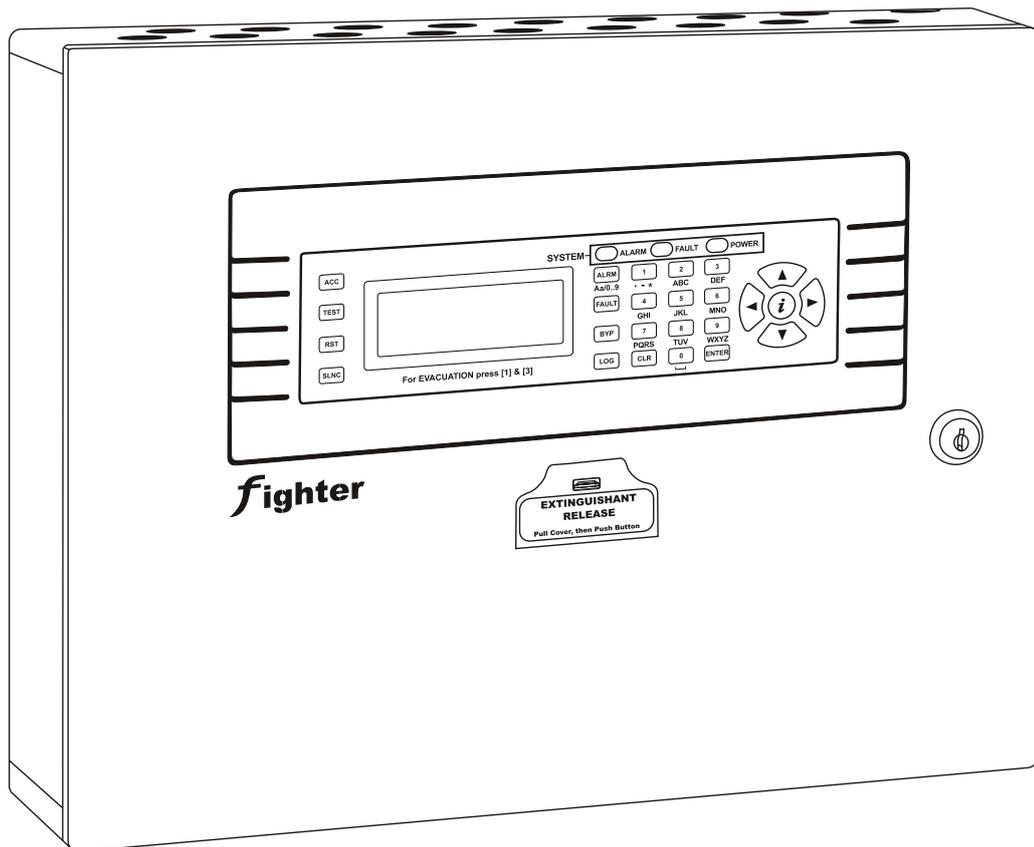


fighter XT



Installation and Operation Manual

**Advanced Analogue Conventional Fire Alarm & Extinguishing Control
Panel BUS Technology**

Version: 2
Revision: 13



EN 54-2: 1997/A1: 2006/AC: 1999
EN 54-4: 1997/A2: 2006/AC: 1999
EN 12094-1:2003 (Extinguishing)

IMPORTANT INFORMATION

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Advanced conventional fire alarm control panel FighterXT is certified according to European Directive CPR (Construction Products Directive 93/68/EEC).

-Standards:

EN 54-2: 1997/A1: 2006/AC: 1999

EN 54-4: 1997/A2: 2006/AC: 1999

EN 12094-1:2003 (Extinguishing)

Certificates can be found online at paradox.gr.

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Paradox Hellas hereby declares that the design and production of the FighterXT fire panel have been conducted in strict compliance with our ISO 9001 quality management system. This system encompasses all software and hardware development, as well as production processes. All electrical components have been carefully selected to ensure reliable performance and operate within their specified electrical and thermal ratings when the environmental conditions outside the cabinet conform to Class 3K5 of EN 60721-3-3.



RoHS directive compliance

The EC RoHS guideline has been released in order to reduce the heavy metal load in electrical and electronic products caused by e.g. lead and mercury. All manufacturers are obligated to provide only RoHS-compliant products to the European market, effective from July 1st, 2006.

Paradox Hellas hereby states that FighterXT panel is fully compliant with RoHS 2002/95/EC directive.

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1. When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2002/96/EC.

2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.

3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health.

4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.

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Introduction

Thank you for purchasing the FighterXT Fire Panel. The panel's main design goal was low cost (using conventional detectors) high modularity and flexible, easy installation with the use of a 4 wire system interconnect bus.

The FighterXT panel is an advanced multipurpose analogue conventional fire alarm panel and can be used for fire extinguishing applications.

The panel is fully customizable via a user interface from the keyboards. All parameters are displayed with hierarchical menus in 3 different access levels in an easy to understand and use manner. The system general status can be easily viewed at a glance from the led indicators on the keypads and the user can retrieve more information from the LCD character display and perform actions using the keyboard.

The layout and operation is designed with the user in mind and meant to be user friendly. The menus are designed to be logical and easily accessible.

Typing conventions and abbreviations

Throughout this manual the use of specific symbols and character types signify specific items. The following table summarizes the typing conventions:

- **[Button/Indicator]**: A Keypad button that can be pressed. The button also works as an indicator that can be lit or not. e.g. [ACC].
- **<Button>**: A Keypad button that can be pressed. e.g. <5>.
- ***Indicator***: A visual indicator that may be lit or not. e.g. *ALARM*.
- **|TEXT ON LCD DISPLAY|**: Text that appears on the LCD display by the system.
- **"TEXT ENTERED BY THE USER"**: Text that appears on the LCD display as a result of user input.

The following terminology is used :

- **PSU**: Power supply unit
- **A.L.**: Access Level
- **ALM**: Access Level Menu
- **ALM.x.y.z**: Access Level Menu x, subitem y, subitem z.
- **EOL**: End Of Line (device).

1. System overview

1.1 System capabilities list

The FighterXT fire panel has the following characteristics:

Analogue conventional detector inputs: This is the way that detectors connect, get power and communicate an alarm condition to the fire panel. Analogue conventional detectors are very common, inexpensive and exist in a variety of functions and manufacturers.

Two general alarm siren relay outputs, one general fault relay output: The two siren outputs get activated when an alarm condition is detected. One of the two relays produces a constant output when active. The second can be programmed to produce an output pattern (e.g. ANSI evacuation pattern).

Relay boards with one relay dedicated to each zone input: Each zone input is mirrored by a relay. When the zone is in alarm the relay is active producing 24 VDC.

Auxiliary power output: A power output of 24 VDC / 1 Amps fully protected and monitored.

Power distribution overview: Each module reports voltage levels from bus or/and connected PSU. The display units summarize this information in an easy to see and understand way.

User friendly interface: The system's key-display units consist of a backlit rubber keypad with numerical, arrow and dedicated keys as well as a 4 lines 20 characters per line blue backlit LCD screen. All operations are performed through menus. Help screens accessible with the use of the "info" button provide operation hints as well as information about the active display screen.

Multiple display/keyboard units (as repeaters): Up to 8 keypad units may be connected with the 4 wire interface. The system ensures correct operation in this parallel mode and implements a lock out mechanism if one keypad unit enters an elevated access level (2 or 3).

Communicator: A PSTN line interface provides communication of events to a Central Monitoring Station. The format used is Contact ID also used by burglar alarm systems. See section 6.8.

Fault supervision and notification: All inputs and all outputs except the Fault relay output are monitored for faults. Furthermore, the Mains power supply as well as the connection and health of the batteries are fully monitored. Fault conditions are raised in the event of a detected system abnormality. The system also monitors earth fault conditions (system wiring shorting with protective earth). See section 5.

