



**FIRECLASS**

# **FC503 & FC506 FIRECLASS Addressable Fire Control Panels**



## **Quick-Start Setup Guide**

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# FIRECLASS Addressable Fire Control Panel

## *Quick-Start Setup Guide*

This document has been designed to guide you through the basic installation and setup process for FC503 and FC506 control panels. Full reference Installation and User manuals are available in the USB drive with all panels or can be downloaded from our website at [www.fireclass.net](http://www.fireclass.net)

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

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## Important notes

### FC503 and FC506 fire control panels

The FC503 and FC506 fire control panels follow Johnson Controls' highest standards of quality and performance.

FC503 is an analogue addressable fire control panel with one main loop (three sub loops), that can support up to 250 addressable devices and 128 zones. Loop lengths are to be a maximum of 2 km (dependent on device types, quantities connected, and cable type).

FC506 is an analogue addressable fire control panel with two main loops (six sub loops). The panel can support up to 500 addressable devices and a maximum of 250 devices in a single main loop, and 256 zones. Loop lengths are to be a maximum of 2 km (dependent on device types, quantities connected, and cable type).

A maximum of 8 nos. of FC500 repeaters, 4 nos. of FC500MFI modules and 7 nos. of client panels can be driven from a FC503 or FC506 addressable panel. The Loop devices can be addressed and configured from the panel menu. See the *Auto-Addressing procedure* section.

Alternatively, the FC490ST service tool can be used to address your field devices.

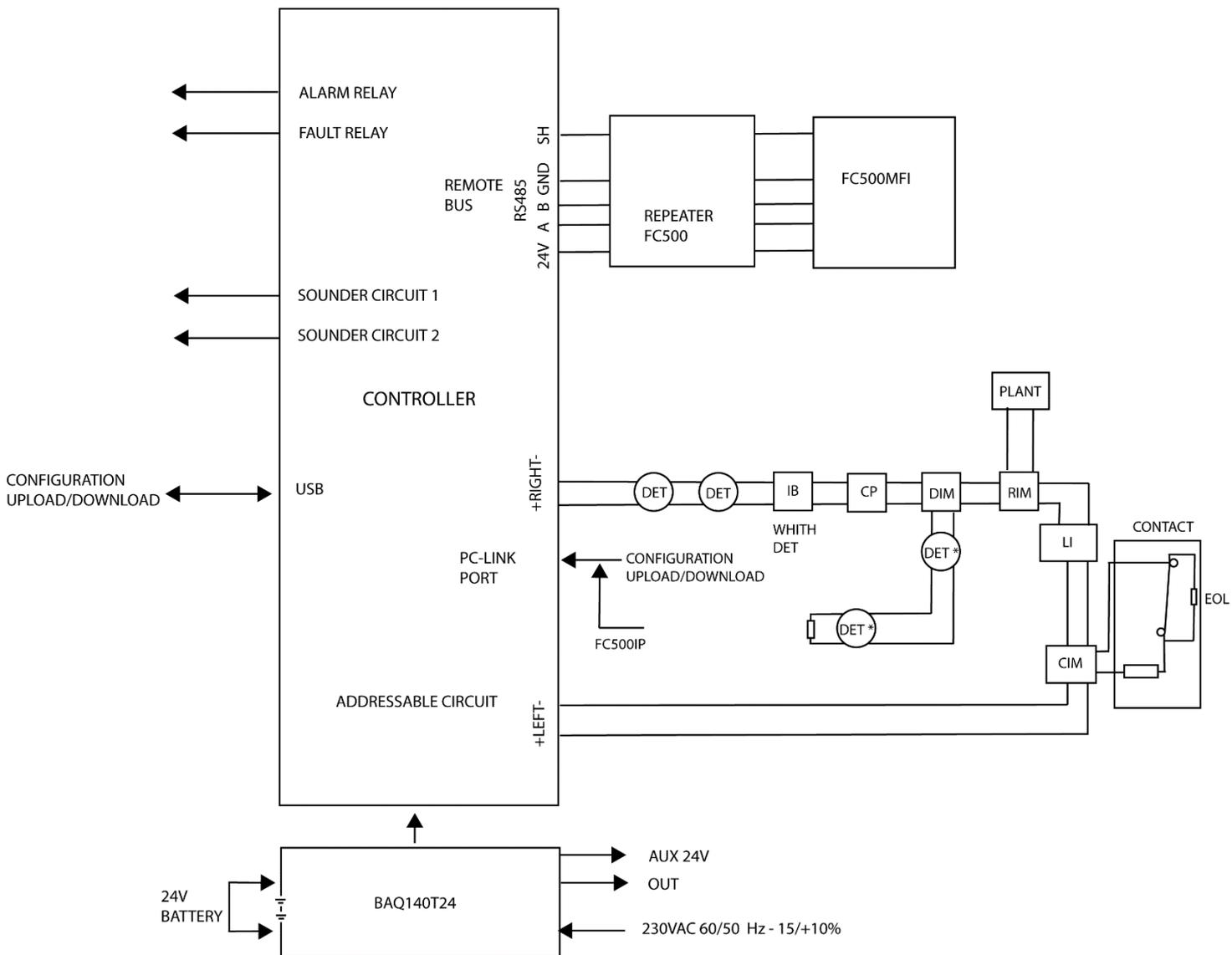


**WARNING**  
**Read this section completely before commencing installation.**

The control panel must be installed by competent engineers familiar with the installation of fire detection systems. In addition, it is recommended to refer to the following information:

