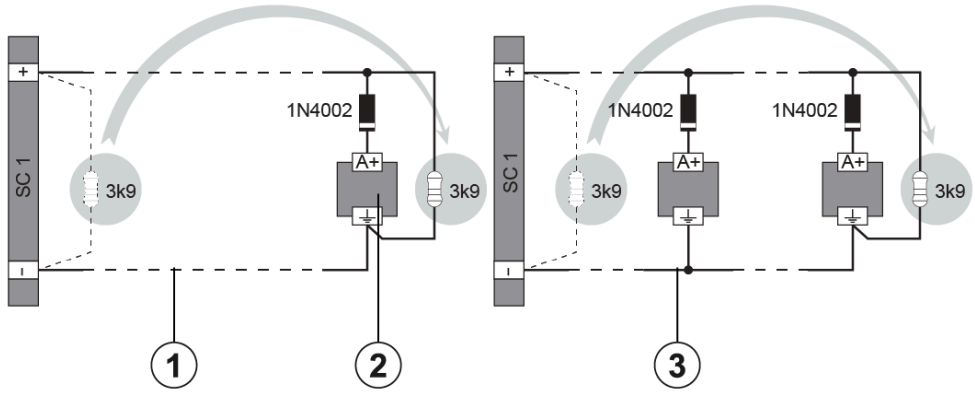
Connecting output devices

The control panel has non supervised outputs and two bell outputs.

It is also possible to connect output devices to the loops using output modules.

The bell outputs are indicated by SC1 and SC2. Figure 14 shows the wiring of the bell outputs.

Figure 14: Wiring diagram of the connection to bell outputs



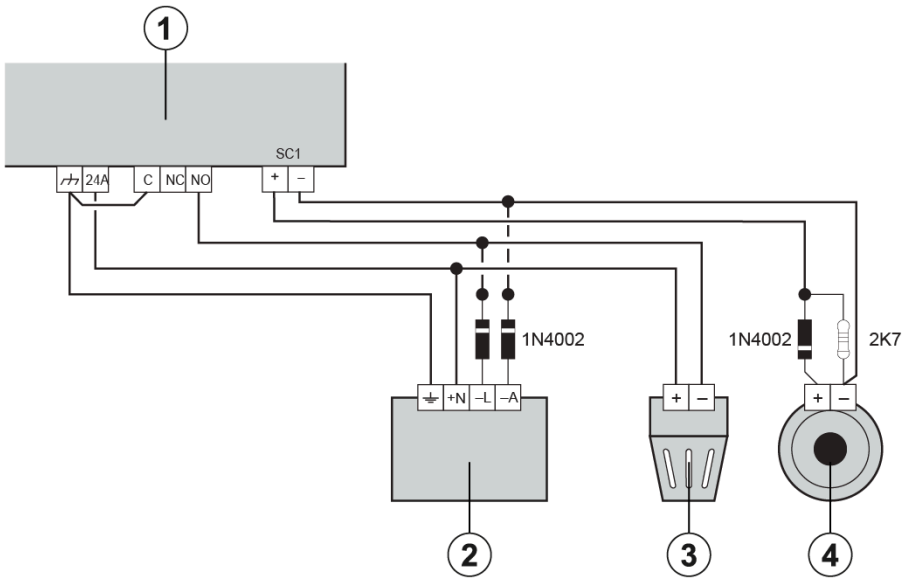
Callout	Description
1	Connection of one device
2	Device activated by positive (27.6 V) on terminal [A+]
3	Connection of several devices

The SC1 and SC2 bell outputs are supervised and silenceable. They can also be disabled. SC2 is also programmable.

Force the bell outputs to standby using the **SILENCE/RESOUND SOUNDERS** button. When a user acknowledges an alarm, you can silence the audible signaling devices and leave the visual signaling devices active until alarm conditions cease.

For example, a connection similar to the wiring diagram in Figure 15 activates the flasher, the bell and the visual and audible signaling device of the self-powered siren in alarm conditions.

Figure 15: Wiring diagram: Non-silenceable and silenceable output connections



Callout	Description
1	Control panel
2	Self-powered siren +N: power supply -L: negative on this terminal activates the flasher -A: negative on this terminal activates the horn
3	Flasher
4	Bell

Using the **SILENCE/RESOUND SOUNDERS** button stops the horn, but not the flasher, which continues to signal alarm status until you press the **RESET** button.

Connecting the mains supply

⚠ **DANGER:** In order to comply with the safety regulations in force, the mains must be equipped with a bipolar isolating device, with a minimum contact distance of 3 mm, for protection against over voltage and short-circuit to Earth. For example, the automatic isolating switch.

⚠ **DANGER:** C.I.E in overvoltage category II. If C.I.E is subjected to transient voltages that exceed those for its design overvoltage category, it requires additional transient voltage protection to be provided external to the equipment.

Pollution degree: PD2

⚠ **CAUTION:** Do not allow the power cable to cross over other wiring. The power cable must be routed and held firmly in place by a cable tie. See Figure 2.

Note: To silence the buzzer permanently during installation, access the program screen, and remove the Jumper J5, see Figure 3, item 32. For more information about accessing the program screen, see Accessing the program screen. The disabled buzzer causes the zone LEDs to flash and the BUZZER OFF message displays alternately with the date and time on the panel display. As a result of this procedure, the timeout for the installer does not change. To reactivate the buzzer, replace the Jumper J5 when the installation process completes.

To connect the mains supply, complete the following steps:

1. Locate the backup batteries in the cabinet. See Figure 2. Secure the batteries to the panel, using the cable ties, in the appropriate opening.
2. Using the jumper supplied, connect the batteries in series.
3. Observing the battery polarity, connect the battery terminals to terminals -BAT+ on Main Board. Wires are supplied.

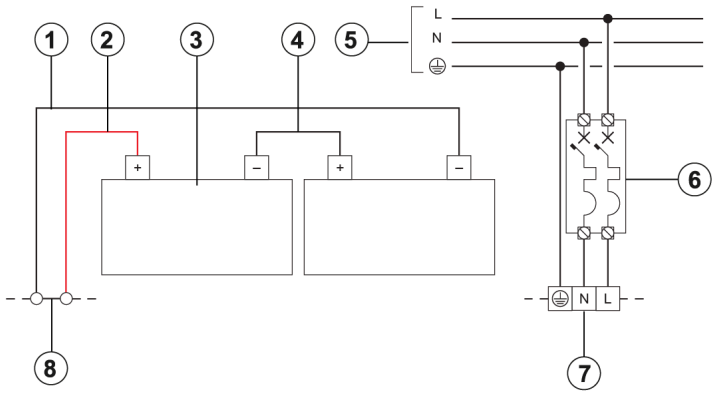
   Note:

   To verify battery efficiency, the charger circuit measures the internal resistance of the batteries. To ensure you receive an accurate reading, use only the cables supplied. Longer cables or those that have an insufficient section may incorrectly simulate an inefficient battery.

   For suitable batteries, see Table 33.
4. Connect the switching power supply with the mains voltage. See callout **48** on Figure 4:
   - Connect the earth wire to the earth terminal
   - Connect the neutral wire to terminal [N]
   - Connect the line wire to terminal [L]

On power up, the control panel resets.

Figure 16: Wiring diagram for the power supply



Callout	Description
1	Black wire
2	Red wire
3	Battery 12V
4	Jumper
5	Mains voltage
6	Automatic isolating switch
7	Power supply
8	Main board

Verifying the functionality of the circuit

The purpose of verifying the circuit's functionality is to ensure the circuit can detect faults.

1. Connect one of the loops’ SH terminals to the ground.
2. Verify that the control panel correctly reports the fault
3. Remove any connection points previously made.

Programming from the panel

The following section provides an overall view of using the user interface programming (main panel) of the control panel.

For PC Programming help, refer to the *FC501 Addressable Fire Control Panels PC Programming Manual*.

Access levels and options

The user interface (main panel) allows access to three authorized access levels. The three access levels are:

1. **Level 1** (**lev.1** or **L1**) allows read-only access to the parameters. The options included in lev.1 are:
   - **ANALYZE** key views the status of the: LOOP, DEVICE, SW ZONES, OUTPUT, NETWORK, TELECOM, OPTIONS, LOG, FW Vers., and PANEL
   - **View LOG**
   - **View lists** key views the lists of: DIS. ZONES, DIS. DEVICES, DIS. PARTS, WALK TEST, FAULTS, WARNINGS and Dev. in TEST
2. **Level 2** (**lev.2** or **L2**) is referred to as the User Level. To access L2, enter the USER PIN (Access Level 2). L2 includes all the operations of L1 and access to the **MODIFY** and **DISABLE** keys. The additional options included in L2 are:
   - **MODIFY** key for: Init MSG (MESSAGE), L2 USER PASSWORD, DAY/NIGHT, TIME and DATE, CLEAR LOG and WALK TEST
   - **DISABLE** key for: DIS LISTS, DEVICE, SW ZONES, OUTPUT, NETWORK, COMMUNIC, FIRE RELAY **Note:** Disable User Passwords and Sounders are only possible at L3
3. **Level 3** (**lev.3** or **L3**) is also referred to as the Installer Level. To access L3, enter the INSTALLER PIN (Access Level 3). L3 includes all of the operations of L1 and L2 and you can also program the system from L3. The programming phase allows you to program the control panel and peripheral devices including detectors, modules, and repeaters in detail. The additional options included in L3 are:
   - AUTO, DEVICES, SW ZONES, OUTPUTS, NETWORK, MAP DEVICE, USB, SYSTEM, DEFAULT, and L3 PWD.

Note: This section shows the operations managed at L3 (Installer Level). Refer to the *FC501 Addressable Fire Control Panels User Manual* for further details about the operations managed at L1 and L2 (User Level).

Operating the system from the panel

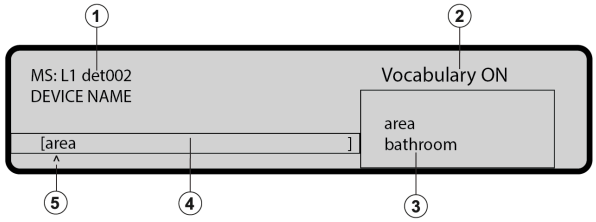
Use the alphanumeric keypad, the cursor keys, the **ESC** key, and the **ENTER** key to manage the system from the user interface (main panel).

Assistant text composition

To simplify the entry of text strings, an assisted procedure has been included, based on a pre-compiled list of 128 vocabulary words with a maximum of 18 characters. When one of the numeric keys is pressed to enter a letter, the first word in the list that begins with that letter will be inserted. The **Up** and **Down** keys loads the next or the previous word in the list.

Activate the assisted entry procedure by pressing the **Up** key for more than 3 seconds. Deactivate the assisted entry procedure by pressing the **Down** key for more than 3 seconds. See Figure 17.

Figure 17: Assisted entry procedure



Callout	Description
1	Device coordinate
2	Assisted procedure active
3	Vocabulary area
4	Entry area
5	Cursor

When the assisted entry procedure is active, the string **Vocabulary ON** blinks on the upper right area of the LCD display. In the Vocabulary area the word currently selected in the row aligned with the Entry area displays. The word that precedes it in the vocabulary displays in the upper row while the next word displays in the lower row. In the Entry area the words used to compose the label display.

To enter a word, press the numeric key (more than one time if necessary) related to the first letter of the word that needs to be entered. If this word is not correct, scroll through the vocabulary using

the **Up** and **Down** keys until a suitable word is found. During the vocabulary scan, the word in the middle row is entered in the Entry area at the cursor position. Use the **Left** and **Right** keys to move the cursor to the beginning of each word.

Entering text

Use the alphanumeric keypad to create labels and enter data and codes. The alphanumeric string cannot exceed 20 characters.

Each time an alphanumeric key is pressed in the selected position, pointed by the cursor, the characters printed on the key will appear in sequence and cyclically as indicated on Table 7.

Table 7: Keys function when entering text

Key	Function
1	Enters ABC1
2	Enters DEF2
3	Enters GHI3
4	Enters JKL4
5	Enters MNO5
6	Enters PQR6
7	Enters STU7
8	Enters VWX8
9	Enters YZ *blank* 9
0	Enters *blank* 0 ⓘ **Note:** Press for more than one second to clear the entered data and return the cursor to its starting point.
Up	Use for upper-case letters
Down	Use for lower-case letters
Right	Use to scroll along the line
Left	Use to scroll along the line
ESC	Use to cancel the operation and return to the previous screen.
ENTER	Use to accept the programmed string. The LCD shows the next screen, if any, or the control panel resets and then the display shows the main screen.

Selection of a single value

Use single selection to select a single value between a set of possible values. The maximum number of values is 8.

ON off

^

The selected value displays in upper case. The selection of a new value automatically deselects the previously selected value.

To select a single value, use the keys in Table 8.

Table 8: Keys function when selecting a single value

Key	Function
Right	Use to move the cursor to the next value position and select the value pointed to.
Left	Use to move the cursor to the previous value position and select the value pointed to.
ESC	Use to cancel the operation and return to the previous screen
ENTER	Use to accept the selected value. The LCD shows the next screen if any, or the control panel resets and then the display shows the main screen.

Selection of multiple values

Use multiple selection to select more than one value between a set of possible values. The maximum number of values is 8.

SUN mon tue wed thu **FRI SAT**

^

The selected values are displayed in upper case.

To select multiple values, use the keys in Table 9.

Table 9: Keys function when selecting multiple values

Key	Function
Up	Use to select the value pointed by the cursor.
Down	Use to deselect the value pointed by the cursor.

Table 9: Keys function when selecting multiple values

Key	Function
Right	Use to move the cursor to the next value position
Left	Use to move the cursor to the previous value position
ESC	Use to cancel the operation and return to the previous screen
ENTER	The LCD shows the next screen, if any, or the control panel resets and then the display shows the main screen.

Entering date and time

The format for date and time is:

hh: mm: ss dd/mm/yy

To enter the date and time, use the keys in Table 10.

Table 10: Keys function when entering date and time

Key	Function
Alphanumeric keypad	Use to enter the date and time digits. To clear all entered digits, press the 0 key for more than one second.
Right	Use to move the cursor to the next digit position.
Left	Use to move the cursor to the previous digit position.
ESC	Use to cancel the operation and return to the previous screen
ENTER	Use to accept the entered date and time. The LCD shows the next screen, if any, or the control panel resets and then the display shows the main screen.