User friendly zone descriptions: Each zone may be assigned with a meaningful description rather than the default "Zone 1", "Zone 2" etc. See section 3.4.1.

LOG (events): Storage of up to 1.000 log events. See section 3.8.

Bypasses (disablements) for both zone inputs and relay outputs: Zone inputs and Relay outputs may be disabled independently from each other. See section 4.

Cross-zoning/extinguishing operation: A system that uses 4 (or 8) zones and 4 (or 8) relays to produce a very reliable alarm detection and commence a sequence of relay activations. Mainly used to drive extinguishing systems. If extinguishing mode 1 is used, any 4 zones on any module along with their corresponding relays may be programmed as an extinguishing area. If extinguishing mode 2 is selected only the first 8 zones and corresponding relays may be used, forming one extinguishing area but with more features than mode 1. See section 6.3.

Intellizone operation (Alarm verification): A system that provides a verification to an alarm condition before the alarm state is entered. Helps avoid false alarms by combining alarm signals in time and/or from different detector zones. Can be activated on selected zones and may have global or per module grouping. See section 6.1.

Day/Night operation: A system that reduces false alarms during specific hours of the day by using the intellizone feature. Used for example in smoking areas during working hours. See section 6.2.

3 options for global evacuation: The system can use manual call points or/and a key combination on the keypads or/and extinguish zones to activate the global evacuation condition. See section 6.4.

Siren pattern selection: One of the two General alarm outputs and the relays may be programmed to produce the ANSI standard audio pattern for evacuation. See section 7.3.4.

Main screen branding, Installer's contact info: The installer has one line (20 characters) on the main screen that can program to display any message he wishes (e.g. company name). Contact information (e.g. telephone number) may also be programmed into the panel for user reference. See section 7.3.6.

Advanced Access level control: The system is not limited to (the required by European and American) standard 3 access levels. It provides an extra 8 Access Level 2 users plus one Master user that manages the rest. Access Level 3 (installer) has one user. See section 3.3 and section 7.3.1.

Periodic test with reminder: The installer may program how often the system must be checked. A reminder screen with sound notification indicates when the test is overdue. The system test may also be done before due time and the re-occurrence date is updated from Access Level 2 operation. See section 6.5.

Walk test: The user may activate a test state on the panel. During the test he manually triggers each one detector and the system once the alarm is detected sounds the sirens for a short period and auto resets. He/she then repeats the triggering process for all detectors to verify the system's good operation. See section 6.7.

Easy module identification: Modules are easily identified with a selection mechanism from the keypad units and their status LED (selecting a module of interest will activate a specific blinking pattern on the selected module).

Expansion port: An expansion port is implemented which allows the connection of Serial or Ethernet modules.

PC connectivity: The expansion port along with the required communication module permits PC connectivity for system supervision and operations.

1.2 System components

The FighterXT fire panel has a wide variety of configuration and installation options. This is achieved with its modular design. A system has a minimum setup of 8 zones.

1.2.1 System description and Wiring diagram

Figure 1, Figure 2, Figure 3, and Figure 4 show an overview of the system components, connections and various notes on their interconnectivity.

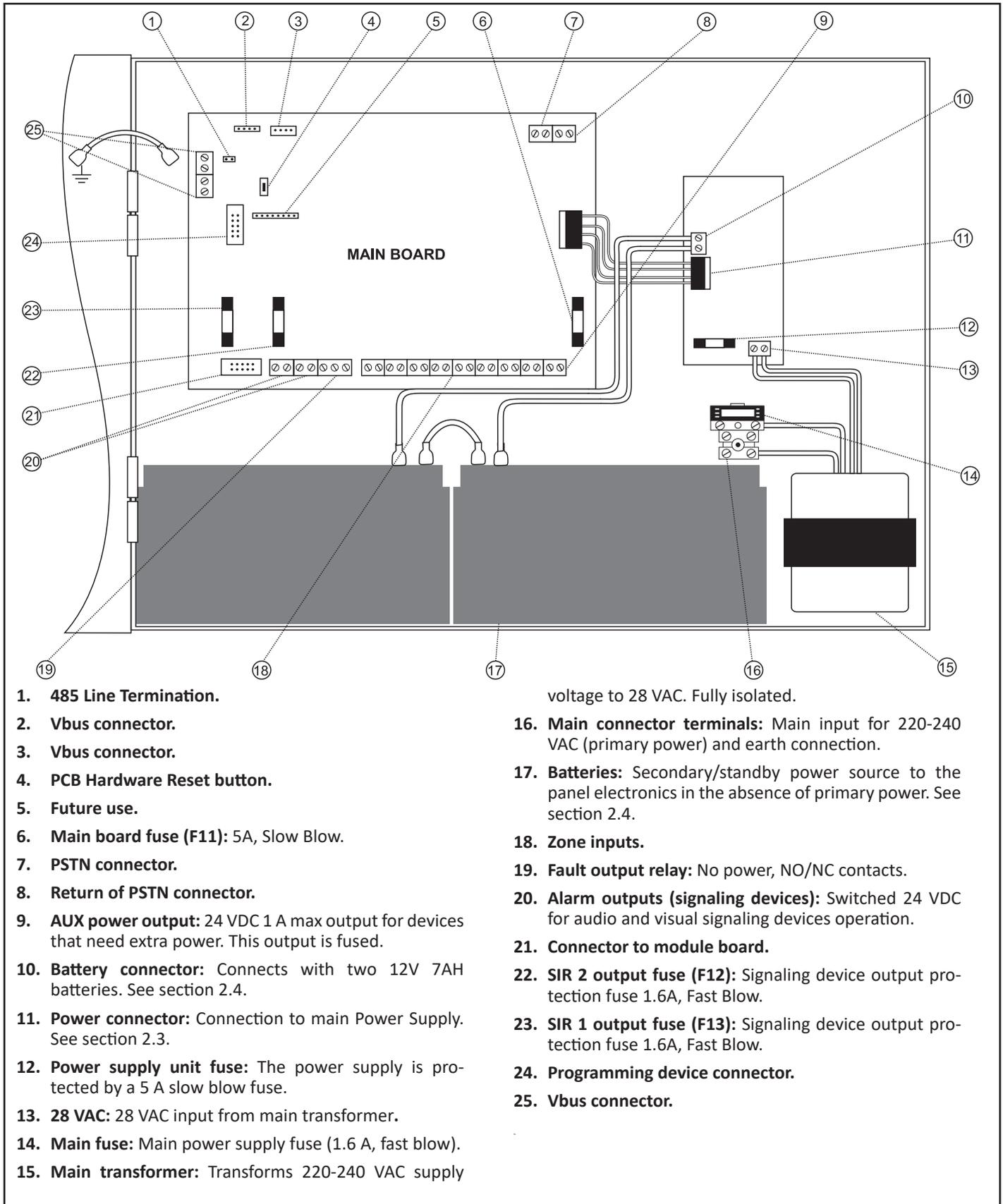
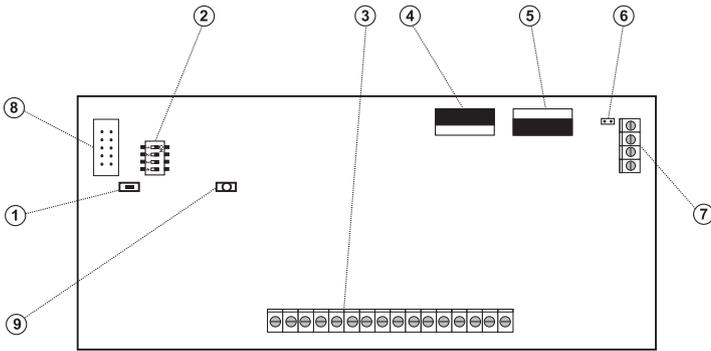
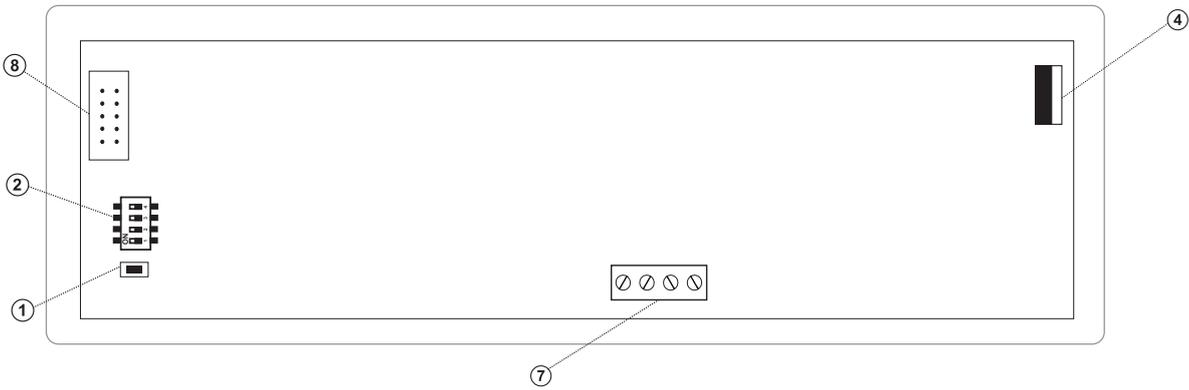