- The current edition of the local laws regarding wiring regulations.
- Fire detection and alarm systems in buildings or the installation standards for the relevant country.
- Any specific site requirements.
- FireClass field device installation instructions

**Figure: 1 Schematic diagram for typical system layout**



DET	Addressable detector
DET*	Conventional detector
IB	Isolator base
CP	Call point
DIM	Detector input module
RIM	Relay interface module
CIM	Contact input module
LI	Line isolator

## Box contents

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

- A sheet metal cabinet and plastic door with an assembled motherboard and power supply switching.
- The Quick-Start Setup Guide.
- A transparent plastic bag containing a USB consisting of the installation manual, user manual, and 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 main board, and a 320 mm black cable with two faston terminals to connect batteries.

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

## Cable requirements

All cables should be specified and installed to meet the requirements of local laws. See *Figure: 1* for a typical system layout.

### Cable types

For specific details on the cable types, and how they should be run, refer to local practices and regulation.

### Earthing

The addressable loop conductors must be isolated from the earth. Any current leakage to the earth is indicated as a fault.

### Screening

If a cable with a conductive screen or a metal sheath is used, do not connect it to the addressable loop conductors. Join the screens from each section of the cable within each loop device to form a continuous cable screen.

## Cable routing

Ensure cables are routed to minimize coupling effects. Avoid grouping power and signal cables together in the same conduit or trunking. Feed the mains supply into the cabinet through its own dedicated knockout.

## RS485 networking

Use copper cabling for the network. The maximum distance between nodes is 1000 m using a shielded twisted pair cable. Use shielded cables only, with one end of the shield connected to the control panel negative terminal and one end of the shield left free. The continuity between several segments of connection must be secured.

## Mains supply

Do not allow the power cable to cross over other wiring. The power cable must be routed and held firmly in place by a two cable tie. The mains supply final circuits to all parts of the fire alarm system should be dedicated solely to the fire alarm system, and should serve no other systems or equipment.

To facilitate local isolation during maintenance, suitable means should be provided for double pole isolation of the low voltage supply circuit that serves the power supply and control equipment.

The power circuits of this control panel comply with the EN54-4 standard.



### CAUTION

In order to comply with the safety regulations in force, the mains must be equipped with a bipolar isolating device for protection against over voltage and short-circuit to earth.

The control panel is powered from the mains (230 V~ 60/50 Hz -15/+10%) and provides housing for a 5.5 A switching power supply (BAQ140T24).

# Installation



## CAUTION

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

Prior to commencing the installation of the control panel, take adequate precautions to prevent damage to the sensitive electronic components on the display board and control board due to electrostatic discharge. Discharge any static electricity accumulated by touching a convenient earthed object such as an unpainted, copper radiator pipe. Repeat the process at regular intervals during the installation process.

## Installing the control panel

Work carefully through the following steps. See *FC503 & FC506 Addressable Fire Control Panels Installation Manual* for further information. Install the FC500IP module before mounting the control panel as described in the *Installing the FC500IP board* section in the *FC503 & 506 Addressable Fire Control Panels Installation Manual*.



## CAUTION

- Place the panel in a clean, dry position where there is no shock or vibration present, and at least 2 m away from pager systems or any other radio transmitting equipment.
- Separate the fire alarm cables from all other wiring unrelated to the fire alarm system.