Entering numbers

Use numeric entry to enter numeric data up to 20 digits.

[ ]

^

To enter numbers, use the keys in Table 11.

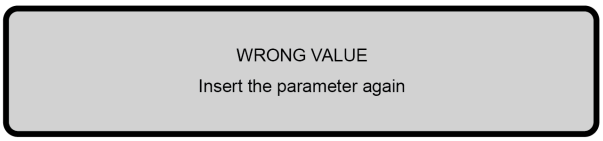
Table 11: Keys function when entering numbers

Key	Function
Alphanumeric keypad	Use to enter the number digits. To clear all entered digits, press the 0 key for more than one second.
Right	Use to move the cursor to the next digit position.
Left	Use to move the cursor to the previous digit position.
ESC	Use to cancel the operation and return to the previous screen
ENTER	Use to accept the entered numeric data. The LCD shows the next screen, if any, or the control panel resets and then the display shows the main screen.

Wrong value message

If you enter an incorrect value, an error message displays for 5 seconds. See Figure 18.

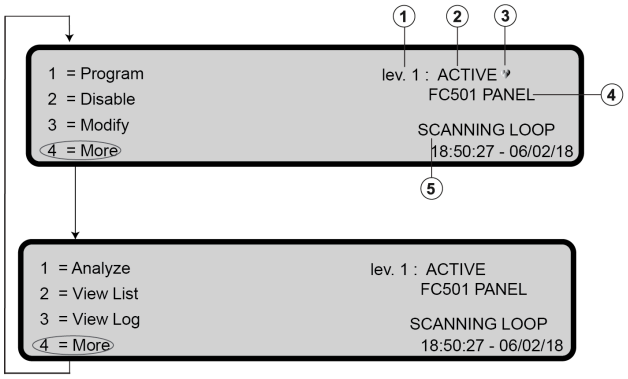
Figure 18: Wrong value screen



The main screen

When the control panel is on standby status, the display shows the front screen. To access the main screen, press Esc. See Figure 19.

Figure 19: Main screen



Callout	Description
1	Access level
2	Control panel status
3	If blinking, the control panel is working properly
4	Control panel name
5	Current phase

On the main screen, the keys have the functions outlined in Table 12.

Table 12: Keys function on the main screen

Key	Function
1	Displays the Program or Analyze menu
2	Displays the Disable or View List menu
3	Displays the Modify menu or the event log
4	Switches between the main screen options groups
Up	Use to increase the brightness of the LCD display
Down	Use to decrease the brightness of the LCD display
Right	Use to increase the contrast of the LCD display

Table 12: Keys function on the main screen

Key	Function
Left	Use to decrease the contrast of the LCD display
ESC	Exit from the main screen, and shows the front screen or event driven screen, if any. By pressing the key for more than three seconds, the panel exits to the level 1.

Note: If you do not press any key for 30 seconds, the display exits from the main screen and shows the front screen.

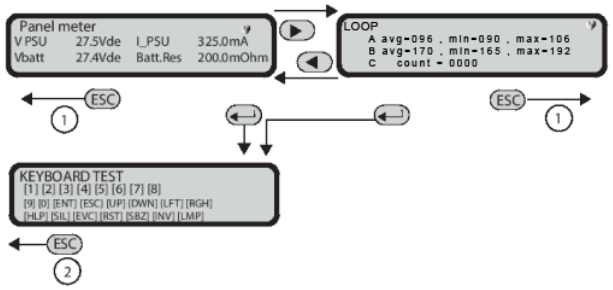
Diagnostic screens

Use the diagnostic screens for the following operations:

- **Panel meter** screen: Use this screen to view some control panel parameters.
- **Loop** screen: Use this screen to view some loop parameters.
- **Keyboard test** screen: Use this screen to test the control panel keypad.

To access the diagnostic screens from the main screen, press and hold the 4 key. See Figure 20.

Figure 20: Interaction between the diagnostic screens



Callout	Description
1	Press ESC key to go to main screen
2	Press ESC key for a minimum of one second to go to main screen

Table 13: Field information on the panel meter screen

Field	Screen display
V PSU	Displays the output voltage of the panel power supply
I_PSU	Displays the output current of the panel power supply. Displays LOW if I_PSU<150 mA.
Vbatt	Displays the battery voltage
Batt.Res	Displays the value of the battery internal resistance plus the battery wiring resistance.

ⓘ **Note:** Vbatt. and Batt.Res display **NO BATT** if the battery voltage is less than 19 VDC or the battery resistance is above 999 milliohm.

LOOP screen

This is a general purpose screen used to display the values of firmware (FW) parameters related to loop management, in real time. The rows labelled A and B display the average, minimum and maximum value of the relevant FW parameter. The row labelled C counts the occurrence of events related to the assigned FW parameter. If you press the 0 key, all the displayed values reset.

Keyboard test screen

To test the control panel keys, use the keyboard test screen. When you press a control key, the relative abbreviation on the display disappears, if the key works.

Accessing the program screen

To access the **Program** screen, on the main screen, select the **Program** option by pressing the 1 key.

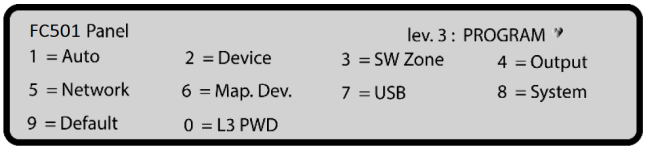
The control panel shows the screen for entering the installer password.

Enter the installer password, and then press Enter.

The default Installer 1 password is 00000.

If the password is correct, the display shows the Program screen. See Figure 21.

Figure 21: The program screen



If the password is incorrect, the display shows the **Wrong Password** screen.

Table 14 outlines the program screen options.

Table 14: Program screen options

Key	Function
1	**Auto**: starts the auto-learning of the loop devices and the RS485 network devices (repeater only).
2	**Device**: starts the selection and programming screen of the loop devices.
3	**SW Zone**: starts the programming screen of the software zones.
4	**Output**: starts the programming screen of the outputs.
5	**Network**: starts the programming screen of the RS485 network, FC500MFI modules.
6	**Map Device**: activates the On Demand device mapping feature.
7	**USB**: starts the programming screen for the management of the USB memory stick.
8	**System**: starts the programming screen of the system parameters.
9	**Default**: starts the default setting restore procedure.
0	**L3 PWD**: starts the screen to modify the installer password. See 0 Key - Add and modify installer passwords.

To esc from the Program screen and return to the main screen, press Esc.

0 Key - Add and modify installer passwords

The control panel supports up to two installer passwords.

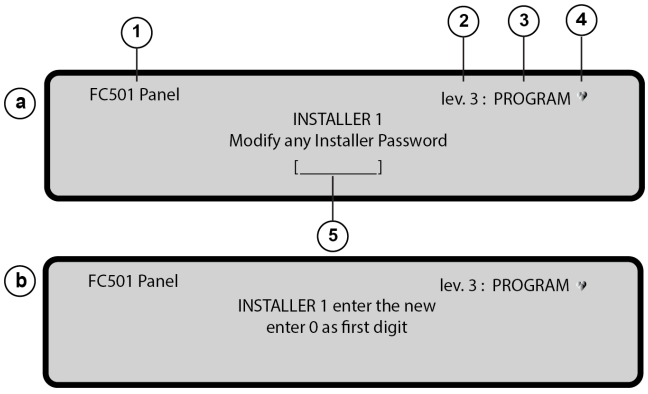
At default, only the installer 1 password is available.

A password becomes available as soon as you modify it the first time.

Note: Only the installer 1 can add new passwords and modify all existing passwords. The installer 2 can modify their own password only.

To add new passwords and modify existing passwords, press the 0 key on the **Program** menu. See Figure 22.

Figure 22: Modify password screens



Callout	Description
1	Control panel name
2	Access level
3	Menu name
4	If flashing, the control panel is working properly
5	Field to insert password

Enter the first digit of the password that you want to add or modify, according to Table 15.

Table 15: First digit of passwords

Password	First digit
Installer 1	0
Installer 2	9

If you enter an incorrect first digit, the control panel emits an error tone.

Enter the four other digits required for the password.

- To clear all digits, press the Esc key for at least one second.
- To exit from the modify password screen without modifying the password, press the Esc key for less than one second.
- To confirm the password, press Enter.

If the password you entered is invalid, the display shows the **Wrong Password** message for five seconds.

If the password you entered is valid, the control panel resets and then the display shows the main screen.

1 Key - Auto-enrolling

Use the **Auto** option from the **Program** menu to enroll the loop devices and the RS485 network devices automatically.

The auto-enrolling consists of three main phases:

- Auto-learning
- Auto-addressing
- Devices mapping.

It is possible to stop the enrolling procedure at the end of each phase: the results are different.

You can perform the auto-enrolling during the installation phase and after changes of the loop and network configurations.

Use the 1 key to select the **Auto** option. See , 0.

The control panel displays a message and executes an action according with the loop status and the control panel status, as you can see in Table 16.

Table 16: Control panel messages and actions versus loop and control panel status

Loop status		Panel status	Messages			
			Differences found!		Automatic zones assignment	Not addressed devices found, start auto-addressing?
1	All devices not addressed	Default				*
2	Some devices addressed and some devices not addressed	Default			* (Applies to already addressed devices only)	
3	All devices addressed	Default			*	
4	Fully addressed, same configuration	Configured				
5	Fully addressed, different configuration	Configured	*	**Accept new configuration**	*	
				Add new devices	* (Applies to new devices only)	
6	Same configuration and not-addressed devices	Configured				*
7	Different configuration and not addressed devices	Configured	*	**Accept new configuration**	* (Applies to already addressed devices only)	*
				Add new devices	* (Applies to new addressed devices only)	*

Note: * indicates that the control panel displays the relative message and executes the relative action.

Auto learning

In the auto-learning phase, the panel looks for all the devices on the loop that you have already addressed with the service tool.

If the control panel detects an open circuit, it prompts you to launch the procedure to locate the loop break: the control panel display shows the number of devices visible on the left and right side of the loop, in this way you can locate the device that is causing the loop break.

If the control panel detects a duplicated address, it prompts you to switch on the LEDs of the involved devices, in this way you can locate the devices with the same address.

Note: If the faults are generated in unsteady situations, for example with devices that start or stop working randomly or faulty contacts between wires, the result of the new operations may be misleading.

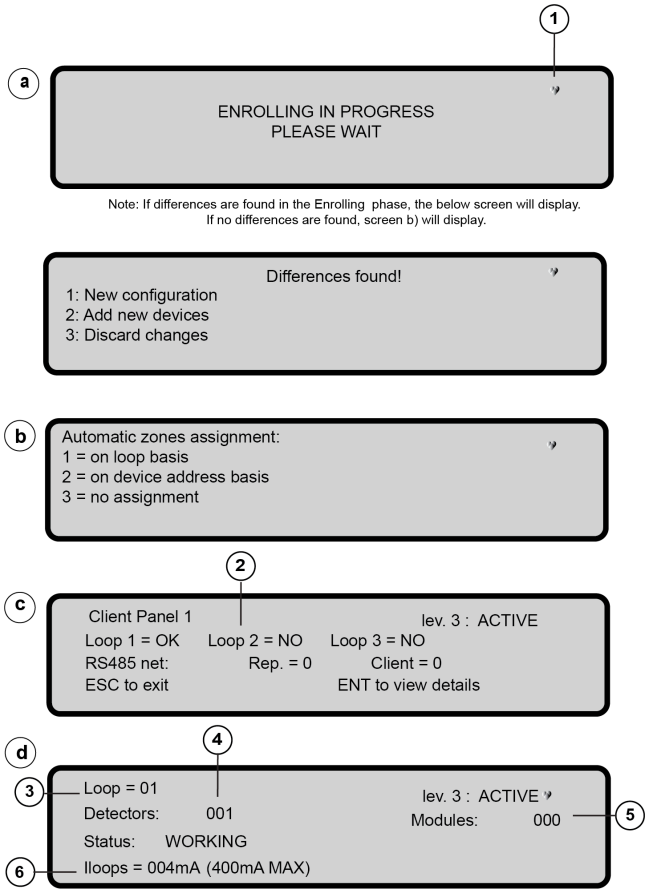
If the control panel detects differences between the configuration in its memory and the auto-learning results, it shows the message **Differences found!** See Figure 24, 1A. For more information, see Differences found.

If the control panel does not detect open circuits and duplicated address, it prompts you to select the automatic zone assignment mode and the sounder trigger mode. See Figure 24, 1B and Figure 24, 1C. For more information, see Automatic zone assignment and Sounders triggered by.

At the end of the auto-learning phase, if you have addressed all the devices on the loop, the control panel display shows the status of the loops and the RS485 network. See Figure 23 c.

To view the loop details, press the **ENTER** key. See Figure 23 d.

Figure 23: Auto-learning screens



Callout	Description
1	If blinking, the control panel is working properly
2	Loop and RS485 network status
3	Loop details
4	Number of detectors found on the loop
5	Number of modules found on the loop
6	Value of the current in the three loops, in real time. Data is updated every 5 s.

To scroll the loops, use the **Up** and **Down** keys.

To return to the main scree, press the **ESC** key.

At the end of the auto-learning phase, if the control panel detects not-addressed devices on the loop, it shows the message **Not addressed devices found, start auto-addressing ?** See Figure 24, 1D.

To start the auto-addressing, press the **ENTER** key. For more information about auto-addressing, see Auto-addressing.

To stop the auto-enrolling procedure, press the **ESC** key.

If you stop the enrolling procedure at the end of the auto-learning phase, the following results occur:

- The control panel takes over all devices with an address between 1 and 128.
- The control panel assigns the default values to the devices options.
- The control panel assigns the initiating devices to the zones according with the **Automatic zone assignment** setup.
- The control panel setup the first trigger zone of the notification devices according with the **Automatic zone assignment** setup.
- The control panel activates the notification devices according with the **Sounders triggered by** setup.
- The control panel generates the faults **NOT PROGRAMMING DEVICE** and **wrong addresses** in case of not addressed devices or with address greater than 128, respectively.