Figure 1. Panel's Components identification - Cabinet inside view

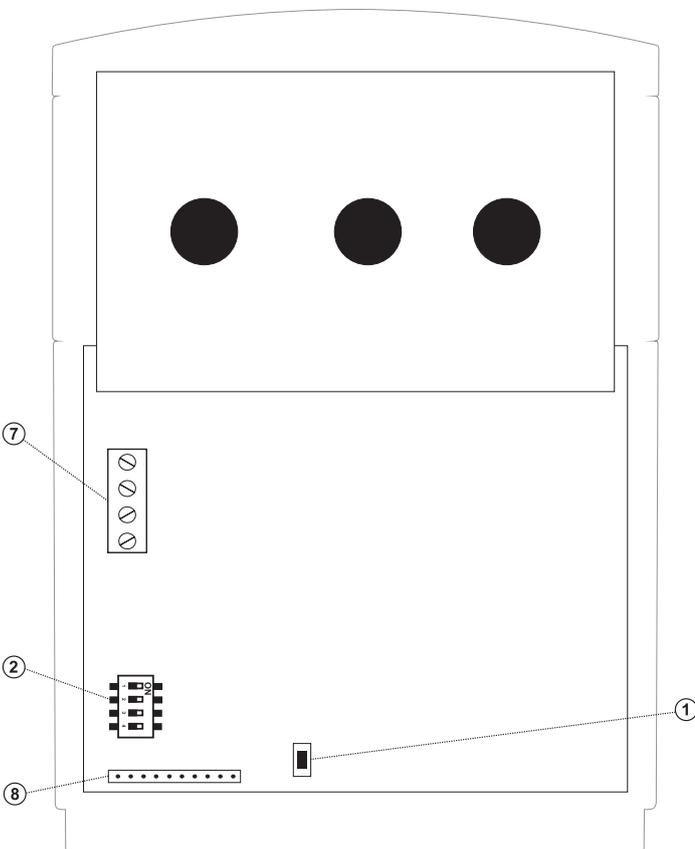
EXP-R8 8 RELAYS BOARD



PANEL'S KEYPAD (LONG) BOARD



STAND ALONE BOARD



1. PCB Hardware Reset button.
2. Module ID: See section 2.7.
3. Relay Outputs. 24 VDC/1A max per relay, 1A max total.
4. Internal BUS connection: See section 2.5.
5. PSU connection
6. BUS Termination
7. Vbus connector
8. Flash Writer
9. Health LED, module identification: See section 3.4.4.