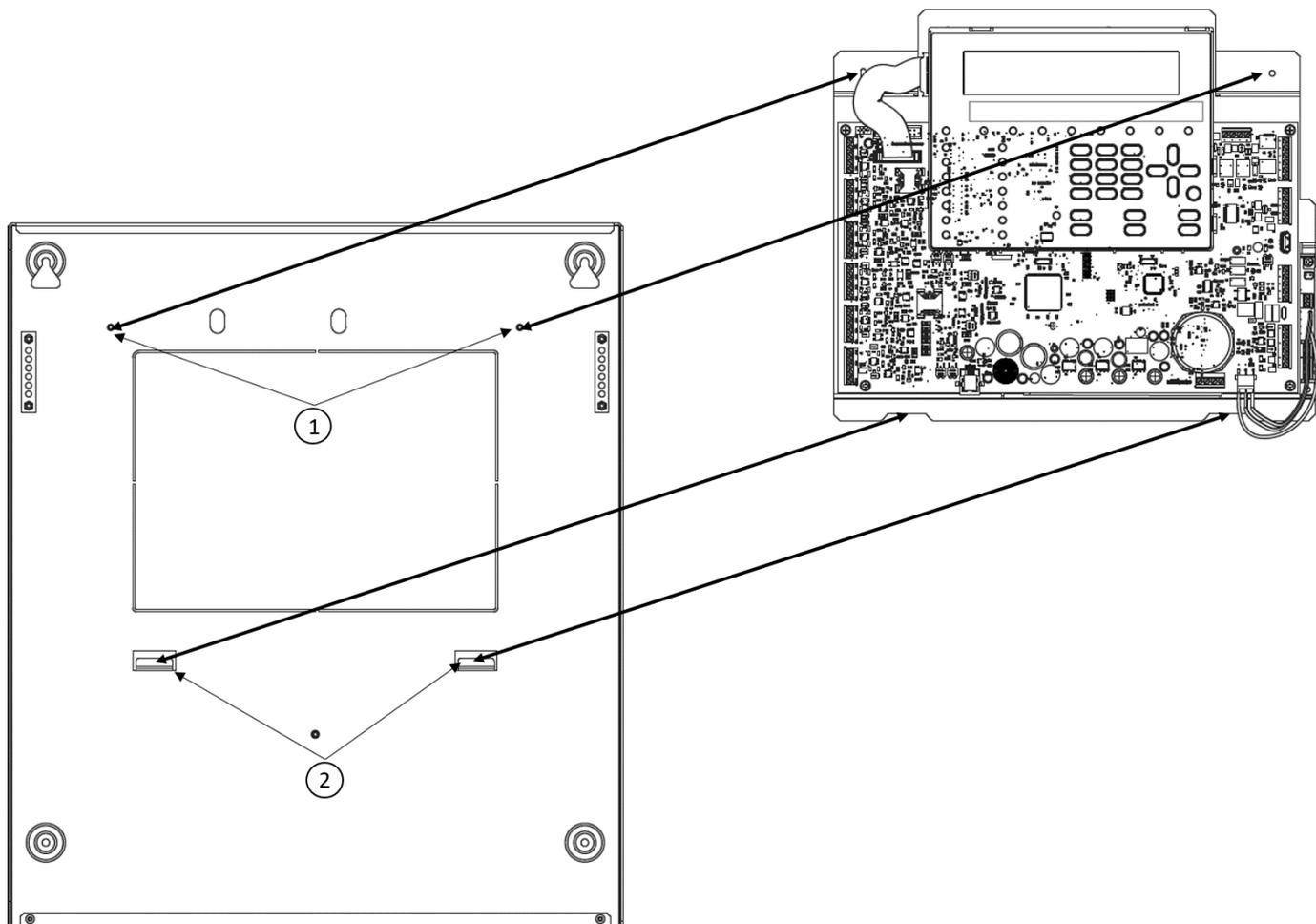
1. Identify a suitable mounting location on the wall for the control panel.
2. Remove the two screws from the cover and open the control panel. Lift the lower part of the cover and push upwards to fully remove the cover from the panel assembly.
3. Disconnect the earth cables at the top left and right of the control panel chassis.
4. Remove the chassis, including power supply and control board, from its fixings by unscrewing the screws on the chassis. Remove the top left and right screws completely. Push the chassis upwards and remove. Do not remove the power supply or control board from the chassis. Handle

the chassis carefully to avoid damage and place it safely to one side.

5. Level and hold the empty cabinet up to the wall. Mark the positions for the four mounting holes on the wall.
6. Drill the holes at the marked positions on the wall. Check for water pipes and electrical wiring before drilling.
7. Insert the top two screws halfway. Hang the panel on the top two screws and tighten them securely.
8. Insert the bottom two screws and tighten them securely.
9. Refit the chassis using the two resting features at the bottom of the cabinet and the top two mounting screws.
10. Reconnect the earth lead to the chassis.
11. Insert the installation cables into the cabinet using the cable entry knockouts at the top of the cabinet. Use the knockouts for all the cables and secure the cables through the cable ties.
12. When the installation cabling is complete, check the cabling to ensure that it is free from short circuits, open circuits, earth faults, and crossed connections.
13. Program the control panel in accordance with the instructions in the *FC503 & FC506 Addressable Fire Control Panels User Manual* and the *FC503 & FC506 Addressable Fire Control Panels PC Programming Manual*.
14. Test the entire system. Ensure that you test the control panel, detectors, fire warning, and fire control devices.
15. Remove any debris from the cabinet before closing the cover.
16. Attach the cover to the hooks and rotate the cover down to close it. Secure the cover at the bottom with two screws.