Differences found

If the control panel detects differences between the configuration in its memory and the auto-learning results, it shows the following options:

- **1: Accept new configuration**
- **2: Add new devices**
- **3: Discard changes**

See Figure 24, 1A

If you select the option **Accept new configuration**, the control panel deletes the old configuration and accepts the new configuration.

If you select the option **Add new devices**, the control panel adds new devices and removes the devices that are no longer present.

If you select the option **Discard changes**, the control panel discards the current configuration and keeps the previous configuration.

Automatic zone assignment

The **Automatic zone assignment** feature assigns the enrolled initiating devices (detectors, call points, input modules, and input channels of input-output modules) to the control panel zones, and sets up the first trigger zone for the enrolled notification devices (sounders, beacons, output modules, and outputs channels of input-output modules).

The control panel display shows the following options:

- **1 = on loop basis**
- **2 = on device address basis**
- **3 = no assignment**

See Figure 24, 1B.

On loop basis

The control panel assigns the initiating devices and sets up the first trigger zone, on a loop basis:

- Zone 1 for devices on loop 1 (sub loop 1)
- Zone 2 for devices on loop 2 (sub loop 2)
- Zone 3 for devices on loop 3 (sub loop 3)

On device address basis

The control panel assigns the initiating devices and sets up the first trigger zone, on an address basis:

- Zone 1 for devices with address 1 to 16
- Zone 2 for devices with address 17 to 32
- Zone 3 for devices with address 33 to 48
- Zone 4 for devices with address 49 to 64
- Zone 5 for devices with address 65 to 80
- Zone 6 for devices with address 81 to 96
- Zone 7 for devices with address 97 to 112
- Zone 8 for devices with address 113 to 128

No assignment

The control panel assigns the initiating devices to the zone 0, the system zone, and sets up the zone 0 as the first trigger zone.

Sounders triggered by

The **Sounders triggered by** option sets the event that activates the notification devices.

The control panel display shows the following options:

- **1 = Zone Alarm**
- **2 = Panel Alarm**

See Figure 24, 1C.

If you select the **Zone Alarm** option, the control panel activates the notification devices assigned to a zone, in case of an alarm of that zone.

If you select the **Panel Alarm** option, the control panel activates all the notification devices in case of panel alarm.

Auto-addressing

The auto-addressing phase consists of a sequence of operations to make all the devices accessible by the control panel without executing any previous configuration of the devices during their installation phase.

Use the auto-addressing procedure instead of manually assignment of devices addresses thought the service tool.

The control panel starts the auto-addressing phase if, during the auto-learning phase, it finds not-addressed device or devices with addresses greater than 128.

During the auto-addressing phase, the control panel searches the not-addressed devices, assigns them a temporary address, and sets them at default. See Figure 24, 2A.

At the end of the auto-addressing phase, the control panel display shows the numbers of detectors and modules that it has addressed. See Figure 24, 2B.

To start the device mapping phase, press the **ENTER** key. For more information on the device mapping phase, see Device mapping.

To stop the auto-enrolling procedure, press the **ESC** key.

If you stop the enrolling procedure at the end of the auto-addressing phase, the following results occur:

- The control panel assigns an address to not-addressed devices.
- The control panel takes over all devices.
- The control panel assigns the default values to the devices options.
- The control panel assigns the initiating devices to the zones on the loop basis. For more information, see On loop basis.

- The control panel setup the first trigger zone of the notification devices on the loop basis. For more information, see On loop basis.
- The control panel activates the notification devices assigned to a zone, in case of an alarm of that zone.

Device mapping

The device-mapping phase is a powerful and flexible tool to draw the plant being in front of the control panel, without the use of a PC and the panel configuration software.

You can start the device-mapping phase by pressing the **ENTER** key at the end of the auto-addressing phase.

ⓘ **Note:** You can perform the device-mapping procedure also by selecting the **Map Dev.** option in the **Program** menu.

To perform the device mapping, proceed as follow.

1. Activate all the initiating devices in sequence by reporting the sequence of activation on the map of system: the control panel stores the activation sequence. See Figure 24, 3A
2. Return to the front of the control panel and press the **0** key to stop the device-mapping phase: the control panel display shows the devices on the loop. See Figure 24, 3B.

   In the **time** column, the word **Unique** indicates that on the loop there is only a device of that type, so you do not need to activate it to locate it.

   You can locate the initiating devices and the input modules looking at the activation sequence you reported on the system map.

   You can locate a notification device or an output module by selecting it: the control panel activates the notification devices and the output modules when you select it.
3. Use **Up** and **Down** keys to select a device: when you select a device, the **add** (address) option blinks.
4. If necessary, change the address, and then press **ENTER** to confirm: the address becomes fixed.

Assign each device an address. Ensure that the address meets the following conditions:

- The address does not belong to an older generation device from the FC400 series.
- The address is in the range of 1 to 128.
- The address belongs to a new generation device and the device is present in the list of located devices.
- The address is not a duplicate of an automatically assigned address.

When you try to assign to a device an address already assigned to another device, the control panel display shows the message **nnn Used!**, where nnn is the duplicated address.

To set up the device's options, press the **Right** key.

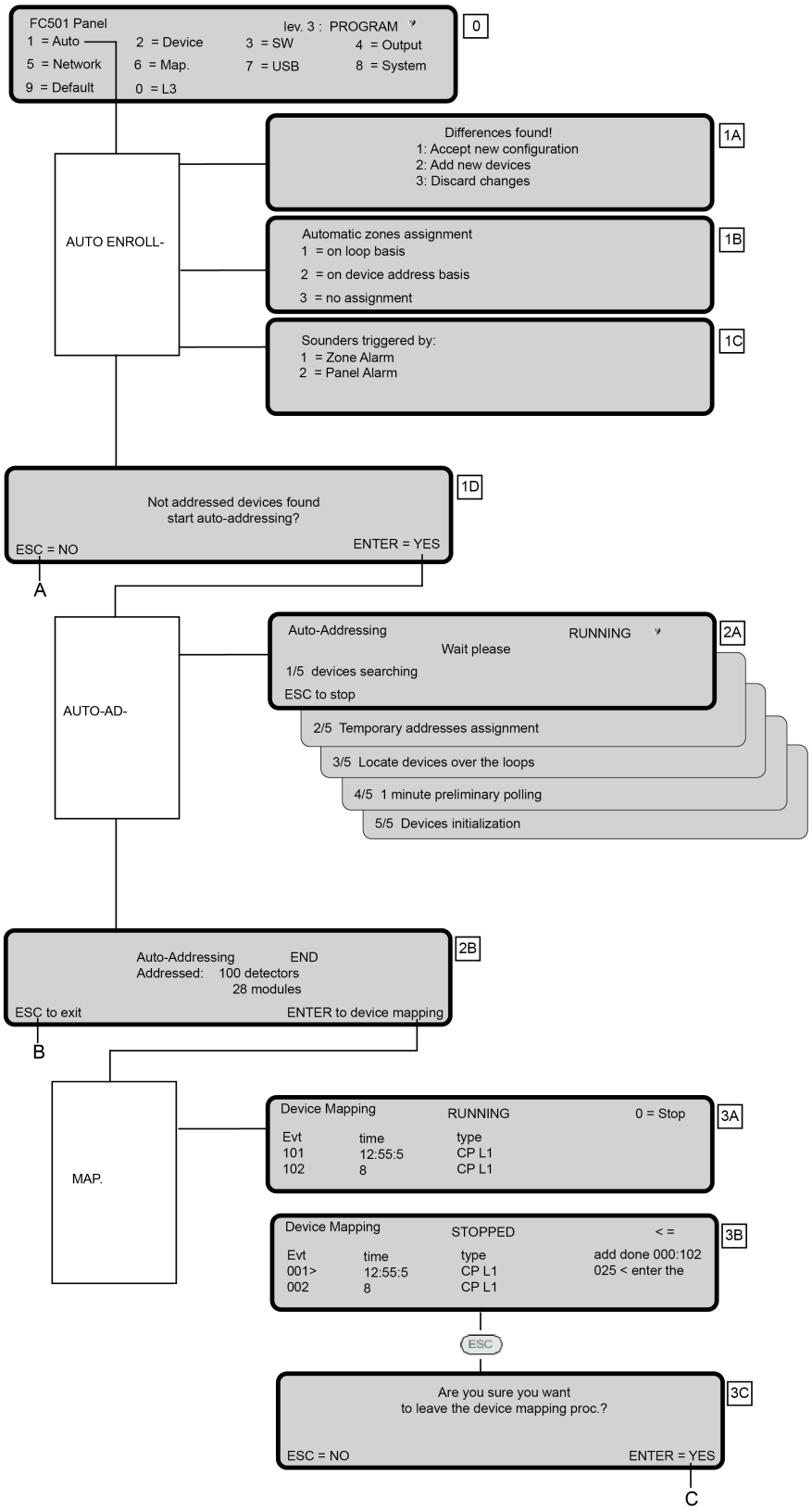
To resume the device mapping, press the **Left** key.

To return to the main screen, press the **ESC** key. See Figure 24, 3C.

If you exit the device-mapping phase without changing the default options of the devices, the following results occur:

- The control panel assigns the default values to the devices options.
- The control panel assigns the initiating devices to the zones on the address basis. For more information, see On device address basis.
- The control panel setup the first trigger zone of the notification devices on the address basis. For more information, see On device address basis.
- The control panel activates the notification devices assigned to a zone, in case of an alarm of that zone.

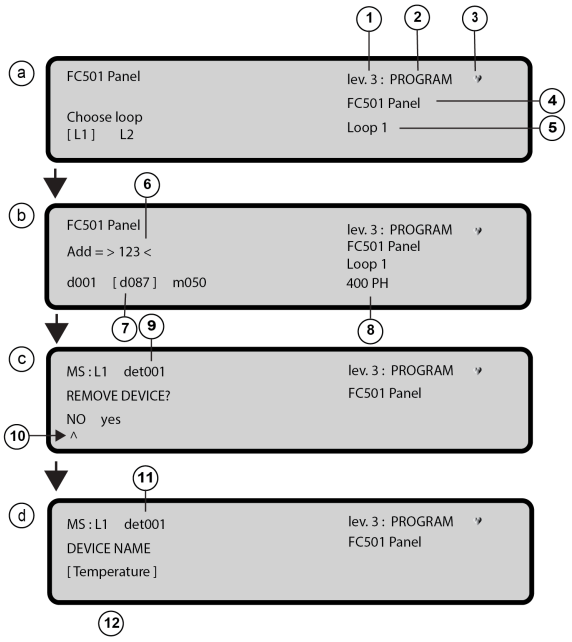
Figure 24: Programming option AUTO



2 Key - Loop devices setup

To set up the loop devices, press the 2 key on the **Program** menu. See Figure 25.

Figure 25: Loop devices setup screens



Callout	Description
1	Access level
2	Menu name
3	If flashing, the control panel is working correctly
4	Name of control panel
5	Name of loop
6	Entered address
7	List of loop's devices: • D001: Detector with address 001 • [d087]: Selected device • m050: Module with address 050 To select the previous device, press the Left key. To select the next device, press the Right key.
8	Selected device. See Table 32.
9	Detector to program
10	Select
11	Detector to program
12	Parameter to program

Select the loop

To select the loop of the device that you want to set up, use the keys in Table 17.

Table 17: Keys function for loop selection

Key	Function
1	Selects loop 1
2	Selects loop 2
3	Selects loop 3
Right	Selects the next loop
Left	Selects the previous loop
ESC	Cancels the operation and returns to the previous screen
ENTER	Confirms the loop selection and displays the screen for device selection. See Figure 25 b.

Select the device

To select a device, use the Left and Right keys to scroll the loop's devices, or use the alphanumeric keypad to enter the device address. See callout 6 in Figure 25:

- An address between square brackets indicates that the address is valid.
- An address between angular brackets indicates that the address is invalid. In this case, the LCD shows the device with the address closer to that you entered. See callout 7 in Figure 25.
- To set up the selected device, press Enter.

Loop devices options

Table 18, Table 19, and Table 20 show some loop devices options. For the description of other loop devices options, see LED, PROG. REMOTE LED, and SOUNDER = BEACON?.

Table 18: Detectors options

Heat detector	Smoke detector	Smoke + Heat detector	Heat + CO detector	Heat + Smoke + CO detector
Remove device? No Yes	Remove device? No Yes	Remove device? No Yes	Remove device? No Yes	Remove device? No Yes
Working Mode: DAY: A2S CR A1R		Working Mode: DAY: Temp=A2S A1R DIS	Working Mode: DAY: CO=Default Enhanced Disabled	Working Mode: DAY: Universal High Immunity
Working Mode: NIGHT: A2S CR A1R		Working Mode: NIGHT: Temp=A2S A1R DIS Smoke=Default Enhanced Disable	Working Mode: NIGHT: CO=Default Enhanced Disabled	Working Mode: NIGHT: Universal High Immunity
		Working Mode: DAY: Smoke=Default Enhanced Disable	Working Mode: DAY: Temp=A2S A1R DIS	
		Working Mode: NIGHT: Smoke=Default Enhanced Disable	Working Mode: NIGHT: Temp=A2S A1R DIS	
Detector label	Detector label	Detector label	Detector label	Detector label
Assigned zone	Assigned zone	Assigned zone	Assigned zone	Assigned zone
Detector base: Standard Isolator Sounder Addressable	Detector base: Standard Isolator Sounder Addressable	Detector base: Standard Isolator Sounder Addressable	Detector base: Standard Isolator Sounder Addressable	Detector base: Standard Isolator Sounder Addressable

ⓘ **Note:** The underlined options are the default options

Table 19: Callpoint, generic module and DDM module options

Callpoint	Generic module	DDM module
Remove device? No Yes	Remove device? No Yes	Remove device? No Yes
Callpoint label	Module label	Module label
Assigned zone		Detector type CNV conventional GSO 4-20mA source GSI 4-20mA sink
	Channel options, see Table 20	Channel options, see Table 20

Note: The underlined options are the default options

Table 20: Channels options

Generic digital input channel (loop devices)	Generic digital output channel (loop devices)	DDM input channel
Working mode B NO C NO C NC		
Input label	Output label	Input label
Assigned zone	Trigger zone#1	Assigned zone
	Trigger zone#2	
	Trigger zone event ALA Alarm DLY Delay to alarm WAR warning FAU Fault TST Test DK Double Knock	
	Silencable On Off	
	Trigger zone#3 Trigger zone#4 Trigger point#1 Trigger point#2 Trigger point#3	

Note: The underlined options are the default options

LED

Use the LED option to locate the selected device by switching on its LED:

- To switch on the device's LED, select **ON**
- To switch off the device's LED, select **OFF**
- To not change the device's LED status, select **SKP**

To apply the selection, press Enter.