Figure 2. Boards' Components identification

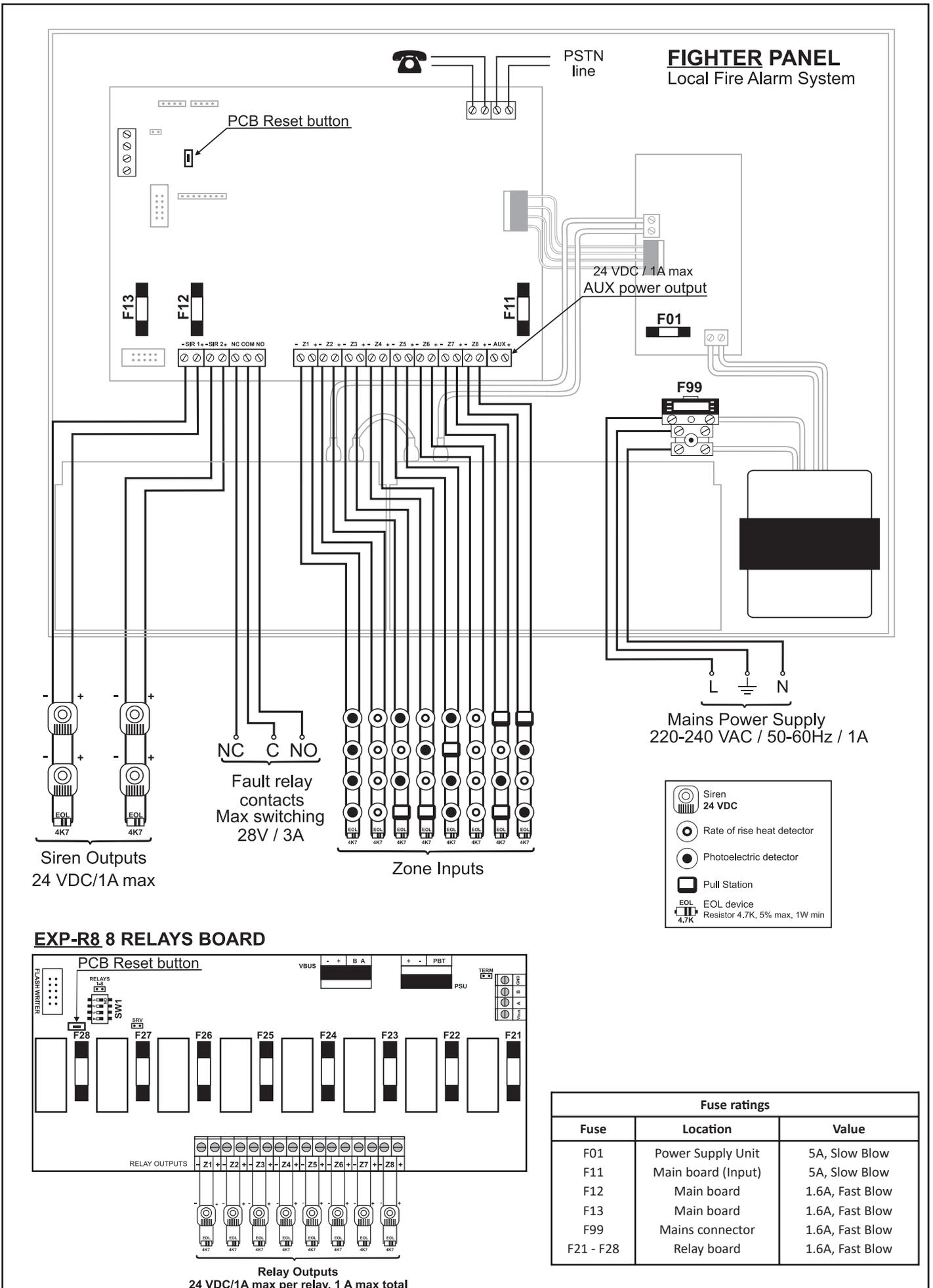


Figure 3. Wiring diagram and information

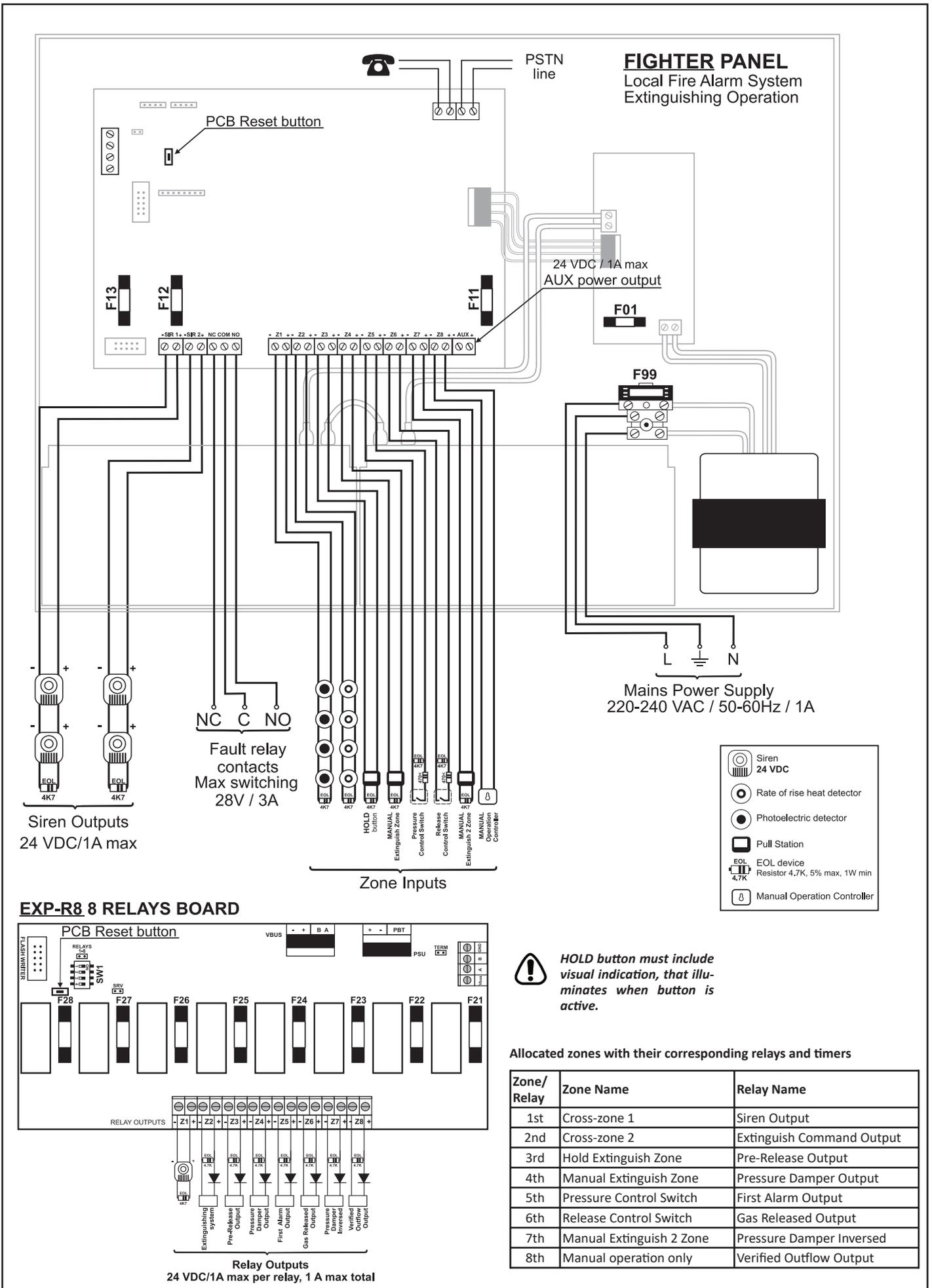


Figure 4. Wiring diagram and information for the extinguishing operation MODE 2

2. System installation

2.1 Installation checklist

- Prepare the site: Make sure the installation location is free from construction dust, debris, extreme temperature ranges and humidity.
- Unpack the equipment.
- Install the cabinet: See 'Installing the cabinet' for cabinet dimensions.
- Install optional components
- Review wire routing: See Figure 3.
- Connect the field wiring: See Figure 6.
- Check for opens, grounds, and shorts before connecting.
- Connect ground then AC power.

! Ensure that the AC circuit breaker is OFF before connecting high voltage wires (220-240 VAC) to the main connector.

- Connect batteries.
- Test for proper operation.

2.2 Installing the cabinet

Cabinets can be surface or flush mounted. See Figure 5 and Table 1 for framing and mounting dimensions.

To wall mount the cabinet:

1. Position the cabinet on the finished wall surface up to 2 meters.
2. Fasten the cabinet to the wall surface where indicated.

Cabinet dimensions

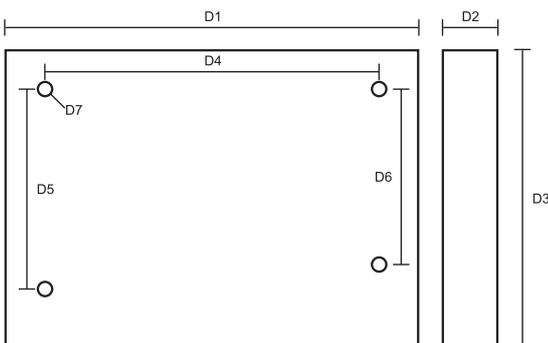


Figure 5. FighterXT cabinet dimensions

	Dimension
D1	42 cm
D2	10 cm
D3	31 cm
D4	36 cm
D5	16.5 cm
D6	11.5 cm
D7 [Ø]	0.6 cm

Table 1. Framing and mounting dimensions

2.3 Mains connection

Use the 3 terminal fused block to connect the AC power cable to the panel. Ensure that the power cable is safe to handle (has no power). First connect the ground wire to the middle connector of the terminal then the phase and neutral wires.

The diameter of the wires must be between 0.823 and 3.31 mm² (12-18 AWG). See section 8.

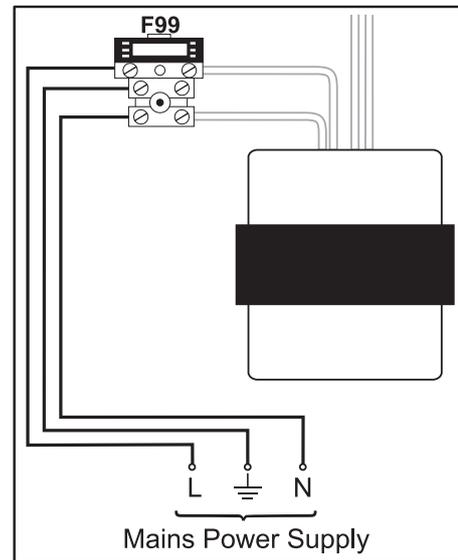


Figure 6. Mains connection

2.4 Battery installation

The panel uses two lead acid gel 12 V/7Ah batteries connected in series. Connect the batteries with the supplied free lead and the Batteries to the power supply unit with the red (positive) and black (negative) wires.