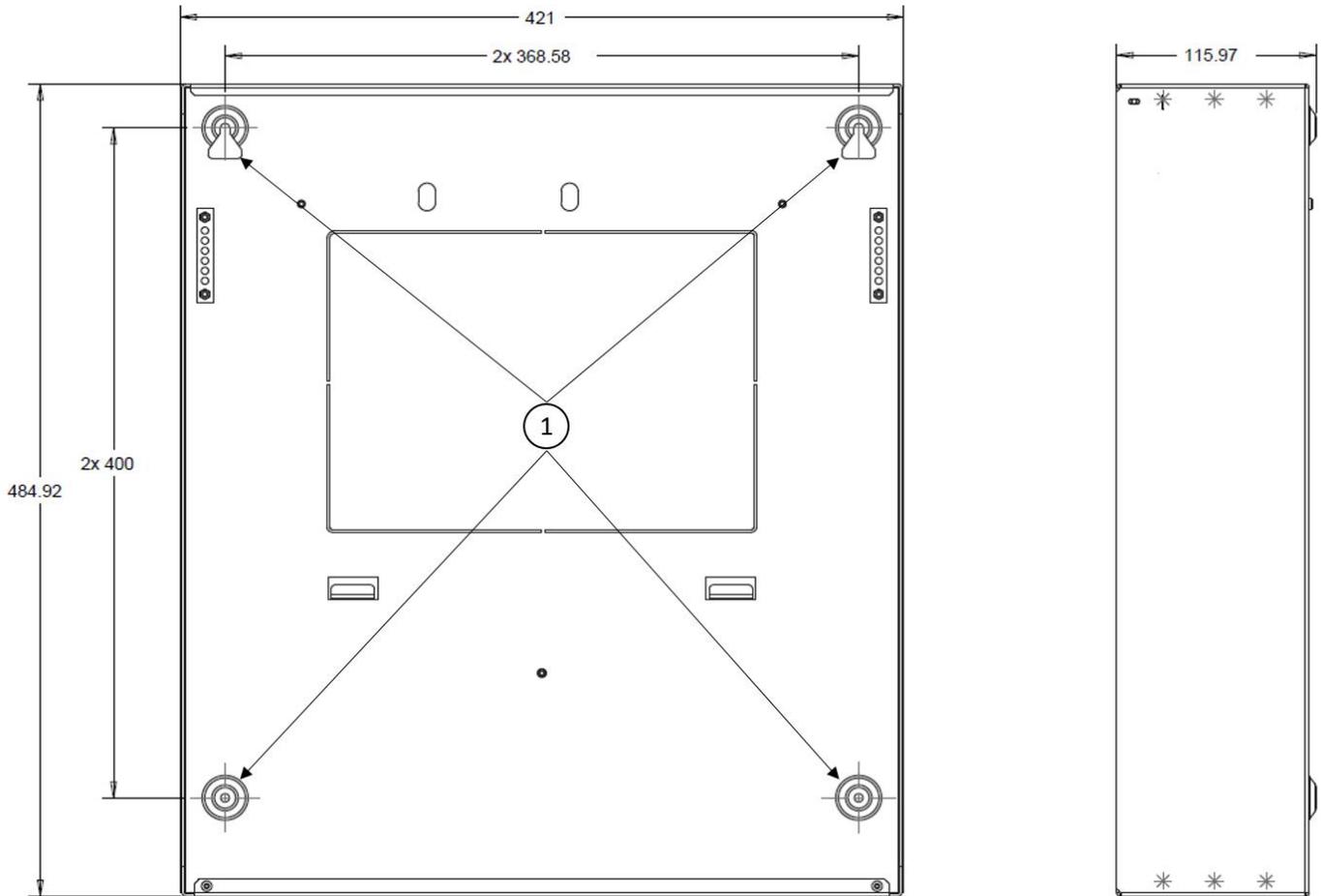
**Note:** An identification label of the SW zones is included on the bottom of the last page of this guide. Cut the identification label out and insert it in the pocket of the user interface.

Figure 2: Chassis mounting details



1	Mounting studs
2	Mounting slots

**Figure 3: Cabinet dimension details**



**Note:** All dimensions are in mm.

1	Mounting holes
---	----------------

## Pre-commissioning checks

Create temporary connections to test the wiring for continuity and insulation.

Complete the following steps for pre-commissioning checks:

1. Run the loop wiring around the building and wire up the detector bases according to the system plan or design.
2. Run any other wiring required for ancillary modules.
3. Label the “+” and “-” conductors and connect them to the corresponding terminals of the detector bases.  
Where screened cables have been used and no earth connections are provided at the device, join the loop screen connections together using terminal block connector to maintain the integrity of the loop earth.



### CAUTION

- Do not wire in any isolator bases and modules or fit the detectors until pre-commissioning checks are complete. The items will be damaged by any high voltage insulation checks performed. Use terminal block connectors for any temporary connections to preserve continuity. Details for wiring individual devices are provided with the items.
  - Do not make the final connections at the control panel. Testing the wiring requires access to the free ends of the wires.
4. Pull the cables through the appropriate knockouts of the control panel. Use glands as appropriate and leave generous free ends of the wires.
  5. Connect the loop free ends of the wire to a terminal block connector. Place loosely in the cabinet to avoid accidental connection to the

panel before pre-commissioning checks are complete.

6. If any conventional sounder circuits are running, check that all devices have the correct polarity, that the correct polarity is maintained, and that the 3.9 Kohm end of the line resistor has been fitted within the last device of the circuit.



#### WARNING

**Danger of damage to equipment:** Before using a high-voltage insulation tester, ensure that no devices liable to be damaged are fitted to the circuit. This includes isolator bases and ancillary modules.

#### Notes:

- Ensure that the insulation check, the cabling resistance check, and all other necessary checks comply with current local laws.
- Ensure that the mains earth is connected to the safety earth bar located in the upper part of the panel cabinet.

## Installing the batteries



#### WARNING

The standby batteries can deliver high current presenting danger of injury and equipment damage while working on the panel. Take care not to accidentally short the battery terminals.

The suitable batteries for the FC503 and FC506 control panels are two 12 V/17 Ah or two 12 V/ 38 Ah batteries. The control panel can be connected to the 12 V/38 Ah batteries in an external metal box for power in the event of a mains failure.

Complete the following steps to install the batteries:

1. Locate the 12 V/17 Ah backup batteries at the bottom of the panel cabinet and secure them

to the panel cabinet with the battery clamp.

2. Connect the batteries in series with the supplied 320 mm black battery cable.
3. Connect the battery terminals to terminals – BAT+ on the main board. Observe the battery polarity.
4. A KST thermal probe is installed to the power supply connector of the panel. Attach the KST thermal probe to one of the batteries to obtain optimum heat transfer. The KST thermal probe optimizes the battery charging process by regulating the charge voltage in accordance with the battery temperature.