Note: When you enable the LED option of a beacon, the beacon starts to flash. When you enable the LED option of a sounder, the sounder starts to sound.

PROG. REMOTE LED

The detectors have an output to connect a remote LED that activates when the detector goes into alarm status.

Use the PROG. REMOTE LED option to set up further events for activation of the detector's remote LED output.

SOUNDER = BEACON?

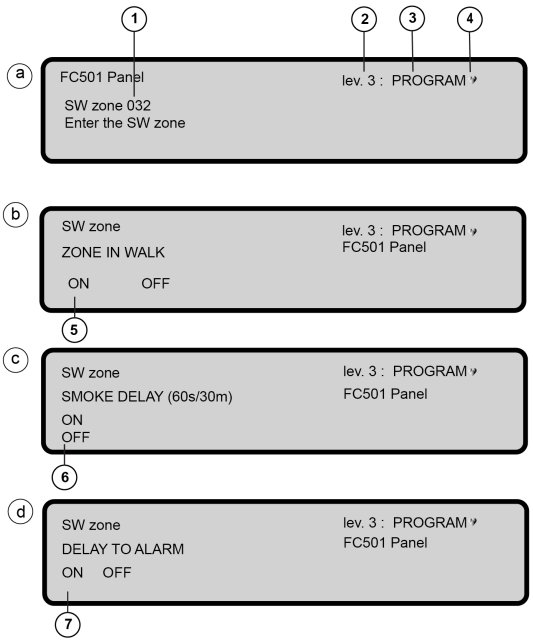
Use this option to select different events for activation of sounder and beacon, on a sounder-beacon.

- To apply the same activation events to the sounder and the beacon, select **Yes**.
- To apply different activation events to the sounder and the beacon, select **No**.

3 Key - Software zones setup

To set up the software zones, press the 3 key on the **Program** menu. See Figure 26.

Figure 26: Software zones setup screens



Callout	Description
1	Software zone number
2	Access level
3	Menu name
4	If flashing, the control panel is working correctly
5	Select the option
6	Select the option
7	Select the option

To select the software zone that you want to set up, use the keys in Table 21.

Table 21: Keys function for software zone selection

Key	Function
Right	Use to select the next software zone
Left	Use to select the previous software zone
ESC	Cancels the operation and returns to the previous screen
ENTER	Confirms the selection and displays the screens for software zone setup

If the software zone does not exist, the warning message **WRONG VALUE! Enter the parameter again** displays for 5 seconds. After 5 seconds the user interface returns to the chosen software zone screens.

Zone name

Enter the zone label (20 characters maximum) using the alphanumeric entry procedures.

Zone in WALK TEST

Use the walk test option to test the software zone's initiating devices.

When you activate a device in walk test mode, the control panel memorizes the WALK TEST event in the event log, without generating an alarm status.

Use the Left and Right keys to select the software zone's devices that you want to put in walk test mode.

- To test all software zone's devices, select **ALL**
- To test the software zone's detectors only, select **DET**
- To test the software zone's manual call points only, select **CP**

Note: To disable the walk test mode, select **OFF**.

To confirm the selection, press Enter.

The Test LED lights up indicating that there is at least one software zone in walk test mode.

You can put more than one software zone in walk test mode at the same time.

Sounders on (3s)

If you want the zone's sounders to activate for three seconds when you activate a zone's device that is in walk test mode, select **YES**.

SMOKE DELAY (60s/30min)

For each zone, program the delayed activation of smoke detectors according to the following schedule.

If the smoke level exceeds the alarm threshold, the panel does not signal anything at first. After 60 seconds, if the smoke level is still above the threshold, the system goes into alarm condition. Otherwise, there are no signals. If a new alarm from the same detector or the activation of another detector in the same zone occurs within 30 minutes, the control panel goes into alarm status.

To set up this option, see Selection of a single value.

Delay to alarm

If you enable this option, the control panel goes into delay-to-alarm status when you activate an initiating device of the software zone.

If the initiating device is still activated at the end of the delay-to-alarm time, the control panel goes into alarm status.

To set up this option, see Selection of a single value.

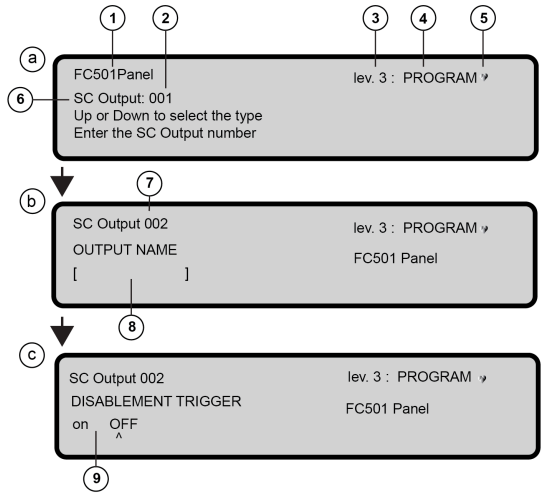
DLY ALARM TIME (min)

If ON is selected for the option **Delay to Alarm** you can enter the zone relevant delay-to-alarm time. The possible value ranges from 0 (no delay) to 9 minutes. Use the Up and Down keys to increment and decrement the value.

4 Key - Control panel outputs setup

To set up the control panel outputs, press the 4 key on the **Program** menu. See Figure 27.

Figure 27: Control panel outputs setup screens



Callout	Description
1	Control panel name
2	Output number
3	Access level
4	Menu name
5	If flashing, the control panel is working properly
6	Output type
7	Output number
8	Enter output label
9	Select ON or OFF

To select the control panel output that you want to set up, use the keys in Table 22.

Table 22: Keys function for output selection

Key	Function
Alphanumeric keys	Enters the output number: 1 or 2
Up and Down keys	Scrolls the output type: SC and OC
ESC	Cancels the operation and returns to the previous screen
ENTER	Confirms the selection and displays the screens for output setup

If the output does not exist, the warning message **WRONG VALUE! Enter the parameter again** displays for five seconds, and then the display shows again the screen for output selection.

Output Name

Enter or modify the relevant output name using the alphanumeric keypad. The maximum number of characters is twenty.

Set As SC1

When set as YES, the relevant output will behave as the Sounder Circuit 1 (SC1). This allows redundant output circuits to drive site sounders. The default setting is NO. Setting the option to YES will end the programming sequence for that output.

ⓘ **Note:** The panel on board open collector outputs (OC1, OC2) may not be programmed to act as SC1.

Panel Alarm Trigger

When the **PANEL ALARM TRIGGER?** option is set to YES, the relevant output becomes active on the panel alarm condition. Alternatively, a more specific trigger condition may be defined for the output. The default setting is YES.

Disablement Trigger

The **DISABLEMENT TRIGGER?** option activates the relevant output if any system part is disabled. The default setting is NO. See Figure 27 c.

ⓘ **Note:** This option is available only if the option **PANEL ALARM TRIGGER** for the same output is set to NO. Setting this option to YES ends the programming sequence for the output. Outputs which have the **DISABLEMENT TRIGGER?** option enabled are not silenceable.

This option is also available for the panel FIRE relay, for the output modules, and for the input and output modules.

Trigger Zone 1

Select the first zone for which events, defined later, the output will become active. The entry 0000 means No Zone. Numeric entry modes range from 0 to 32.

Trigger Zone 2

Select the second zone for which events, defined later, the output will become active. The entry 0000 means No Zone. Numeric entry modes range from 0 to 32.

Trigger Event

Define, for both trigger zones, the event types valid to activate the relevant output. The event type codes are shown in Table 23.

Table 23: Trigger Event Codes

Code	Event Type
ala	Alarm
dly	Delay to Alarm
war	Warning
fau	Fault
tst	Test
dk	Double Knock

You can select more than one trigger event using the multiple selection mode. The selected events are valid for all trigger zones.

When zones trigger condition act in OR mode, it is sufficient that the trigger condition of a single zone is matched to activate the output.

Silenceable

Use SILENCEABLE to select if the output stays active until the **SILENCE/RESOUND SOUNDERS** key is pressed (on option set) or stays active until the **RESET** key is pressed (off option set).

When a SILENCEABLE output is silenced, you may reactivate it by pressing the **SILENCE/RESOUND SOUNDERS** key again.

Monostable

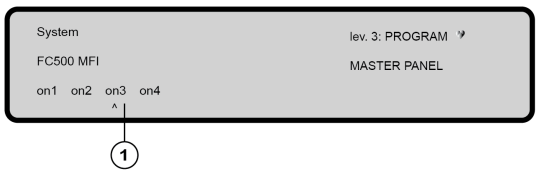
Set MONOSTABLE to ON to automatically deactivate the relevant output when the MONOST. OUTPUT TIME elapses.

The MONOST. OUTPUT TIME is set in the SYSTEM section of the PROGRAM menu and its value is valid for all outputs.

5 Key - MFI modules enrolling

To enroll the MFI modules, press the 5 key on the **Program** menu. See Figure 28.

Figure 28: MFI modules enrolling screen



Callout	Description
1	The ^ symbol indicates the selected module

To enroll the MFI modules, complete the following steps.

1. Use the 5 Key to select the **Network** option from the **Program** screen.
2. Use the Left and Right keys to select the MFI module that you want to enroll: the ^ symbol shows the selected module.
3. To enroll the selected module, press the Up key: ONx indicates that the x module is enrolled.

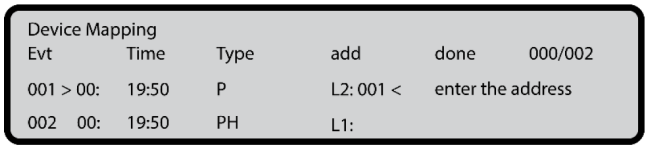
   To remove the selected module, press the Down key: onx indicates that the x module is not in configuration.
4. Press Enter to confirm.

For features and address setup of the MFI module, refer to the MFI module instructions.

6 Key - Devices mapping

To modify the devices addressing scheme, press the 6 key on the **Program** menu. See Figure 29.

Figure 29: Devices mapping screen



Use the on demand devices mapping in a system where the addressing scheme is well known, because all devices are singularly addressed using the service tool or the device mapping feature embedded in the auto-enrolling process.

This option is not intended to enroll new devices on the loops. Use the auto-enrolling process to enroll new devices on the loops.

For more information about the auto-enrolling process, see 1 Key - Auto-enrolling.

In contrast to the device mapping feature embedded in the auto-enrolling process, the on demand version does not automatically modify devices labels and assigned zone.

The control panel lists all devices that it finds on the loops. The control panel activates the only output devices when you select them in the list.

For devices mapping, use the keys in Table 24.

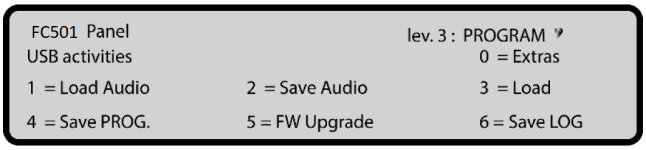
Table 24: Keys function on the devices mapping screen

Key	Function
Alphanumeric keys	Enters new address
Up	Long press: Starts automatic scrolling of previous events in the list. Short press: Scrolls to the previous event in the list. **Note:** To stop the automatic scroll, short press the **Up** or **Down** key.
Down	Long press: Starts automatic scrolling of next events in the list. Short press: Scrolls to the next event in the list. **Note:** To stop the automatic scroll, short press the **Up** or **Down** key.
Right	Displays the device setup screens
ESC	Ends the mapping procedure and exit
ENTER	Confirms the entered address

7 Key - USB activities

To perform the USB activities, press the 7 key on the **Program** menu. See Figure 30.

Figure 30: USB activities screen



The USB activities screen includes the following options:

- 0) Extra
- 1) Load Audio
- 2) Save Audio
- 3) Load programming
- 4) Save programming
- 5) FW Upgrade
- 6) Save LOG

To select the required USB activity, use the keys in Table 25.

Table 25: Keys function on the USB activities screen

Key	Function
0	Load the languages present in the USB key pen drive while the panel is running. See note 1 and Figure 32. Download the languages from the USB pen drive supplied with the panel or from the FireClass website.
1	Load the audio file containing the voice messages from the USB pen drive to the panel.
2	Save the current audio messages from the panel to the USB pen drive.
3	Load the programming data from the USB pen drive to the panel. See note 2.
4	Save the current panel programming data from the panel to the USB pen drive.
5	Upgrade the panel Firmware from the USB pen drive. See notes 3 and 4.
6	Save the panel event logger to the USB pen drive.
ESC	Exits from the USB activity result screen

Note:

1. You can replace the second control panel language also at the first control panel power-up and at the end of the control panel firmware upgrade. For more information see, Control panel language.
2. The loaded data will overwrite the current data in the panel.
3. The file containing the expected firmware version to upgrade the panel has to be present in the F_FW folder in the pen drive.
4. Firmware upgrade of the repeater and the MFI module is not possible using the USB pen drive.