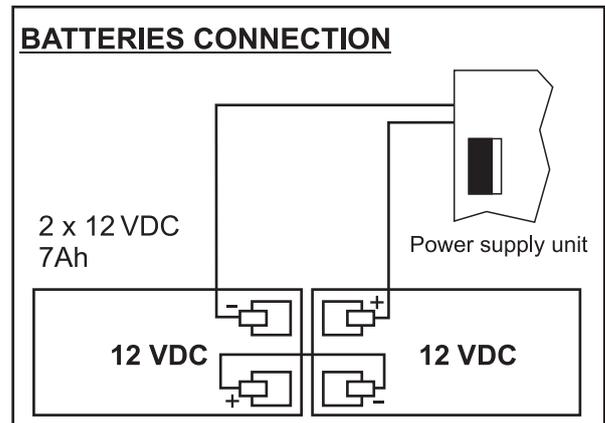


Figure 7. Battery installation

2.5 Setting module IDs

All modules except the power supply units (PSUs) have a set of dip switches (Figure 8) that controls their address on the bus system.

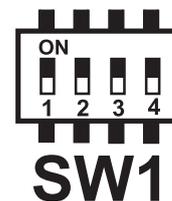


Figure 8. Set of dip switches

2.5.1 Setting keypad modules IDs

It is very important to set a unique address to each keypad. See Figure 2 of the panel's keypad (long) board and the stand alone board for location and naming of the dip switches. Follow the rules below to set a correct set of addresses:

- The panel's keypad board ID must be set as ID=0. Set the dip switches SW1-1 to SW1-4 to OFF.
- Each stand alone board and long board must have a unique ID from 1 to 8. See Table 2 for IDs against dip switch settings.

Micro switches SW1				
ID	SW1-1	SW1-2	SW1-3	SW1-4
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON

Table 2. Keypads' micro switches SW1 ID settings

! It is obligatory the panel's keypad ID to be set as ID=0.

2.6 Initial Power up

When the panel is powered for the first time, the keypad's screen is turned on and a message is shown that the keypad is waiting to sync with the main panel. The main panel will take some time to boot as it reads all configuration data from its eeprom and sets the hardware. When the initialization completes the keypad will start the sync process reading the system's configuration. This procedure is displayed on the keypad's screen with a progress bar and information about the current data transferred. After the operation completes the main screen will be shown.

At this state the system is ready for operation.

! Right after power is applied or a module is hardware reset, the TEST indicator and the Buzzer on the keyboards or the diagnostic LEDs on the rest of the modules indicate the reading of the dip switches. This is done with 4 pulses that may either be short (~0.1 sec) or long (~0.8 sec).

3. System operation & Features

3.1 Keyboard description

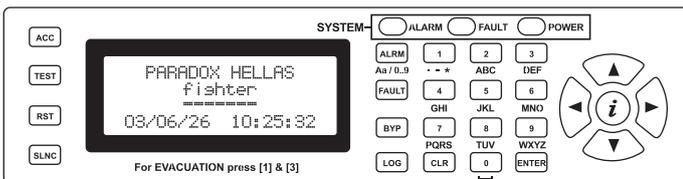


Figure 9. FighterXT keypad

Each keypad (Figure 9) has several buttons with some having different functions depending on the system's state. The following table summarizes each key's functionality:

The following table summarizes each key's functionality:

[ACC]	Button/Indicator Enters access level 2 or 3. The corresponding access code is required. Factory default access codes are "2222" and "3333" for access levels 2 and 3 respectively.
[RST]	Button/Indicator Resets the panel's state including alarm zones, faults etc. (needs access level 2 or 3).
[SLNC]	Button/Indicator Silences alarms or faults (needs access level 2 or 3).

[TEST]	Button/Indicator Tests the keypad by turning on all LEDs, the buzzer and display a test pattern on the LCD screen. When the indicator of this control is lit, it signifies that the HOLD button of the extinguishing hold operation is active. This only applies to Mode 2 of extinguishing operation is selected (see 6.3.1.1 Extinguishing modes). NOTE: The TEST LED which is combined with the test button, is also used as communication status indicator. When the LED is lit the keypad is sending data to the main board.
<ALARM> (Aa / 0..9)	Button Displays the system's ALARMS in two different screens. The first press shows a list of zones in Alarm; by pressing the button again the zones overview screen is shown. Further presses of the <ALARM> button alternates between these two screens. Alternative function: During text input field editing (access level 2 and 3 programming), changes character entry mode from numeric to T9 (text entry mode as used on mobile and telephone devices).
<FAULT>	Button Displays the system's FAULTS in two different screens. The first press shows a list of zones in fault; by pressing the button again the zones overview screen is shown. Further presses of the <FAULT> button alternates between these two screens. Alternative function: During text input field editing (access level 2 and 3 programming), deletes the character that the cursor is over.
[BYP]	Button/Indicator Displays the system's disablements in two different screens. The first press shows a list of bypassed zones; by pressing the button again the zones overview screen is shown. Further presses of the [BYP] button alternates between these two screens.
<LOG>	Button Shows the log events from the main board. While in the LOG screen the user can navigate through the log using the arrow keys (UP=RIGHT=get next log and DOWN=LEFT=get previous log).
<CLR>	Button Returns to the previous menu or to main menu depending the current menu.
<ENTER>	Button Selects an option/menu or submits a change during editing.
<NUM PAD> (keys 0-9)	Button Keys use for data entry and menu item selection. They can be operated either in numeric mode or in T9 (text and numbers) entry mode.
<i> (info key)	Button Displays help information about a menu or action. In the main screen it displays the Menu of Access Level 1 (informational).
<ARROW KEYS>	Button Navigate through menus, lists and log.

Table 3. Keyboard description

3.1.1 Data entry operation

The LCD and Keypad are used in various operations for data entry such as zone descriptions, dates, numeric settings etc. During data entry mode a designated area on the LCD is used for the input. The LCD characters allocated for the data field are enclosed in square brackets Figure 10. If the length of the data is greater than the available LCD character space, horizontal scrolling takes place. In this case the Left or Right (or both) square brackets enclosing the data are changed to "less than" or

"greater than" signs indicating the direction of existing but not visible characters.

The data entry takes place in two different modes:

- **Numeric data entry:** The keypad is in numeric mode, and every time a key is pressed the corresponding number is produced on the screen.

- **T9 entry mode:** Each key has a set of characters (4 or 5) that are selected by promptly pressing the same key as many times needed. The characters allocated to each key are printed above them on the keypad mask (Figure 9). This mode is very popular with cellular phones and used for SMS text messaging.

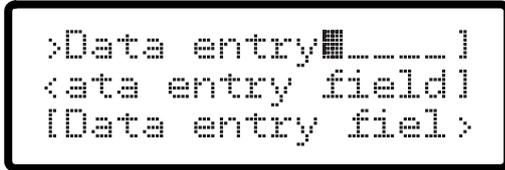


Figure 10. Data entry examples

The operation of the keys during data entry is as follows:

- <0> to <9>: Characters 0-9, A-Z and symbols.
- <ALRM>: Switch keypad mode between Numeric and T9.
- <FAULT>: Delete the character that the cursor is over.
- <CLR>: Cancel editing and exit data entry mode.
- <ENTER>: Accept editing saving data field and exit data entry mode.
- <Left Arrow>, <Right Arrow>: Move cursor in the corresponding direction.
- <Up Arrow>, <Down Arrow>: Increase or decrease the character or numeric value highlighted by the cursor.