## Commissioning

Commissioning includes configuring and testing the system. A fully comprehensive test procedure cannot be provided because the testing must be in accordance with local regulations and practice and sites differ in terms of the system design. Tests must be individually planned to suit the specific site requirements. Instead of a comprehensive test procedure, this section provides guidelines in the form of an example procedure.

For details of the control panel operator functions, refer to the *FC503 & FC506 Addressable Fire Control Panels User Manual*.

### Panel Checks

Complete the following steps to make the panel checks:

1. Power on the control panel.

If there are panel faults, the internal buzzer will sound. To temporarily silence the buzzer, press the **SILENCE BUZZER** key. Press the **ESC** key on the user interface to return to the main menu.

To silence the buzzer for the duration of the installation, engage the control panel at access level 3 and remove the Jumper J5.

When the buzzer is disabled, the control panel user interface zonal LEDs flash and the time, date, and BUZZER OFF are displayed alternatively. The timeout for the installer access is not changed as a result of this procedure.

To reactivate the buzzer, replace the Jumper J5 when the installation process is complete.

2. Using the **LAMP TEST** key, check that the LEDs and buzzers function properly. If the control panel is functioning as intended, all LEDs will be on and the buzzer emits a continuous beep.
3. Check the brightness and contrast of the LCD display. The keys have the following functions:
  - **Up** key: increases the brightness of the LCD display.
  - **Down** key: decreases the brightness of the LCD display.

- **Right** key: increases the contrast of the LCD display.
  - **Left** key: decreases the contrast of the LCD display.
4. Set the date and time on the user interface. Ensure that the date and time are correct for log file consistency. To set the data and time, complete the following steps:
- a. Enter the user access password. Each digit will be masked by an asterisk and the default user password is 11111.
  - b. Press the **3** key to select the Modify option on the MAIN screen.
  - c. Press the **4** key to select Time and Date.
  - d. Use the alphanumeric key to enter the Time and Date values. The keys have the following functions:
    - **Right** key: selects the next value to be inserted or modified.
    - **Left** key: selects the previous value to be inserted or modified.
    - **ENTER** key: confirms the TIME and DATE.
    - **ESC** key: returns to the previous screen.
5. Set the system language of the user interface. To set the system language, complete the following steps:
- a. Press the **1** key to select the Program option on the MAIN screen.
  - b. Enter the installer password and press **ENTER**. Each digit will be masked by an asterisk. The default installer password is 00000.
  - c. Press the **8** key to select System LANGUAGE. The keys have the following functions:
    - **Right** key: selects the next language.
    - **Left** key: selects the previous language.
    - **ENTER** key: confirms the language selection.

## HELP key

An embedded help feature is available on the panel LCD display. Press the **HELP** key to see the dedicated help text for the active User Interface screen.

## Auto-Addressing procedure

Auto-addressing allows you to make all of the devices accessible from the panel without the need to execute any previous configuration action on the devices, during the installation phase or the device acquire phase. The FC490ST is no longer required for the manual assignment of the device addresses.

Auto-addressing allows you to know or to set the geographical position of the devices on the site in the device mapping phase. The auto-addressing

procedure is part of the loop devices enroll process in the FC503 panel. Refer to the Quick Start Procedure section in the *FC503 & FC506 Addressable Fire Control Panels Installation Manual*.

To initiate the loop devices enroll process, complete the following steps:

1. Press the **1** key to select the PROGRAM option on the MAIN screen.
2. Enter the installer password and press **ENTER**. Each digit will be masked by an asterisk. The default installer password is 00000.
3. Press the **1** key to select Auto.

**Note:** If any loop fault such as open circuit or a double address is detected during the enrolling phase, the control panel display shows the instructions to fix it. Refer to *FC503 & FC506 Addressable Fire Control Panels Installation Manual*.

4. Choose the type of automatic zones assignment. The options for automatic zones assignment are:
  - **1:** According to the loop
  - **2:** According to the addresses of the devices
  - **3:** Do not assign. When this choice is made, you can reach the results phase by:
    - Pressing the **ENTER** key to activate the AUTO- ADDRESSING phase
    - or
    - Pressing the **ESC** key to go to the FAULT screen (not addressable devices).
5. Choose the sounder trigger event. The options for the sounder trigger event are:
  - **1:** Zone alarm
  - **2:** Panel alarm

**Note:** Once you select an option, the panel executes the enrolling of already addressed devices and enters the auto-addressing phase.

6. Press the **ENTER** key to activate the auto-addressing phase or **ESC** key to exit.

By default, any addressable device has the address 255. The fire panel examines the serial number of each device and assigns each an address from 1 to 250.

If the control panel finds a device with a different address than the default, it leaves the address set at that device.

The control panel is ready to work, at this time, with the default basic programming.