Figure 31: Example USB activity

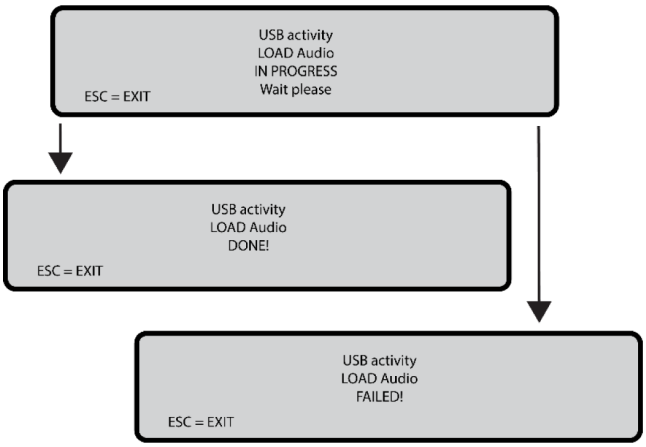
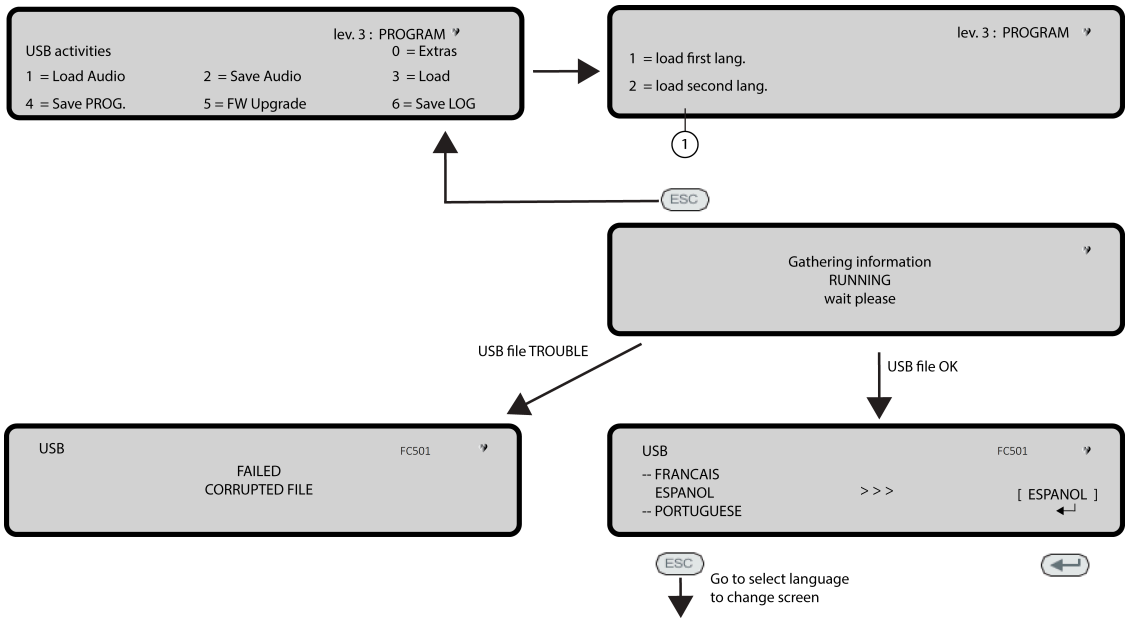


Figure 32: Language strings download during panel run time

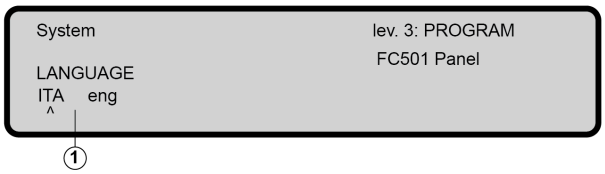


Callout	Description
1	Choice of language

8 Key - System options setup

To set up the system options, press the 8 key on the **Program** menu. The display shows the screen to set up the language of the display messages. See Figure 33.

Figure 33: System language setup screen



Callout	Description
1	Choose language

To set up the system language, use the keys in Table 26.

Table 26: Keys function for system language setup

Key	Function
Right	Selects the next option
Left	Selects the previous option
ESC	Cancels the operation and return to the main screen
ENTER	Confirms the selection and displays the next option. See Panel ID.

At default, you can choose between Italian and English for the LCD messages. To set up different languages through the control panel, see 7 Key - USB activities and Control panel language. To set up different languages through the console, refer to the console's instructions.

Panel ID

Enter up to four digits to identify the configuration file system. Ensure you can distinguish it from other configuration files.

Panel type

- Select **-L** for the FC501-L panel.
- Select **-H** for the FC501-H and FC501-HK panels.

Battery type

Select the battery connected to the panel.

Day night mode

The display for programming Day, Night, or Auto mode is shown. If you choose Auto mode, set the transition time from one mode to another. See the **DAY MODE** LED changing status.

Monst. Output Time

Enter the period of time that the outputs, with the monostable option set, will stay active when triggered. The value ranges from 1 minute to 30 minutes with a default value of 3 minutes. The mono-stable output time is valid for the entire system.

Delay to alarm time

Enter the delay to alarm time in minutes. The maximum time is 9 minutes. The total time for Delay to alarm time and investigation time should not exceed 10 minutes.

Copy on zones

Select the YES option using the cursor keys to copy the same Delay to alarm time in all the zones.

Enable screen saver

Select the YES option using the cursor keys to display the customizable front screen. If you select NO, it is permanently removed.

2 wire loops

Each loop may be individually set to work in 2 wires mode (multiple selection). When the 2 wires mode is selected, it is possible to connect devices on both the left and right sides of the loops (2 spurs). This allows for the connection of up to 6 spurs to the panel, mimicking a 6 zones conventional panel.

Note:

- In all descriptions of the events, the devices are indicated as belonging to a loop. In the case of open loops, it is not possible to distinguish between the left and right side. Loop concept, therefore, is not meaningful by definition, and localization is performed using zones as in the case of conventional panels.

- If devices are addressed by the Service Tool, there are two options to set them in 6 zones which correspond to the 6 spurs:
  a. Connect addresses from 1-16 to the left side of loop 1, from 17-32 to the right side of loop 1, and so on. Then perform the enroll procedure and choose “By address” option for zone assignment (devices on the left side of loop 1 will be assigned to zone 1, those on the right side of loop 1 to zone 2, and so on.
  b. Assign the correct zone to each device, via PC console or control panel LCD.
- If devices are not addressed, a mapping procedure is performed to locate each device and assign the correct zone to it.

9 Key - Restore factory default

To restore the control panel factory default, press the 9 key on the **Program** menu. See Figure 34.

Figure 34: Factory default restore screen

To abandon the factory default restore, press Esc.

To restore the factory default, press Enter.

ⓘ **Note:** The procedure to restore factory default has no effect on the IP module. To restore the IP module to factory default, refer to the console instructions.

Control panel language

The control panel can memorize two user interface languages:

- The default first language is Italian.
- The default second language is English.

You can replace the second language at the first panel power up and at the end of the panel firmware upgrade. To replace the second language, complete the following steps. See Figure 35.

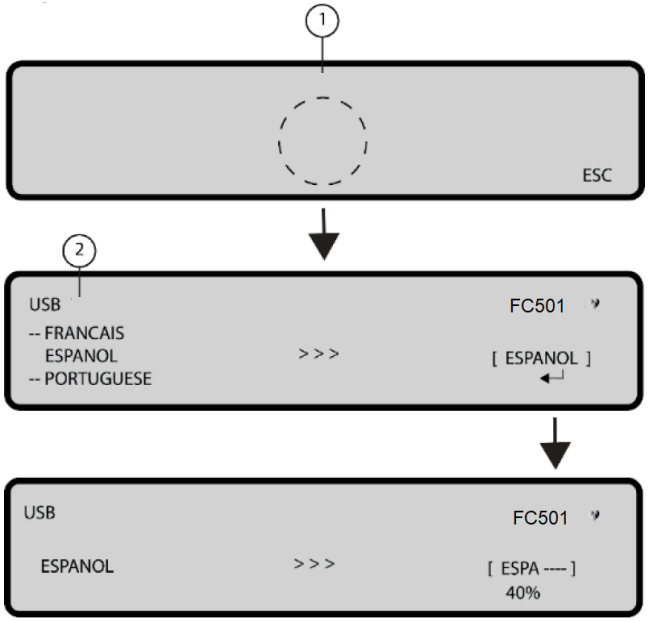
1. Download the language file from the Fireclass website into the folder F_LANG on a USB pen drive, or copy the language file from the USB pen drive supplied with the panel, into the folder F_LANG on a USB pen drive.
2. Insert the USB pen drive into the USB connector of the panel.
3. Power-up the panel or start the firmware upgrade procedure: wait for the panel scans the USB pen drive for a valid language file. See callout 1 in Figure 35.

   If the panel finds a valid language file, the display shows the language list. See callout 2 in Figure 35.
4. Use the Up and Down keys to scroll the language list.
5. Press Enter when the display shows the desired language on the right: wait for the panel copies the selected language from the USB pen drive to its memory.

If the language copy succeeds, the panel continues with the next configuration step.

If the language copy fails, the panel shows a fault message and restore the default English language.

Figure 35: Replacing second control panel language



Callout	Description
1	Language list waiting screen
2	List of languages in the USB pen drive

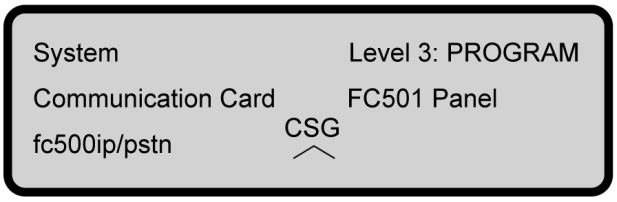
Changing the communication functionality

About this task:
The panel can operate with either PSTN/IP or CSG functionality at the one time. By default, PSTN/IP functionality is enabled.

Choose the preferred communication functionality:

- To switch from PSTN/IP to CSG, click **Program** > **Setup** > **CSG**. See the following figure:

Figure 36: Selecting the CSG functionality



If you switch from PSTN/IP to CSG or from CSG to PSTN/IP, the panel displays a **The system will restart** message for five seconds and then it restarts.

- If you click **Communication Card** in the FC500 console, you must restart the panel manually to apply the new settings.
  - To initiate a manual restart, click **Program** > **System** > **Restart**.

Disabling items

To disable the items listed in Table 27, use the disable menu.

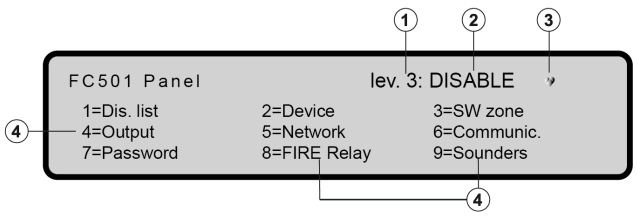
Table 27: Disable options

Key	Description
1	Dis. list: Displays the lists of disabled items
2	Device: Disables loop devices
3	SW zone: Disables software zones
4	Output: Disables the control panel outputs
5	Network: Disables network devices
6	Communic.: Disables the communicator
7	Password: Disables passwords **Note:** Only the installer 1 can access this option.
8	FIRE Relay: disables the FIRE relay
9	Sounders: Disables sounders

To access the disable menu, complete the following steps:

1. On the main screen, select the **Disable** option by pressing the 2 key.
2. Enter a valid password, then press Enter.
   At default, only the installer 1 password is active and it is 00000.
   After entering a valid password, the display shows the disable menu. See Figure 37.

Figure 37: Disable menu



Callout	Description
1	Access level
2	Menu name

Callout	Description
3	If flashing, the control panel is operating normally
4	Options

3. To select the required option, press the relative key.

   To return to the main screen, press Esc.

   For information about the Password and Sounders options, see 7 Key - Disable passwords and 9 Key - Disable sounders.

   For information about the other options, refer to the *FC501 Addressable Fire Control Panels User Manual.*

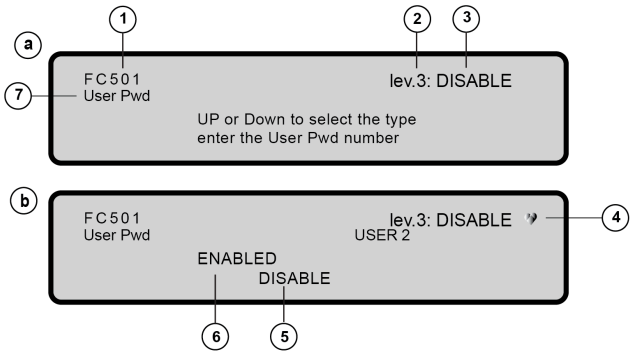
7 Key - Disable passwords

Use the **Password** option to disable and enable the passwords.

- Only the installer 1 can disable the passwords.
- You cannot disable the installer 1 and user 1 passwords.
- You cannot disable not-available passwords. To add new passwords, see see 2 Key - Add and modify passwords.

To disable and enable the passwords, press the 7 key on the **Disable** menu.

Figure 38: Disable and enable passwords screens



Callout	Description
1	Control panel name
2	Access level
3	Menu name
4	If blinking, the control panel is working properly
5	Request to enable or disable
6	Current status
7	Password type

Select the password

To select the password that you want to disable or enable, use the keys in Table 28.

Table 28: Keys function on the selecting password screen

Key	Function
Up and Down	Scolls the password type • Inst. Pwd: Installer password • User Pwd: User password
ESC	Cancels the operation and returns to the previous screen
ENTER	Confirm the selection and displays the screen to disable or enable the password

Disable or enable the password

The display shows the current status of the selected password. See Figure 38 b. To disable or enable the selected password, use the keys in Table 29.

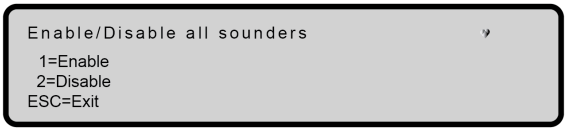
Table 29: Keys function on the password disable screen

Key	Function
ESC	Cancels the operation and returns to the previous screen
ENTER	Disables or enables the password. The panel resets and then the display shows the main screen.

9 Key - Disable sounders

To disable and enable all the sounders on the SC1 terminals, SC2 terminals, and on the loops, use the **Sounders** option. To disable and enable the sounders, press the 9 key on the **Disable** menu. See Figure 39.

Figure 39: Disable and enable sounders screen



To cancel the operation, press Esc: The display returns to the previous screen.

To disable all sounders, press 2: The panel resets and then the display shows the main screen.

To enable all sounders, press 1: The panel resets and then the display shows the main screen.

Modifying items

To perform the actions described in Table 30, use the modify menu.