3.2 Access Levels

The fire panel during its operation is said to be in a specific access level; from 1 to 3. Each access level defines what operations are allowed and what are protected. Each Access Level may be activated or "entered" by entering the requested code (or PIN) for the corresponding access level. Factory default access codes are "2222" and "3333" for access levels 2 and 3 respectively. There are operations and menus that require an elevated access level (other than 1, see Table 4 for operations summary). If the user initiates an operation that requires increased access level the system will prompt for the PIN, and once successfully entered, it will execute the operation and return to access level 1. Alternatively the user may request the menus of access level 2 or 3 (by pressing [ACC] key). In this case he/she will be prompted for the PIN and once successful, the access level menu will be displayed for further operations. While the access is granted, any operation under the specific access level is possible and the user will not be asked for the PIN every time. Elevated Access levels are canceled if the user willingly exits (by pressing <CLR>) or the menu times out due to user inactivity.

The Table 4 summarizes the basic functions and their required access level.

Basic Function	Access Level Required
Access level 2 menu	A.L. 2 / A.L. 3
Access level 3 menu	A.L. 3
Zones Reset	A.L. 2 / A.L. 3
Silence	A.L. 2 / A.L. 3
Bypass	A.L. 2 / A.L. 3
Test	A.L. 1
Log	A.L. 1
Display alarms	A.L. 1
Display Faults	A.L. 1
Display bypasses	A.L. 1
Evacuation	A.L. 1 / A.L. 2 / A.L. 3
System Programming	A.L. 3
Date/Time set	A.L. 2 / A.L. 3
Walk Test	A.L. 2 / A.L. 3
Periodic Test Confirmation	A.L. 2 / A.L. 3

Table 4. Basic functions required access levels

Since the system may have more than one installed key display units, an interlocking system ensures that only one is active at access levels 2 or 3. In this case the [ACC] key is constantly lit on the active key display. On the rest of the key display units the [ACC] key is producing three short flashes every 5 seconds. The user may press [ACC] on a locked key display to find out which unit is currently in elevated access mode. Figure 11 shows the information screen. To ensure that the system will never be locked untenanted in elevated access level, it detects user inactivity and drops to access level 1 automatically after a period of 30 seconds.

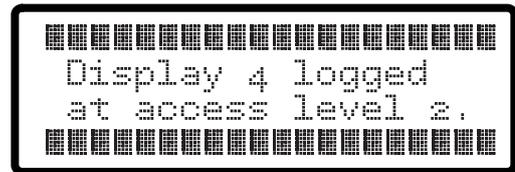


Figure 11. Locked key Access Level information screen

3.3 Users (master / normal, installer)

The fire panel apart from having two elevated access levels, also provides 9 users for access level 2; one Master and 8 Normal users. All users are limited to access level 2 operations (including the Master user). The Master user though may change the PIN codes for himself as well as all 8 Normal Users. Each Normal user can change only him/her own PIN. This system ensures that the Master user can have control over who is authorized to operate the system without disclosing his/her own PIN. This ensures future user control in the case of access revocation for a specific user.

The Access level 3 (A.L.3) user has full control over the entire system, including the Master and Normal user codes, programming and operation of the system. In other words Access level 3 (A.L.3) may perform operations that belong to the Access level 2 (A.L.2) group.



A PIN code of "0000" makes the user inactive.

3.4 System Information and status (A.L.1)

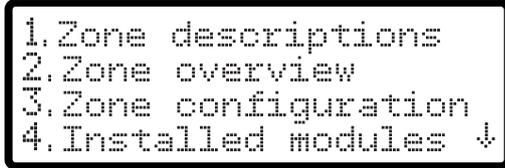


Figure 12. Access Level 1 menu screen

In Access level 1 (A.L.1) the user may request through the level's menu a number of information screens. The A.L.1 menu is shown by pressing the **<I>** button while on the main screen (Figure 12). The items of the A.L.1 menu is as follows:

3. Zone descriptions
4. Zone overview
5. Zone configuration
6. Installed modules
7. Power levels
8. System info
9. Contact info

 *Pressing **<I>** on some screens will display a help screen with useful related information.*

3.4.1 Zone descriptions (ALM1.1)

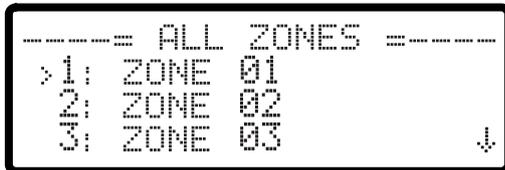


Figure 13. Zones descriptions screen

This screen shows a scrollable list of all installed zones along with their description. Selecting a zone (with the up/down arrows) and pressing **<ENTER>** will request A.L.2 code and enter the zone description editor. See section 3.1.1 for help on data entry.

3.4.2 Zones overview (Zone states) (ALM1.2)

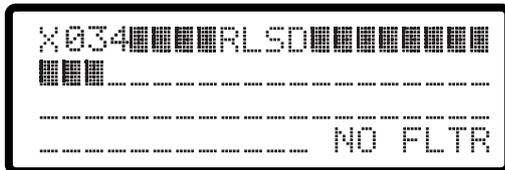


Figure 14. Zones overview screen

This screen shows an overview of all the installed zones. Each zone is represented by one LCD character. Each character space may have one of the following characters signifying a zone condition:

- █**: Zone active and idle.
- |Z|**: Zone is in fault condition.
- |R|**: Relay corresponding to the zone is in fault.
- |F|**: Zone and corresponding relay in fault.
- |A|**: Zone is in alarm.
- |I|**: Intellizone is in pre-alarm state.
- |a|**: Zone is in alarm and corresponding relay is bypassed.
- |z|**: Zone is bypassed.
- |r|**: Relay is bypassed.
- |b|**: Zone and corresponding relay are bypassed.
- |X034|**: Cross-zone area in pre-release. 034 is shown as an example and indicates the time remaining before the release state is reached (in this case 34 seconds).
- |H034|**: Cross-zone area in pre-release state and HOLD button

pressed. 034 is shown as an example and indicates the time remaining before the release state is reached (in this case 34 seconds).

- |RLSD|**: The cross-zone area is in the Released phase.
- |S|**: Cross-zone stopped from HOLD button in Pre-released phase.
- |HOLD|**: Cross-zone in the Released phase but stopped from the HOLD button.

While in the zones overview screen the bottom right of the screen shows one of the following labels meaning:

- |NO FLTR|**: No Filter. All conditions may appear on the character spaces.
- |ALARMS|**: Only alarm indications are displayed for each zone (character **|A|**, **|I|**, **|a|** and cross-zone indications (**|X034|**)).
- |FAULTS|**: Only fault indications are displayed for each zone (characters **|Z|**, **|R|** and **|F|**).
- |BYPASS|**: Only bypass indications are displayed for each zone (character **|z|**, **|r|** and **|b|**).

These filters may be activated by pressing the **<ALRM>**, **<FAULT>** and **[BYP]** buttons while in the Zones overview screen.

3.4.3 Zone configuration (ALM1.3)

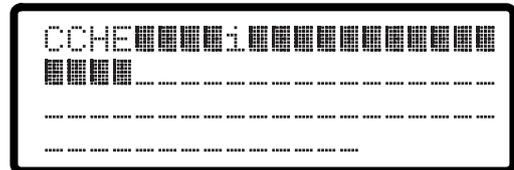


Figure 15. Zone configuration screen

Like the zones overview, this screen uses the same representation of one character space for each installed zone. Each character space represents the configuration that applies to the zone. The following character have the meaning:

- █**: Normal zone.
- |C|**: The zone belongs to a cross-zoning group (4 zones) and is one of the two detector zones.
- |E|**: Extinguish button.
- |H|**: HOLD button input
- |i|**: The zone belongs to an Intellizone group.