If you want to set the system addresses differently, proceed as follows:

1. Press the **ENTER** key, so the fire panel initiates the MAPPING DEVICES phase.
2. Activate all of the input devices in sequence. The input devices may include detectors, input modules, and manual call point. Return to the front of the panel.
3. Report the sequence of activation on the map of the system. The panel will store the activation sequence.
4. Use the **Up** and **Down** keys to examine the first activated device. Select the device. When the device is selected, the address will blink. If necessary, change the address. Press **ENTER** to confirm and the address will be fixed. To switch to the programming phase of the device, press the **ENTER** key again.  
**Note:** Unique in the time field indicates that it is the only device of its type on the loop. For example, if only one FC410DDM module is used in the system, it is tagged as Unique and it is not necessary to activate it because you

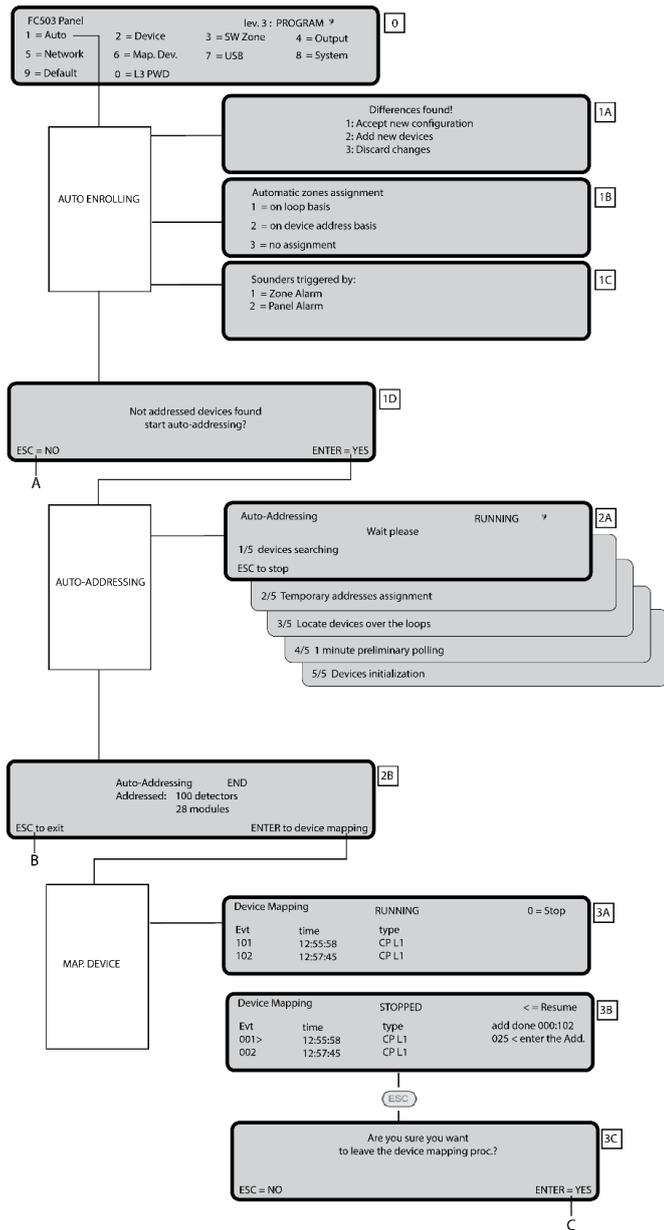
know where it is.

5. Examine the sounders, the beacons, and the output devices. Locate the devices by scanning the list of auto-addressed devices. When you reach an output-only device, it becomes active. Activation is signaled by a sounder starting to sound, a beacon starting to flash, or an output module illuminating its LED. The device will remain active until a new device is selected or a permanent address is entered.  
**Note:** Active in the time field indicates that the relevant device is active. Active is only applicable to output device types such as sounders or beacons.

**Auto-addressing notes:**

- The enroll process does not take place until all the loop wiring issues have been resolved.
- Use the auto-addressing procedure when there are NG1 devices on the loop or it has no effect.
- The device mapping process does not take place until all of the double address faults have been removed.
- FC506 supports 500 devices and has two logical loops which each support 1 to 250 devices. Complete auto-addressing for logical loop1 before proceeding with auto-addressing for logical loop2.

**Figure 4: Programming option AUTO**



**Programming devices addresses using the programmer**

Use the FC490ST service tool to program devices on a loop as an alternative to auto-addressing.

Complete the following steps to program the device addresses with the FC490ST:

1. Connect the detector to the programmer. If you need to program a sounder or a module, connect the programming lead into the AUX port of the programmer and the other end of the lead into the device's programming port. You cannot address a detector while the programming lead is plugged in.
2. To switch the programmer on, press and hold **F1**.

3. Press **F1**, **F2**, **F1**, **F2**, **F3**, and **F4** to enter the password when prompted.
4. Press **F2** to enter the address program. The current address of the device will be shown. New devices will have a current address of 255.
5. Press **F2** to select the write menu option.
6. Press **F3** and **F4** to change the address to the required address.
7. Press **F2** when the correct address is displayed. The programmer will display a message "programmed ok" and then show the next address.
8. Label the device.

## Adding text and zone information without software

Complete the following steps to add text and zone information without software:

1. Press the **1** key to select the Program option on the MAIN screen.
2. Enter the installer password and press **ENTER**. Each digit will be masked by an asterisk. The default installer password is 00000.
3. Press the **2** key to select Device.
4. Select the loop by using the **Right** and **Left** cursor keys and press **ENTER**.
5. Select the device by using the **Right** and **Left** cursor keys and press **ENTER**.
6. The control panel will prompt you to indicate if you want to remove the device. Use the **Right** and **Left** cursor keys to select **NO** and press **ENTER**.
7. Use the alphanumeric keypad to enter the required text in the dedicated field. Use the cursor key **Up** to change the text to capitals and the cursor key **Down** to change the text to lower case. Use the **0** key to add a space. Press **ENTER** to confirm the text. Press **ENTER** again if you do not want to change the WORKING MODE until the zone number is highlighted.
8. Use the alphanumeric keypad, to enter the required zone number and press the **ENTER** key to confirm.
9. If a change of the device base is not required, press the **ENTER** key. The control panel resets.