Table 30: Modify options

Key	Description
1	Init MSG: Modifies the control panel label
2	L2-user password: Adds and modifies user passwords **Note:** Only the installer 1 can access this option.
3	Day/Night: Modifies the control panel operating mode
4	Time and Date: Modifies the control panel time and date
5	Clear LOG: Clears the event log
6	Walk test: Performs the zones walk test

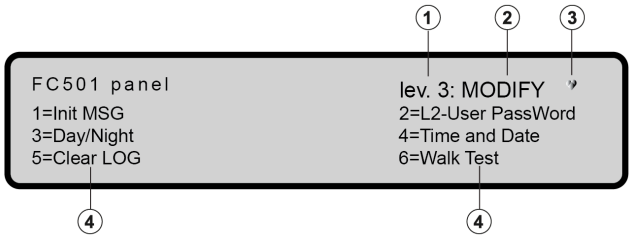
To access the modify menu, complete the following steps:

1. On the main screen, select the **Modify** option by pressing the 3 key.
2. Enter a valid installer password, then press Enter.

   At default, only the installer 1 password is active and it is 00000.

   After entering a valid password, the display shows the modify menu. See Figure 40.

Figure 40: The modify menu



Callout	Description
1	Access level
2	Menu name
3	If flashing, the control panel is operating normally
4	Options

3. To select the required option, press the relative key. To return to the main screen, press Esc.

   For information about the option L2-user password, see 2 Key - Add and modify passwords.

For information about the other options, refer to the *FC501 Addressable Fire Control Panels User Manual*.

2 Key - Add and modify passwords

The control panel supports up to eight user passwords.

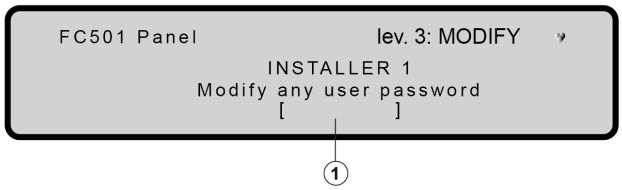
At default, only the user 1 password is available.

A password becomes available as soon as you modify it the first time.

Note: Only the installer 1 can add new passwords and modify all existing passwords.

To add new passwords and modify existing passwords, press the 2 key on the **Modify** menu. See Figure 41.

Figure 41: Modify password screens



Callout	Description
1	Enters the password in this field

Enter the first digit of the password that you want to add or modify, according with Table 31.

Table 31: First digit of passwords

Password	First digit
User 1	1
User 2	2
User 3	3
User 4	4
User 5	5
User 6	6
User 7	7
User 8	8

Enter the four other digits required for the password, then press Enter. The control panel resets and then the display shows the main screen.

System default

Zone assignment

To mimic a conventional panel, the devices over the loops are automatically assigned to a predefined zone. The are two scenarios for zone assignment:

1. If you exit at the end of the auto addressing phase without executing the device mapping process, the zones assignment is as follows:
   - Zone 1: all the devices located on Loop 1 (sub loop 1)
   - Zone 2: all the devices located on Loop 2 (sub loop 2)
   - Zone 3: all the devices located on Loop 3 (sub loop 3)
2. If you execute the Device Mapping process, the device address to zone assignments at the end of the process are as follows:
   - From address 01 to address 16 assigned to zone #1
   - From address 17 to address 32 assigned to zone #2
   - From address 33 to address 48 assigned to zone #3
   - From address 49 to address 64 assigned to zone #4
   - From address 65 to address 80 assigned to zone #5
   - From address 81 to address 96 assigned to zone #6
   - From address 97 to address 112 assigned to zone #7
   - From address 113 to address 128 assigned to zone #8

If an address is not manually assigned to a device, either through the FC490ST or during the device mapping phase, no zone is assigned to it.

The previous zone assignment schemes are also applied to the first trigger zone in the case of output only devices such as sounders, beacons, and SNM modules or output channel of the input output devices.

ⓘ **Note:** In the case of non-zone assigned, the output channel trigger event is the panel alarm.

Option factory settings

Temperature detector	**Default values**
Label	See Notes 1
Enablement	Enabled
LED blink	On
Assigned zone	See Zone assignment
Base type	Normal
Use zone setting	Yes
Day operating mode	A2S
Night operating mode	A2S

Smoke detector	**Default values**
Label	See Notes 1
Enablement	Enabled
LED blink	On
Assigned zone	See Zone assignment
Base type	Normal
Use zone setting	Yes
Day smoke sensitivity	Medium
Night smoke sensitivity	Medium

Smoke + Temperature Detector	**Default values**
Label	See Notes 1
Enablement	Enabled
LED blink	On
Assigned zone	See Zone assignment
Base type	Normal
Use zone setting	Yes
Day temp. operating mode	A2S
Day smoke operating mode	Normal
Day smoke sensitivity	Medium
Night temp. operating mode	A2S
Night smoke operating mode	Normal
Night smoke sensitivity	Medium

CO + Temperature Detector	Default values
Label	See Notes 1
Enablement	Enabled
Led blink	On
Assigned zone	See Zone assignment
Base type	Normal
Use zone setting	Yes
Day temp. operating mode	A2S
Day CO operating mode	Normal
Day CO sensitivity	Medium
Night temp. operating mode	A2S
Night CO mode	Normal
Night CO sensitivity	Medium

CO+Smoke +Temperature detector	Default values
Label	See Notes 1
Enablement	Enabled
Led blink	On
Assigned zone	See Zone assignment
Base type	Normal
Use zone setting	Yes
Day algorithm	Universal
Night temp. operating mode	Universal

Modules	Default values
Label	See Notes 1
Enablement	Enabled
LED blink	On
Activation unit (where applicable)	Off
Act as SC1 (where applicable)	Off
Input Channel	
Beacon Enablement	Enabled
Channel label	See Notes 2
Assigned zone	Address related See Zone assignment
Operating mode	Style C, NO

Modules	Default values
Use zone setting	Yes
Output Channels	
Enablement	Enabled
Channel label	See Notes 2
Trigger zone #1	Address related See Zone assignment
Trigger zone #2	None
Trigger zone #3 (where applicable)	None
Trigger zone #4 (where applicable)	None
Trigger point #1	None
Trigger point #2	None
Trigger point #3	None
Silenceable	Yes
Active on disablement (where applicable)	Off
Trigger on event	Zone Alarm
Delay from alarm	Off
Silenceable	Yes
Sounder pattern (where applicable)	7Hz fast sweep
Sounder volume (where applicable)	High
Beacon enablement (where applicable)	Enabled
Beacon flash rate (where applicable)	0.5 Hz

DDM module	Default values
Label	See Notes 1
Enablement	Enabled
LED blink	On
External power	On
Detector type	4/20 mA Source
Threshold set	Set #1
Input Channel	
Enablement	Enabled
Channel Label	See Notes 1

DDM module	Default values
Assigned zone	Address related See Zone assignment
Use zone setting	Yes

TSM module	Default values
Label	See Notes 1
Enablement	Enabled
LED blink	On
External power	On
Input function	Door monitoring
Loop monitoring	Off
Door monitoring event	Fault
Monitoring time	30 s
Input Channel	
Enablement	Enabled
Channel Label	See Notes 2
Assigned zone	Address related See Zone assignment
Operating mode	Style C, NO
Output Channel	
Enablement	Enabled
Channel Label	See Notes 2
Trigger zone #1	Address related See Zone assignment
Trigger zone #2	None
Trigger point #1	None
Trigger point #2	None
Trigger point #3	None
Silenceable	Yes
Trigger on event	Zone Alarm
Delay from alarm	Off

Zones	Default values
Label	Zone AAA
Enablement	Enabled
Walk test	Off
Detector warning	Off
Delay to alarm	Off
Drift compensation	Off
Double knock	Off

Zones	Default values
Smoke verification	Off
Delay to alarm duration	0s

On board programmable outputs	Default values
Enablement	Enabled
Channel label	tttt y, see Notes 3
Trigger zone #1	None
Trigger zone #2	None
Trigger zone #3	None
Trigger zone #4	None
Trigger point #1	None
Trigger point #2	None
Trigger point #3	None
Silenceable	Yes
Active on disablement (where applicable)	Off
Trigger on event	None
Delay from alarm	Off

General options	Default values
Investigation delay	300 s
Main fault delay	1 min
Delay to alarm	60 s
Silence duration	60 s
Reset	2 s
Loop 1 wires	4 wires
Loop 2 wires	4 wires
Loop 3 wires	4 wires
Day/Night mode	Day mode
SC1 disablement	Enabled
PSTN communicator enablement	Not operative
IP communicator enablement	Not present
Network enablement	Disabled
Delay from alarm #1	0 s
Delay from alarm #2	0 s
Delay from alarm #3	0 s

General options	Default values
Delay from alarm #4	0 s
Delay from alarm #5	0 s

PSTN communicator	Default values
Tone check	On
Start playing after	Selection
Call attempts	3
Iteration	3
Call all tele-monitoring numbers	No
Call all voice message numbers	No
Telephone number label	TEL.NUMBER xx, see Notes 4
All telephone numbers behavior	None
Trigger events	Panel alarm, panel fault
Message #1 to #7	Prerecorded

Notes

1. The label is composed by a brief description of the device followed by its address, xxxyyy.
   xxx = device acronym
   yyy = device address
2. The label is composed by a first part containing the module acronym and address followed by the brief description of the channel using the acronym printed on the module PCB: xxxyyy: ccc.
   xxx = module acronym
   yyy = module address
   ccc = channel acronym
   For example *DDM098: Input A* is the default label for input 1 of the DDM module at address 98.
3. tttt represents the on board output type:
   for SC outputs, tttt = SC
   for programmable outputs, tttt=OC
   y is the output number
4. xx represents the telephone number ID

Device acronyms

The following table shows the acronyms used on the panel LCD to identify the devices on the loops.

Table 32: Device acronyms and descriptions

LCD Acronym	Loop Device Name	Loop Device Description
400CH	FC400CH	Addressable Carbon Monoxide + Heat Detector
410BDM	FC410BDM	Beam Detector Module
410CIM	FC410CIM	Contact Input Module
410DDM	FC410DDM	Universal Fire and Gas Detector Module
410DIM	FC410DIM	Detector Input Module
410MIM	FC410MIM	Mini Input Module
410MIO	FC410MIO	Small Addressable Multi I/O Module
410QIO	FC410QIO	Quad Input/ Output Module
410QMO	FC410QMO	Quad Monitored Output Module
410QRM	FC410QRM	Quad Relay Module
410RIM	FC410RIM	Relay Interface Module
410SIO	FC410SIO	Single Input/ Output Module
410SNM	FC410SNM	Sounder Notification Module
410TSM	FC410TSM	Door Control Module
420CP	FC420CP-I	Addressable Break Glass Callpoint (indoor)
421CP	FC421CP-I	Addressable Break Glass Callpoint (outdoor)

Table 32: Device acronyms and descriptions

LCD Acronym	Loop Device Name	Loop Device Description
430SAB	FC430SAB	Sounder Addressable Beacon
430SAM	FC430SAM	Sounder Addressable Module
440AIB	FC440AIB	Addressable Base Sounder Beacon VID
440AVB	FC440AVB	Addressable Base Sounder Beacon VAD Standard Power
440AVx	FC440AVR	Addressable Wall Sounder Beacon VAD Red
	FC440AVW	Addressable Wall Sounder Beacon VAD White
440SB	FC440SB	Addressable Base Sounder
441AVB	FC441AVB	Addressable Base Sounder Beacon VAD High Power
445AVR	FC445AVR	Addressable Wall Sounder Beacon VAD Weatherproof
44xAIx	FC440AIR	Addressable Wall Sounder Beacon VID Red
	FC440AIW	Addressable Wall Sounder Beacon VID White
	FC445AIR	Addressable Wall Sounder Beacon VID Weatherproof

Table 32: Device acronyms and descriptions

LCD Acronym	Loop Device Name	Loop Device Description
44xSx	FC440SR	Addressable Wall Sounder Red
	FC440SW	Addressable Wall Sounder White
	FC445SR	Addressable Wall Sounder Weatherproof
460H	FC460H	Addressable Heat Detector
460P	FC460P	Addressable Optical Smoke Detector
460PC	FC460PC	Addressable Optical Smoke, Heat, and CO Detector
460PH	FC460PH	Addressable Optical Smoke and Heat Detector
LPASB	FC430LPASB	Loop Powered Addressable Sounder-Beacon Base
LPAV	FC410LPAV	Loop Powered Sounder-Beacon IP65
	FC410LPAVR	Loop Powered Sounder-Beacon Red
	FC410LPAVW	Loop Powered Sounder-Beacon White

Table 32: Device acronyms and descriptions

LCD Acronym	Loop Device Name	Loop Device Description
LPBS	FC410LPBS	Loop Powered Sounder-Beacon IP65 (EN54-23)
	FC410LPBSR	Loop Powered Sounder-Beacon Red (EN54-23)
	FC410LPBSW	Loop Powered Sounder-Beacon White (EN54-23)
LPBSB	FC430LPBSB	Loop Powered Addressable Sounder-Beacon Base (EN54-23)
LPSB	FC430LPSB	Loop Powered Addressable Sounder Base
LPSY	FC410LPSY	Loop Powered Sounder IP65
	FC410LPSYR	Loop Powered Sounder Red
	FC410LPSYW	Loop Powered Sounder White

Accessories

The following is a list of accessories for FC501 control panel with a description of the main features. For further information about these accessories, refer to the instructions supplied with the accessories or download them from the FireClass website: http://www.fireclass.com

FC500IP IP module

The FC500IP is an IP module that is used to connect the FC501 fire panel to a LAN.

The IP Module may be connected to a LAN using a private IP address or a DHCP address. The same procedures may be performed using the FireClass FC500 (FC501_FC503_FC506) Console application, either through the serial port or the network. With a public IP address and access to the internet, you can manage and monitor the control panel from anywhere in the world.

FC460H Addressable heat detector

The FC460H detector is intended to plug into the following:

- 4B-I 4 in. isolator base
- 4B 4 in. universal base
- FC440AVB Addressable base sounder VAD standard power
- FC441AVB Addressable base sounder VAD high power
- FC440SB Addressable sounder base
- FC440AIB Addressable base sounder VID
- FC440DSB Detector activated sounder base

Software within the controller is used to interpret the returned heat values to raise an alarm or other appropriate responses according to the type of detector configured in the FireClass FC500 (FC501_FC503_FC506) Console. The mode of the detector may be:

- EN54-5 A1R, rate-of-rise normal ambient
- EN54-5 A2S, fixed 60°C
- EN54-5 CR, rate-of-rise high ambient

FC460P Addressable optical smoke detector

The FC460P optical smoke detector forms part of the FC460 series addressable fire detectors.