3.4.4 Installed modules, Module Identification (ALM1.4)

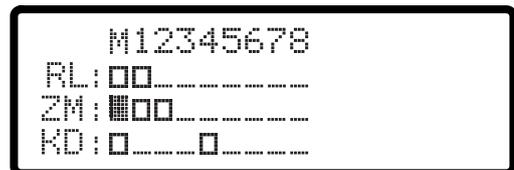


Figure 16. Installed modules screen

This screen represents an overview of the installed modules with each LCD character representing one module. The top LCD line forms an index with the module ID. The next 3 lines display the Relay modules (**|RL|**), Zone modules (**|ZM|**) and Key display modules (**|KD|**). The state of each module is shown with the following character representation:

- |□|**: Module present and healthy. No extra PSU attached.
- █**: Module present and healthy. Extra PSU is attached.
- |_ |**: Module not installed.
- |L|**: Module is not present or not communicating.
- |F|**: Module reports zone or relay fault(s).
- |S|**: Attached PSU reports Mains power lost.
- |B|**: Attached PSU reports Battery connection fault.

- |R|: Attached PSU reports batteries need replacing.
- |P|: PSU and Battery in fault.
- |V|: Module in low voltage mode / out of operation.
- |2|: Keypad in access level 2.
- |3|: Keypad in access level 3.
- |O|: Selected module for identification (see below)

Module Identification

The system provides a mechanism for selecting a module and activating its status LED or the LCD's backlight (for keypads). The selected module's LED produces a sequence of 3 rapid flashes and a pause every second. For Keypads the LCD backlight toggles on and off every second. This mechanism helps the installer or maintainer to identify a module without margin for error.

To select a module:

- In the "Installed modules" screen press <ENTER>: A small i appears on the top left of the screen and a cursor is activated.
- Move the cursor with the arrow keys over an installed module and press <ENTER>: The module character changes to |O|.
- The LED or backlight on the selected module start to flash with the identification pattern.
- To stop the identification pattern press <ENTER> again on the activated module or on an empty module space.

The <CLR> button on an activated keypad, will also deactivate the flashing pattern.

Only one module can be selected at any time. Selecting a new module while another one was active, will cancel the last activation.

Exiting the screen with a module selected will not stop the identification process.

 *The system's operation is not affected in any way by the module identification mechanism.*

 *Pressing <i> will display a help screen with the above table. See also section 5.1.1.*

3.4.5 Power levels (ALM1.5)



Figure 17. Power levels screen

Displays the voltage levels of the PSU, the backup battery, the module power source and the AC power condition. The units are Volts DC. The information is provided for all installed modules. If the shown module does not have a PSU connected only the Module voltage is displayed. The module voltage is the power level that actually feeds the electronics and consumptions of the specific module either coming from the Bus connection or the connected PSU.

The Up/Down Arrow keys are used to scroll through the installed modules.

This screen can also be easily reached by pressing <Left Arrow> once from the Main Screen.

3.4.6 System info (ALM1.6)



Figure 18. System info screen

This screen shows the serial number of the system. The serial number is kept in the main board and needs to be transferred every time it is requested. During that time the **|Retrieving data|** message is displayed.

3.4.7 Contact info (ALM1.7)

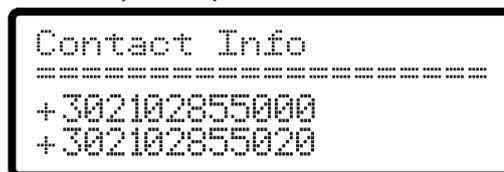


Figure 19. Contact info screen

Displays the installer pre-programmed contact information. Useful for keeping technical support telephone number and/or other means of communication in case the installer must be contacted. The contents of this screen are programmed at A.L.3 menu item **|8.Additional Options|**.

3.5 Alarm

Signaling a Fire Alarm is the main purpose of a fire alarm panel. The whole system is designed in such a way as to give in the most reliable way possible an evacuation signal in the case of a detected fire. It uses a set of inputs that once activated in a certain way will activate a set of outputs that eventually cause audible and/or visible notification of a detected fire.

The alarm condition maybe entered under the following conditions:

- A zone input is activated by an automatic detector (smoke, thermodifferential, rate of temperature rise etc).
- A zone is activated by Manual Call Point with user action.
- Any of the two cross-zones of any area is activated (see Cross-zoning section 6.3 for details).
- One or more programmed Intellizone zones are activated in a certain pattern (see Intellizone section 6.1).
- A manual evacuation is activated by a user on a key display unit (see key display Evacuation section 6.4).

During an alarm condition the following take place:

- The general alarm indication on every installed key display is activated.
- Every on-board buzzer is activated.
- The General Alarm Relay Output 1 is activated and produces a constant or interrupted pattern (depends on ALM.3.6.8: **|Siren 1 pattern|**). See Figure 20 for a visual representation of the two patterns. See section 7.3.4 for information selecting the desired sound pattern.
- The General Alarm Relay Output 2 (ALM.3.6.9: **|Siren 2 pattern|**) is activated giving constant power/sound.
- The corresponding zone relay is activated.
- The alarm screen is shown on the LCD screen.

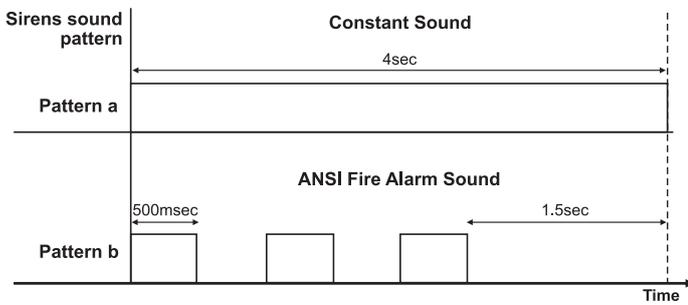


Figure 20. Sirens alarm patterns

3.5.1 The alarm screen



Figure 21. Default alarm indication screen

The above screen is the default indication when there are alarms under way. The screen shows the following information:

[FIRST]: The first zone during idle state that produced an alarm.

[LAST]: The latest zone that produced an alarm.

[ZONES]: The total number of zones in alarm.

[EXT]: The total number of extinguishing areas in alarm.



This screen is mandatory by the EN54 directives. If the user navigates away from it during an alarm, it will be automatically re-displayed after user inactivity of 20 seconds.

3.5.2 To get information about active alarms

By pressing **<ALRM>** the Alarms list screen appears. This is a scrollable list with zone number and zone description:

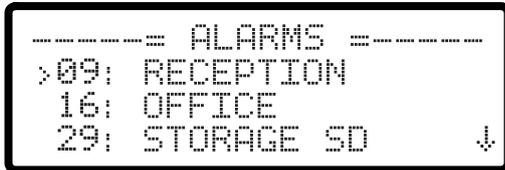


Figure 22. Zones alarm list screen

Pressing **<ALRM>** again will display the zones overview screen with an alarms filter imposed. Any zone in alarm will be shown with an **[A]**. A bypassed zone in alarm will be shown with **[a]** (see zones overview, section 3.4.2).

All active cross-zone areas are also displayed on this screen. See section, section 6.3.2 and 3.4.2 for details.

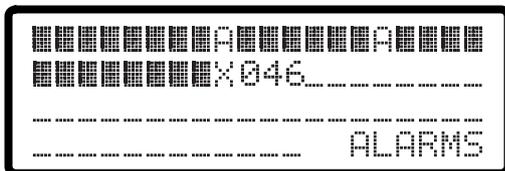


Figure 23. Zones alarm overview screen

3.5.3 Bypasses of zones in alarm

- Bypassing one zone in alarm will cause the corresponding indication and relay of the relay board to be deactivated (if installed).
- Bypassing all zones in alarm will cause the General Alarm Outputs to be deactivated.
- In any of the above two (2) cases the Alarm indications and buzzers are not affected.