Repeat steps 1-8 for all of the addresses you want to edit.

## Testing and monitoring the devices

Check that each device activates correctly. Use the one man test facility or complete a live test. Examples of testing include testing call points by pressing the **Activate** key or testing smoke detectors with a smoke aerosol can.

If the auto-addressing procedure was followed, some devices will already have been verified.

## Testing the local and loop sounders

1. Press the **EVACUATE** key on the panel to issue an alarm. Check that the sounder has operated.

2. After the test, press the **SILENCE/RESOUND** key and then press the **RESET** key.

**Note:** Be aware of the possible nuisance caused by the alarms and take any required measures.

## Testing the open sounder circuit monitoring

1. Disconnect any EOL resistors or associated circuits in the system. Ensure that the control panel reports the appropriate faults.
2. After the test, restore the system to normal.

## Testing the short sounder circuit monitoring

1. Replace any EOL resistors or associated circuits in the system with a short circuit. Ensure that the control panel reports the appropriate faults.
2. After the test, restore the system to normal.

## WALK TEST procedure

1. Press the **1** key to select the **Program** option on the MAIN screen.
2. Enter the installer password and then press **ENTER**. Each digit will be masked by an asterisk. The default installer password is 00000.
3. Use the **3** key to select the **SW Zone** screen.
4. Select the number zone and press **ENTER**.
5. Use the **Right** and **Left** cursor keys to select an option. The keys have the following functions:
  - **OFF**: does not perform the procedure.
  - **ALL**: selects all the devices assigned to zones in WALK TEST mode. It will not generate an alarm in the case of their activation but will reach the TEST status.
  - **DET**: selects only the detectors assigned to zones in WALK TEST mode. It will not generate an alarm in the case of their activation but will reach the TEST status.
  - **CP**: selects only the call-points assigned to zones in WALK TEST mode. It will not generate alarm in the case of their activation but will reach the TEST status.
6. Press the **ENTER** key to confirm the selection.

The presence of a zone in WALK TEST mode is signaled by the TEST yellow LED on the user interface. More than one zone can be put in WALK TEST mode at the same time.

# Useful menu options

## Accessing the event log

Complete the following steps to access the event log:

1. Press the **1** key to select the Analyze option on the MAIN screen and then press the **8** key to select Log. Alternatively, press the **3** key to select View Log.
2. Use the alphanumeric keypad to select the visualization of the filters. The selection allows you to observe only a certain type of event. The options are:
  - **1**: Alarm events only
  - **2**: Delay to alarm events only
  - **3**: Warning events only
  - **4**: Test events only
  - **5**: Fault events only
  - **6**: Restore events only
  - **7**: Generic events only.
3. Use the **Right** and **Left** cursor keys to scroll through the data blocks and use the **Up** and **Down** cursor keys to scroll through the events.

## Loop check

Complete the following steps to check the loop:

1. Press the **1** key to select the Analyze option on the MAIN screen.
2. Press the **1** key to select Loop.
3. Use the **Up** and **Down** cursor keys to select the loop to view. The panel will check both sides of the loop before displaying the configuration of the loop.
4. To return to the MAIN screen, press the **ESC** key.

## Viewing the device status

Complete the following steps to view the device status:

1. Press the **1** key to select the Analyze option on the MAIN screen.
2. Press the **2** key to select Device.
3. Use the **Right** and **Left** cursor keys to scroll and then press the **ENTER** key to select the loop.
4. Press the **ENTER** key to view all the devices.
5. Use the **Right** cursor key to select the next device and use the **Left** cursor key to select the previous device.

6. To return to the MAIN screen, press the **ESC** key.

## Disabling points

Complete the following steps to disable a point:

1. Press the **2** key to select the Disable option on the MAIN screen.
2. Enter the user password and press **ENTER**. Each digit will be masked by an asterisk. The default user password is 11111.
3. Press the **2** key to select Device.
4. Use the **Right** cursor key to select the next available device and the **Left** cursor key to select the previously available device. Press the **ENTER** key to confirm the selected device.
5. Press the **ENTER** key to confirm the request to Disable or press the **ESC** key to return to the MAIN screen.

## Disabling sounders

Complete the following steps to disable a sounder:

1. Press the **2** key to select the Disable option on the MAIN screen.
2. Enter the user password and press **ENTER**. Each digit will be masked by an asterisk. The default user password is 11111.
3. Press the **4** key to select Output.
4. Use the **Up** or **Down** cursor keys to scroll through the type of output to disable or enter the SC number. Press the **ENTER** key.
5. If the sounder is disabled, the panel will prompt you to enable it and if the sounder is enabled, the panel will prompt you to disable it. Press the **ENTER** key to confirm.