- 4B-I 4 in. isolator base
- 4B 4 in. universal base
- FC440AVB Addressable base sounder VAD standard power
- FC441AVB Addressable base sounder VAD high power
- FC440SB Addressable sounder base
- FC440AIB Addressable base sounder VID
- FC440DSB Detector activated sounder base

Software within the controller is used to interpret the returned optical and heat values to raise an alarm or other appropriate response according to the type of detector configured in the FireClass FC500 (FC501_FC503_FC506) Console.

FC460PH Addressable optical smoke and heat detector

The detector is intended to plug into one of the following:

- 4B 4 in. universal base
- 4B-I 4 in. isolator base
- FC440AVB Addressable base sounder VAD stander base
- FC441AVB Addressable base sounder VAD high power
- FC440SB Addressable sounder base
- FC440AIB Addressable base sounder VID
- FC440DSB Detector activated sounder base

Software within the controller is used to interpret the re-turned optical and heat values to raise an alarm or other appropriate response according to the type of detector configured in the FireClass FC500 (FC501_FC503_FC506) Console. The mode of detector may be:

- Optical smoke only detector (sensitivity high, normal, or low)
- Optical (sensitivity high, normal, or low) and heat fixed temperature 60°C (A2S)
- Heat only rate-of-rise (A1R) detector (no sensitivity selection)
- Heat fixed temperature 60°C (A2S) (no sensitivity selection)
- Heat rate-of-rise (A1R) detector and optical smoke (sensitivity high, normal, or low)
- HPO (Advanced) smoke detector (sensitivity high, normal, or low)
- HPO Enhanced with heat fixed temperature 60°C (A2S)
- HPO Enhanced rate-of-rise (A1R).

FC460PC Addressable optical smoke, heat and CO detector

The high performance FC460PC detector detects smoke, temperature, and CO. It can accurately determine the presence of all types of fires and has an exceptional immunity to false alarms.

The functionalities of the FC460PC detector are:

Self-monitoring, self-testing, status indicator, remote LED, and threshold compensation. FC460PC is compatible with the existing bases.

- 4B 4 in. universal base
- 4B-I 4 in. isolator base
- FC440AVB Addressable base sounder VAD stander base
- FC441AVB Addressable base sounder VAD high power
- FC440SB Addressable sounder base
- FC440AIB Addressable base sounder VID
- FC440DSB Detector activated sounder base

FC400CH Addressable carbon monoxide and heat detector

The FC400CH carbon monoxide plus heat detector forms part of the FC400 series addressable fire detectors.

The detector is intended to plug into the following bases:

- 4B 4 in. universal base
- 4B-I 4 in. isolator base
- FC440AVB Addressable base sounder VAD standard power
- FC441AVB Addressable base sounder VAD high power
- FC440SB Addressable sounder base
- FC440AIB Addressable base sounder VID
- FC440DSB Detector activated sounder base

The detector is designed to transmit digital signals to a remote FireClass controller, which represent the status of the carbon monoxide and the heat elements of the detector. Software within the controller is used to interpret the returned carbon monoxide and heat values to raise alarm or other appropriate response according to the type of detector configured in the FireClass FC500 (FC501_FC503_FC506) Console.

FC490ST Loop service tool

The FC490ST loop service tool is used to program the loop address into FC addressable devices. The FC490ST displays information and performs tests on devices. It has a 32 character backlit LCD alphanumeric display, arranged in 2 rows of 16 characters and four soft keys, F1, F2, F3, and F4. Power for the FC490ST is derived from 4 AA size nickel metal hydride rechargeable batteries. You can also run it from an unregulated +12 VDC input. Examples include a car cigarette lighter connection or a 110/230 VAC mains adaptor which will also recharge the batteries.

4B Universal base

The 4B Universal base is for use with the FC460, FC400, and 600 series of detectors.

The base may be fixed directly to the following:

- British (fixing centers 50 mm) or European (fixing centers 70 mm) conduit box
- 4B EM Euro Mounting Box
- The suspended ceiling, through the CTA adapter
- Directly to the ceiling

4B-I Isolator base

The FC460 and FC400 series detectors, as supplied, use a common 4B-I isolator base assembly. The base may be fixed directly to:

- British (fixing centers 50 mm) or European(fixing centers 70 mm) conduit box
- FC450EMB European mounting box
- Directly to the ceiling

801HL Remote LED indicator

The 801HL remote LED indicator is used where a detector LED is not visible. For example, when the detector is mounted in a roof void or lift shaft.

The 801HL provides a larger indicator for use in place of the 801RIL when longer distances are involved or in VdS influenced markets.

The 801HL can be mounted to any suitable flat surface and has fixing centres at 60 mm and 80 mm.

801RIL Remote LED indicator

The 801RIL remote LED indicator is used where a detector LED is not visible. For example, when the detector is mounted in a roof void or lift shaft. The 801RIL is mounted to a single gang electrical box and is supplied with 2 x M3.5 screws.

DPK6 duct probe

The DPK6 duct probe units have been developed to detect smoke in ventilation ducts. These duct probe units can used in combination with the FC460PH detector. The DPK6 can operate across a wide range of air velocities from 1.5 m/s to 20 m/s. The duct probe unit has a built-in 4B-C base. There is a range of aluminium probe tubes available for air ducts up to 2700 mm.

FIRERAY 5000

The FireRay 5000 motorised and auto-aligning infrared optical beam smoke detector can be installed with up to 4 detector heads per system. When the detector heads are connected, using the Easifit First Fix system, an integral LASER, which is aligned along the optical path of the beam, can be activated. This allows the reflective prism to be sighted quickly. When the LASER has been used to coarsely align the beam, the auto-optimise beam alignment system takes over and automatically steers the beam into the optimum position. The system controller retains one set of fire and fault relays that is common to all detectors installed.

Range: Each detector is configurable from 8 m to 100 m.

FC410BDM beam detector interface module

The FC410BDM beam detector interface module is designed to interface a FIRERAY 50/100/3000/5000 beam detector to the FC Digital Addressable Loop. It cannot be used with other types of beam detectors. The FC410BDM monitors the fire and fault contacts and monitors for open and short circuits on the connections between the interface and the beam detector. For remote siting of the FIRERAY detector an optional BTM800 terminal module can be used with 4 core cable.

FC410CIM Contact input module

The FC410CIM FC addressable contact input module is designed to monitor fire contacts such as extinguishing system control, ventilation control, or fire door control etc. The FC410CIM can be configured as:

- Two spur circuits (Class B) monitoring multiple normally open contacts, with short circuit giving a fault output.
- Two spur circuits (Class B) monitoring single normally closed contacts, with short circuit giving a fault output.
- Two spur circuits (Class B) monitoring multiple normally open contacts, with short circuit giving an alarm.

FC410DDM Universal fire and gas detector module

The FC410DDM provides the ability to connect and interface 2 zones of 20 VDC 2-wire conventional fire detectors, or two 4-20 mA signaling sensors, to the FireClass fire alarm controller. The FC410DDM monitors the status of the detectors and the wiring to the detectors and signals detector and wiring status back to the controller. The conventional detector circuits can be configured to monitor 1 or 2 Class B spur circuits. The 4-20 mA signaling sensors may be one of two types:

- Current sinking
- Current sourcing

FC410DIM Detector input module

The addressable FC410DIM provides the ability to connect and interface one or two zones of 24 VDC 2-wire conventional detectors (not-addressable) to the fire alarm controller.

The FC410DIM monitors the status of detectors and wiring to detectors and signals detector and wiring status back to the controller.

FC410LI Line isolator module

The FC410LI line isolator module is designed to be used on the FC addressable controller loop circuits. It monitors the line condition and when detecting a short circuit will isolate the affected section while allowing the rest of the addressing circuit to function normally.

The purpose of the FC410LI line isolator module is to ensure that, on a looped addressable system, no short circuit fault can disable more detection devices then would be lost on a conventional fire circuit.

FC410MIM Mini input module

The FC410MIM mini input module is designed to monitor fire contacts, such as extinguishing system control, ventilation control, fire door control etc. The module provides one identifiable detection spur which is capable of monitoring multiple normally open contacts or a single normally closed contact.

The FC410MIM may be mounted in any electrical enclosure with sufficient depth to accommodate FC410MIM and the contacts monitored by the IN+ and IN- terminals, i.e., no field wiring. The remote LED (if required, not supplied) must be located within the same electrical enclosure.

FC410MIO Small addressable multi I/O module

The FC410MIO multi I/O module has three class B inputs and two outputs from latching relays. The class B inputs can monitor fire contacts such as extinguishing system control, ventilation control, and fire door control. The two relays outputs are dry form C that provide volt-free relay changeover contacts. A maximum of two HVR800 high voltage relay modules can be individually driven and controlled by an FC410MIO if all HVR800s are powered by 24 VDC or 24 VAC. In this application, the HVR800s are controlled by the two latching relays on the FC410MIO. A maximum of four HVR800 high voltage relay modules can be individually driven and controlled by an FC410MIO if all HVR800s are powered by 120 VAC or 240 VAC. In this application, the HVR800s are controlled by the four control outputs (O1+/O1- to O4+/O4-) on the FC410MIO.

FC410QIO Quad input output module

The module provides four monitored digital inputs and four potential free relay changeover outputs.The outputs are monitored with parallel contacts of the relays. The outputs can be connected to an auxiliary voltage source and the voltage can be monitored. Additionally, all the outputs can be connected to the HVR800, for switching high power galvanic isolated loads. For more details, refer to the HVR800 documentation. The module has an integral loop isolator. If this activates, a yellow LED illuminates. The activation remains in place until the short is removed. The digital input monitoring and isolator functions are both configurable.

Maximum relay current: 2 A

Maximum relay voltage: 30 V

FC410QMO Quad monitored output module

The FC410QMO module comprises of four relays with selectable wiring supervision.

The output wiring is monitored for any short or open circuit. Spur and Loop configurations are supported.

The module has an integral loop isolator. If it activates, a yellow LED illuminates. The activation remains in place until the short is removed.

FC410QRM Quad relay module

The module provides four voltage free relay changeover outputs. The outputs are monitored with parallel contacts of the relays. You can connect the outputs to an auxiliary voltage source, in this case the module is able to monitor the auxiliary voltage source. Additionally, all the outputs are configurable to the high voltage relay (HVR) mode, which allows you to connect up to four HVR800 modules for switching: For example, 240 V loads galvanically isolated.

The module has an integral loop isolator. If the integral loop isolator activates, a yellow LED illuminates. The activation remains in place until the short is removed.

Maximum relay current: 2 A

Maximum relay voltage: 30 V

FC410RIM Relay interface module

The FC410RIM relay interface module provides one volt-free relay changeover contact on a latching relay. The relay is controlled by a command sent from the FC fire controller through the addressable loop. The relay state (activated, deactivated, or stuck) is returned to the controller.

FC410SIO Single input and output module

The FC410SIO single input and output module is designed to provide a monitored open collector input and a volt free relay changeover output.

FC410SIO can switch up to 2 A @ 24 VDC.

FC410SNM Sounder notification module

The FC410SNM sounder notification module provides an output, in response to a command signaled from a controller, to activate a number of polarized and supervised sounders. The sounders are powered from an independent power supply and the module is capable of passing up to a maximum current of 2 A. For example, 24 VDC 50 mA company sounders or a mixture of different current rated sounders not exceeding a maximum current of 2 A.

Note:

The possibility of the configuration of extinction, although present in the FC410SNM module, is not available for the FC501 control panel.

FC410TSM Door control module

The FC410TSM door control module closes a fire door in case of alarm or fault. The door is normally kept open by electromagnets. The door control module disconnects the electromagnets from power supply in order to allow the door to close. The FC410TSM has a relay changeover output and a monitored input. The FC410TSM contains an integrated line isolator and self-monitoring circuits (monitoring of communication with a panel, loop power monitoring), which enables the fire door to be closed when communication with a panel is lost for longer than 45 s (±5 s) or the loop power drops below Umin=19 V for more than 15 s (± 5 s). In addition, the FC410TSM monitors the external 24 V supply.

FC420CP-I Addressable break glass callpoint (indoor)

The FC420CP-I addressable break glass callpoint is designed to monitor and signal the condition of a switch contact that is operated by activating the break glass element. The type of alarm generated by the callpoint is configured in the FireClass FC500 (FC501_FC503_FC506) Console. The FC420CP-I call point meets the requirements of EN54 Pt.11. The FC420CP-I is fitted to a standard surface mount plastic back box, standard single gang metal plaster box (35 mm for flush mounting) or standard single gang metal plaster box (25 mm) with back box.

FC421CP-I Addressable break glass callpoint (outdoor)

The FC421CP-I weatherproof addressable break glass callpoint is designed to monitor and signal the condition of a switch contact that is operated by activating the break glass element. The type of alarm generated by the callpoint is configured in the FireClass FC500 (FC501_FC503_FC506) Console.

The FC421CP-I callpoint meets the requirements of EN54 Pt.11. The FC421CP-I is fitted into a standard weatherproof break glass callpoint housing.

FC440AI Addressable wall sounder VIDs

The FC440AI range of compact addressable wall sounders with the visual indicating device (VID) includes three models with the same low current and high output specification; red and white body indoor models plus an IP rated version for either outdoor use or for harsh environment applications.

- FC440AIR: Addressable wall sounder VID red
- FC440AIW: Addressable wall sounder VID white
- FC445AIR: Addressable wall sounder VID weatherproof red

FC440AV Addressable wall sounder VADs (EN54-23)

The FC440AV range of compact addressable wall sounders with a visual alarm device (VAD) includes three models with the same low current and high output specification; red and white body indoor models plus an IP rated version for either outdoor or harsh environment applications.

- FC440AVR: Addressable wall sounder VAD red
- FC440AVW: Addressable wall sounder VAD white
- FC445AVR: Addressable wall sounder VAD weatherproof red

FC440AVB and FC441AVB Addressable Sounder VAD Bases (EN54-23)

The FC440AVB and FC441AVB are addressable sounder bases with a visual alarm device specifically for use with the FireClass addressable detectors. The bases are available as fire alarm sounders with visual alarm device (VAD) in two power outputs, standard and high.

- FC440AVB: Addressable base sounder VAD standard power
- FC441AVB: Addressable base sounder VAD high power

FC440DSB Detector activated sounder base

The FC440DSB is a detector base specifically for use with the FireClass addressable detectors. The base incorporates a fire alarm sounder that is activated directly by the detector.

FC440S Addressable wall sounder

The FC440S range of compact addressable wall sounders includes three models with the same low current and high output specification; red and white body indoor models plus an IP rated version for either outdoor use or for harsh environment applications.

- FC440SR: Addressable wall sounder red
- FC440SW: Addressable wall sounder white
- FC445SR: Addressable wall sounder weatherproof red

FC440SB and FC440AIB Addressable sounder base and addressable sounder VID base

The FC440SB is an addressable sounder base that is specifically for use with the FireClass addressable detectors. The base incorporates a fire alarm sounder that carries its own address so it can be monitored and controlled from the fire alarm control panel, which is independent of the detector fitted to the base.

- FC440SB: Addressable sounder base
- FC440AIB: Addressable base sounder VID

HVR800 High voltage relay

The HVR800 high voltage relay interface is a non-addressable multi-voltage relay module (operating from 24 VDC, 24 VAC, 120 VAC, and 240 VAC). The encapsulated HVR800 provides a 10 A volt-free contact that can be used to extend the contact ratings of FC410RIM addressable relay module applications.

If all HVR800s are powered by 120 VAC or 240 VAC, a maximum of four HVR800s can be individually driven and controlled by an FC410MIO small addressable multi-input and output module. For AC operation, no external DC power supply unit is required to operate the relay. When used to switch 24 VDC, the HVR800 must be provided with an external 24 VDC supply which should be switched through the clean relay contacts of an FC410MIO or FC410RIM.

Connecting the CSG

About this task:
The CSG connects to the control panel with the serial RS232 port for remote services.

To connect the CSG with the panel:

1. Connect the CSG board's serial port to the COM1 (PC_LINK) port on the control panel.
2. Choose the preferred installation configuration for the CSG:
   - Install the CSG within the panel enclosure.
   - Install the CSG within a separate enclosure that is close coupled to the panel.

   ⓘ **Note:** For more information about the installation process, refer to the *Connected Services Gateway Installation Guide (05791285_A)*.

Panel and repeater firmware upgrade quick guide

Upgrading firmware using FireClass FC500 (FC501_FC503_FC506) Console software

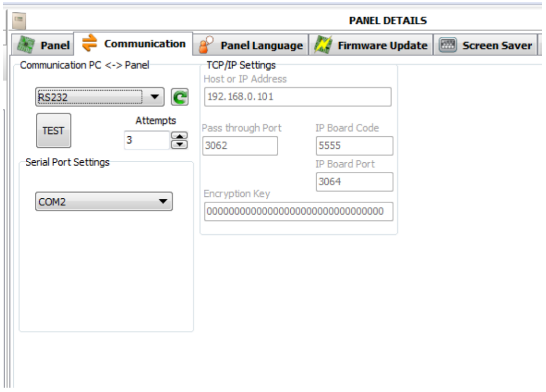
1. Connect the communication cable of choice (either PC - LINK or USB).
2. If you are using a USB cable, insert the USB cable into the PC host port and install the USB driver when asked.
3. Find the correct drivers in the FireClass FC500 (FC501_FC503_FC506) Console Software installation directory: C:\Program Files \FireClass\FireClass_FC500_Console\Drv.

   ⓘ **Note:**

   - For 32 bit Windows™, use the X86 version.
   - For 64 bit Windows™, use the X64 version.
   - Windows may show a driver security warning. In this case, continue with the installation procedure.

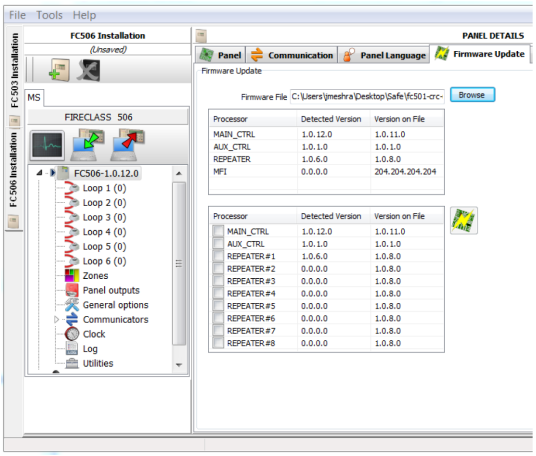
4. Proceed to the FireClass FC500 (FC501_FC503_FC506) Console software main screen, select the **Communication** tab and the channel you will use: RS232 (COMx) or USB (USBx).

Figure 42: Selecting a channel



5. Proceed to the FireClass FC500 (FC501_FC503_FC506) Console software main screen and select the **Firmware Update** tab.
6. Select **Browse** and load the .BIN packet containing the FW (firmware).
7. The software scans the packet and then shows the FW versions read on file and those detected on the connected panel.

Figure 43: Scanning for firmware versions



8. Select the FW for updating and click the **Start flash** button, as seen in Figure 41.
9. Wait until all the firmware files have been updated (you will receive a confirmation notice from the software).

   ⓘ **Note:**

   - You may receive a fault warning during the aux controller or the PTSN communicator updates.
   - When all FW update related faults are automatically restored, the system is considered fully operative again.

10. Verify that the FW version running is the updated version on the **Panel** tab.

Upgrading firmware using the USB pen drive

1. Access the updated firmware packet from the FireClass website; the correct file name has the 'FWxxxxxxBIN' format.
2. Get a FAT or FAT32 USB pen drive.
3. Create a folder named 'F_FW' at the root of the USB pen drive.
4. Copy the downloaded file into the 'F_FW' folder.
5. Insert the USB pen drive on a working panel.
6. Click on the **1=Program** menu and select option **7=USB** followed by option **5=FW Upgrade**.

7. Wait until the panel returns to the main page. This procedure takes a few minutes to complete.

   ⓘ **Note:** The upgrade procedure may take several minutes to complete

Maintenance

To ensure the system operates normally, you must carry out regular testing and an installer must provide periodic maintenance in accordance with local laws.

For the maintenance of other devices such as detectors and modules, follow the dedicated instructions for the devices.

Users must carry out the following operations regularly:

- Use a damp cloth to remove dust from the control panel cabinet. Do not use solvents of any kind.
- Using the **Lamp Test** key, check that the LEDs and buzzers function properly.

The following operations must be carried out regularly by qualified persons only:

- Ensure that the batteries are sufficiently charged and functioning properly. If not, replace them immediately.
- Ensure that all cables and connections are intact.
- Ensure that there are no unrelated objects inside the control panel case.
- Ensure that the control panel can process a fire alarm and operate the regular sounders and outputs subsequent to a fire alarm incident. If there is a facility for transmitting fire alarm signals to a central station, ensure that signal comes through correctly.

Specifications

The information in this section is aimed at suitably qualified technicians experienced in the installation and commissioning of fire detection and alarm systems, who have also received FIRECLASS training.

Technical features

Table 33: FC501 technical features

Control panel	FC501-L	FC501-H FC501-HK
Main voltage	110/230 VAC	110/230 VAC
	60/50 Hz -15/+10%	
Aux. outputs nominal voltage	27.6 V	
Aux. outputs min. and max. voltage	19.0 - 27.6 V	
Minimum output voltage	19.0 VDC ±5%	
Maximum current drawn	1.1 A @ 110 V 0.65 A @ 230 V	1.6 A @ 110 V 0.8 A @ 230 V
Ripple	1%	
Suitable batteries make model (1)	Two 7 Ah @ 12 V or two 12 Ah @ 12 V YUASA NP7-12FR or NP12-12FR	Two 12 Ah @ 12 V or two 38 Ah @ 12 V YUASA NP12-12FR or NP38-12I
Maximum internal resistance of the battery and associated circuitry	1 ohm	
Temperature range	-5°C to +40°C	
Storage temperature	-40°C to +80°C	
Operating humidity	Up to 95% non-condensing	
Dimensions (W x H x D)	335 mm x 369 mm x 115 mm	
Weight (Without batteries)	3 kg	

Note:

1. Use the specified battery or an equivalent that meets the following requirements.

- The battery must comply with one of the following applicable standards: IEC 60086-4, IEC 60086-5, IEC 60896-11, IEC 60896-21, IEC 60896-22, IEC 61056-1 and IEC 61056-2, IEC 61427, IEC/TS 61430, IEC 61434, IEC 61959, IEC 62133, IEC 62281, and IEC 62485-2.
- The battery must be VRLA (valve regulated lead acid) type.
- The case flame class of the battery must be UL94V-1 or better.

Table 34: FC500 technical features

Repeater	FC500
Operating voltage	27.6 VDC
Maximum current	130 mA
Temperature range	-5°C to +40°C
Storage temperature	-20°C to +70°C
Operating humidity	Up to 95% non-condensing
Dimensions (W x H x D)	346 mm x 235 mm x 56 mm
Weight	2.7 kg

Table 35: FC500BX technical features

Batteries cabinet	FC500BX
Dimensions (W x H x D)	445 mm x 345 mm x 190 mm
Weight	7 Kg

Description of the terminals

Table 36 describes the terminals of the main board.

The first status is the standby (normal) status. The voltage present during the different operating conditions is indicated for each terminal, as well as the maximum current in amps that can circulate.

Note:

- **FC501-L**: the sum of the currents drawn by the terminals SC1, SC2, 24A, 24R and 24V (RS485) must not exceed 750 mA with FC500IP installed, or 850 mA without FC500IP.

- **FC501-H/FC501-HK**: the sum of the currents drawn by the terminals SC1, SC2, 24A, 24R and 24V (RS485) must not exceed 1350 mA with FC500IP installed, or 1450 mA without FC500IP.

Table 36: Terminals description

TERM.	Description	v(V)	i(A)
LOOP1 +LEFT-	LOOP 1, LEFT SIDE +: Positive signal –: Negative signal (return)	37.5	(1)
LOOP1 +RIGHT-	LOOP 1, RIGHT SIDE +: Positive signal –: Negative signal (return)	37.5	(1)
LOOP2 +LEFT-	LOOP 2, LEFT SIDE +: Positive signal –: Negative signal (return)	37.5	(1)
LOOP2 +RIGHT-	LOOP 2, RIGHT SIDE +: Positive signal –: Negative signal (return)	37.5	(1)
LOOP3 +LEFT-	LOOP 3, LEFT SIDE +: Positive signal –: Negative signal (return)	37.5	(1)
LOOP3 +RIGHT-	LOOP 3, RIGHT SIDE +: Positive signal –: Negative signal (return)	37.5	(1)
SH	TERMINALS FOR CONNECTION OF CABLE SHIELDS	-	-
⏚ LE LI	⏚: terminal for connection of the earth cable LE: terminal for connection of the external telephone line LI: terminals for connection of the internal telephone line	-	-
FIRE C NC NO	FIRE ALARM OUTPUT (Non-Supervised) Standby: C connected to NC with NO open In the event of alarm: C connected to NO with NC open	-	2 @ 24 V
FAULT C NC NO	FAULT ALARM OUTPUT (Non-Supervised) Standby: C connected to NC with NO open In the event of fault: C connected to NO with NC open	-	2 @ 24 V
+SC1– +SC2–	Programmable (SC2 only), supervised, silenceable, option to disable ALARM OUTPUTS (2) Panel in standby: negative on + terminal; positive on – terminal Panel in alarm: positive on + terminal; negative on – terminal	27.6	0.5(3)
MIK SPK BLK RED	FUTURE USE	-	-

Table 36: Terminals description

TERM.	Description	v(V)	i(A)
OC1 OC2	Programmable, non-supervised, silenceable, option to disable, open-collector OUTPUTS The polarity is not programmable.	0	0.05
 24R	24 V RESETABLE AUXILIARY POWER SUPPLY (4) Negative on terminal  Positive present on terminal 24R	27.6	0.5(5)
 24A	24 V AUXILIARY POWER SUPPLY (4) Negative on terminal  Positive on terminal 24A	27.6	0.5(5)
RS485 24V – + 	SERIAL BUS Terminals to connect the repeaters, and MFI modules	27.6	0.5
+BAT-	BATTERY CONTROL PANEL POWER SUPPLY	-	-

Note:

1. The sum of the currents of LOOP1, LOOP2 and LOOP3 must not exceed 400 mA.
2. Connect a 3900 ohm resistor between the + and – terminals of the SC1 and SC2 outputs, if not used.
3. The sum of the currents of SC1 and SC2 must not exceed 500 mA.
4. For the power supply of the external devices.
5. The sum of the currents of 24A and 24R must not exceed 500 mA.

Table 37: Current distribution of FC501-L control panel (mA)

Power supply	BAW50T24	
Battery	**7 Ah**	**12 Ah**
Power supply current	1800	1800
Current for 80% battery charging in 24 h (1)	- 250	- 400
Current for panel	- 175	- 175
Current for loops @ Vbattery (Current for loops @ 40 V (2))	- 313 (200)	- 313 (200)
Current for outputs (3)	- 850	- 750
Current for FC500IP (4)	- 100	- 100
Current residual	113	63

Table 38: Current distribution of FC501-H/FC501-HK control panel (mA)

Power supply	**BAW75T24**	
Battery	**12 Ah**	**38 Ah**
Power supply current	2700 mA	2700 mA
Current for 80% battery charging in 24 h (1)	- 400	- 1300
Current for panel	- 175	- 175
Current for loops @ Vbattery (Current for loops @ 40 V (2))	- 625 (400)	- 313 (200)
Current for outputs (3)	- 1350	- 650
Current for FC500IP (4)	- 100	- 100
Current residual	50	163

Note:

1. Battery capacity x 0.8 / 24.
2. The sum of the currents absorbed on the three loops.
3. The sum of the currents drawn by the terminals SC1, SC2, 24A, 24R and 24V (RS485).
4. If the FC500IP module is not used, the relative amount of current (100 mA) can be taken from the SC1, SC2, 24A, 24R and 24V (RS485) terminals.