## Loading a language from the USB stick

The USB option in the PROGRAM menu activates the USB programming screen. Use the **7** key to select the USB programming screen. The USB programming screen includes the following options:

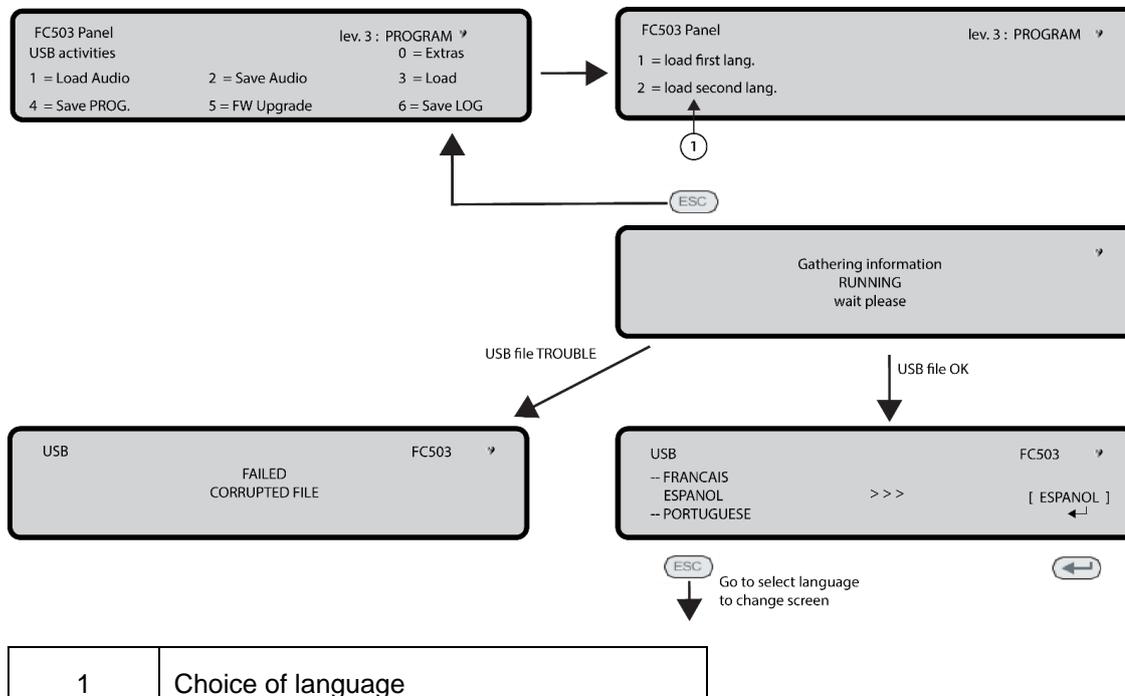
- **0**: Extra
- **1**: Load Audio
- **2**: Save Audio
- **3**: Load programming
- **4**: Save programming
- **5**: FW Upgrade
- **6**: Save LOG

The loaded languages are the languages of the control panel. The default first language is English and cannot

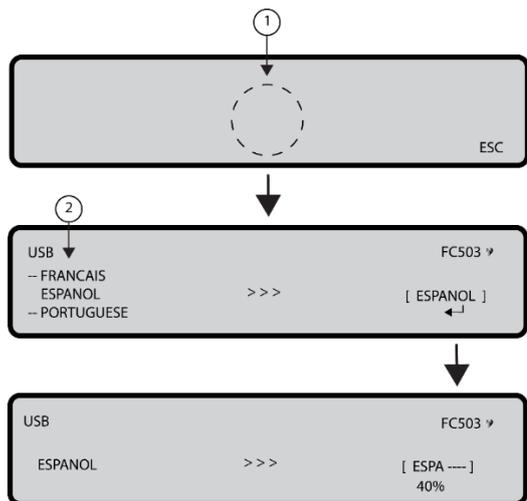
be overwritten. The default second language is Italian and can be overwritten with another language at the first panel power-up or at the end of the FW upgrade process.

The available second language files are contained in a folder on a USB stick connected to the control panel before the first power up. At the end of the FW upgrade process, the panel will start the procedure Language strings download via USB key to load the correct version of the required language. See *Figure 6*.

**Figure 5: LCD screens sequence for loading a language**



**Figure 6: LCD screens sequence for downloading language strings from USB key at first panel power-up**



1	Language list waiting page
2	List of languages in the USB key

# CPR Information



0051

Tyco Fire & Security GmbH,  
Victor von Bruns-Strasse 21,  
8212 Neuhausen am Rheinfeld,  
Schaffhausen, Switzerland  
19

**DoP-2018-4260** (FC503/ FC506 with optional  
FC500IP module)

**EN 54-2:**1997+A1:2006 **EN54-4:**  
1997+A1:2002+A2:2006

**EN 54-21:** 2006

Control and indicating equipment with integrated  
power supply equipment for fire detection and  
fire alarm systems for buildings with alarm  
transmission and fault warning routing  
equipment.

#### EXPECTED OPTIONS

Fault signals from points  
Dependencies on more than one alarm signal:  
type A and B Delays to outputs  
Disabling of  
addressable point  
Test condition  
Output to fire alarm device

## NOTES

This product uses the FreeRTOS.org real time kernel.  
The FreeRTOS.org source code can be obtained by  
visiting <http://www.FreeRTOS.org>

#### FreeRTOS LICENSING:

"The FreeRTOS source code is licensed by the GNU General Public License  
(GPL) with an exception.

The full text of the GPL is available here:

<http://www.freertos.org/license.txt>

The text of the exception is available on FreeRTOS official

website: <http://www.FreeRTOS.org>

- License and Warranty Page

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