3.5.4 Faults during alarm

- A zone in alarm will not be altered if a fault develops on the zone after the alarm was detected.
- A fault on any other zone will not affect a zone in alarm.
- Any other system fault will not alter or interfere with the zone in alarm.
- Indications of alarms take precedence of fault indications on the LCD.
- The user is informed for the existence of detected faults from the activation of the General Fault indicator and the fault relay output.

3.5.5 Other operations during alarm

The only way to completely eliminate an alarm condition is by the Reset operation (see below Reset, section 3.6).

Silence operations will alter the way the user is audibly notified during alarm condition. The sound notification devices are directly addressed.

3.6 Reset

The system can be set to the Normal/Idle condition by using the reset operation. The operation requires A.L.2 / A.L.3 authorization.

An alarm condition from a zone input is a latching operation; the detector will present an alarm as long as it is kept under power. To reset the detector to idle state the power must be interrupted for a short period (3 seconds is typical). This operation is called "Resetting the system". The short removal of power from the zones inputs is one of the actions taking place during a reset. The following list shows all actions during a reset:

- The power to the zone inputs is switched off for 3 seconds forcing any activated detectors to reset.
- Any active Alarm relays are deactivated, including any active module relays.
- The fault relay if active is deactivated.
- All silences are canceled.
- All active indicators except Power are turned off.
- Any Bypasses are NOT affected (including their indicators and sound notification which are reactivated).

Immediately after the reset operation, the system returns to its normal state. This of course includes detection of alarms, faults etc. Any condition that was canceled by the reset, will be reactivated as long as the cause continues to exist.



Any manual call point that is found activated after a reset will cause an alarm condition. Call points, being conventional switches, are not reset by the removal of the power. The user must ensure that the call points are manually deactivated. This does not apply to cross-zoning inputs. See "Cross-zoning" section 6.3.2.4 and 6.3.3 for a detailed description.

3.7 Silence

The silence operation is used to stop the various sounders either connected or built in to the fire alarm panel. It requires A.L.2 authorization.

The sounders belong to two distinct categories; The buzzers that are built into the system and the external devices that the installer connects to the relay outputs. The external devices may be connected to the two General Alarm Outputs, the Fault output relay, and the zone relays module.

The silence menu prompts the user with the following menu (Figure 24) to select which of the above groups to silence.



Figure 24. Silence menu screen

- [0.Silence All]** will stop any sound coming either from internal (buzzers) or external device. Same result as both 1 and 2 below.
- [1.Silence Keypads]** will stop any sounding on-board devices (buzzers) on keypads and main board.
- [2.Silence Sirens]** will stop only externally connected devices on Alarm and Fault relays.
- [3.Undo Silence]** will cancel any silence already active.

To perform a silence operation:

- Press **[SLNC]**: The access level code request appears.
- Enter A.L.2 code: The Silence Menu appears.
- Press buttons **<0>**, **<1>**, **<2>** or **<3>** according to what action is required.

During an active silence condition the following apply:

- The **[SLNC]** button/indicator is lit.
- The Fault relay is deactivated (if silence Sirens is in effect).
- The General alarm relays are deactivated (if silence Sirens is in effect).
- The on board buzzers are deactivated (if silence keypads is in effect).
- Any new event that would trigger a sound notification will cancel the silence condition.
- Alarms and faults are indicated without modification.
- The silence will produce a reminder sound of about 3 seconds every 1 minute.

3.8 LOG (events)

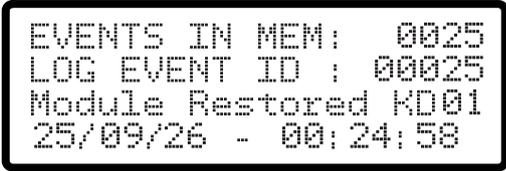


Figure 25. LOG (events) screen

The above screen shows the log events from the main board. To see the log events press the **<LOG>** button. The screen shows the following information:

[EVENTS IN MEM]: Number of stored events. The maximum capacity for stored events is 1.000.

[LOG EVENT ID]: Every event has a unique incremental serial ID number. The number on display is the ID of the selected event as shown in the last two LCD lines.

4. Bypasses (disablements)

Bypasses are distinguished into two categories:

- Zone bypasses: Disable the input of a zone and everything related to it's operation.
- Relay (output) bypasses: Disable only the relay output corresponding to the zone. The zone is otherwise operational.

Active bypasses are not affected by the Reset operation. To cancel an active bypass the user must use the provided configuration menus as described below.

4.1 Zone Bypasses (Zone disablements)

4.1.1 Description

A zone bypass operation is performed on a zone at access level 2. It marks the zone as not operational and as such any alarm signals coming from the specific zone are not detected. With an active zone bypass the following apply:

- The **[BYP]** key indicator is lit.
- The buzzers on the keypads and main unit are activated once every minute.
- An alarm condition coming from a bypassed zone will not be indicated on the LCD and on the General Alarm Indicator.
- An alarm condition coming from a bypassed zone will not activate the General Alarm Relay Output, nor the corresponding relay (if installed).
- Any fault on a bypasses zone will not be indicated and no sounders will be activated.

Bypasses are not considered "healthy" system states and are only used for tests or other exceptional conditions. Unused zones must not be bypassed; must be properly terminated on their input terminal block (see Figure 26 unused zone input).

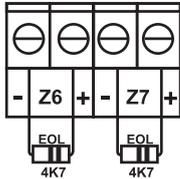


Figure 26. Unused zone inputs

4.1.2 Operation

To activate a bypass on a zone:

- Press **[ACC]** button to enter access level 2: Access Code Prompt is displayed OR
- Enter a valid PIN: Access Level 2 menu is displayed
- Press **<2>** to select menu item **|2. Bypass Zones|**: The list with all available zones is displayed (see Figure 27).
- Use **<Up>** **<Down>** keys to place the flashing cursor on the required zone.
- Use the **<Right Arrow>** to activate a bypass and **<Left Arrow>** to cancel a bypass.
- Once finished press **<CLR>** to exit to access level 2 menu.



Figure 27. Bypassed zones activation screen

Note! You can also access the zone bypasses as follows:

- Press **[BYP]**. The active bypasses will be shown as a list.
- Press **<ENTER>**: Access Code Prompt will be displayed.



Figure 28. Activated bypassed zones overview screen

4.2 Relay Bypasses

4.2.1 Description

A relay bypass operation is performed on a zone at access level 2. It makes the corresponding relay output of the zone not operational although any alarm signals coming from the specific zone are detected and indicated. With an active relay bypass the following apply:

- The **[BYP]** key indicator is lit.
- The buzzers on the keypads and main unit are activated once every minute.
- An alarm condition coming from the corresponding zone will be indicated on the LCD and on the General Alarm Indicator.
- An alarm condition coming from the corresponding zone will activate the General Alarm Relay Outputs.
- An alarm condition coming from corresponding zone will NOT activate the corresponding relay (if installed).
- Any fault on a zone with bypassed relay will be indicated normally.

 **Bypasses are not considered "healthy" system states and are only used for tests or other exceptional conditions.**

4.2.2 Operation

To activate a bypass on a zone output:

- Press **[ACC]** button to enter access level 2: Access Code Prompt is displayed OR.
- Enter a valid PIN: Access Level 2 menu is displayed.
- Press **<3>** to select menu item **[3. Bypass Relays]**: The list with all available zones with relays is displayed (see Figure 29).
- Use **<Up>** **<Down>** keys to place the flashing cursor on the required zone.
- Use the **<Right Arrow>** to activate a bypass and **<Left Arrow>** to cancel a bypass.
- Once finished press **<CLR>** to exit to Access level 2 menu.



Figure 29. Bypassed relays activation screen

Note! You can also access the zone bypasses as follows:

- Press **[BYP]**. The active bypasses will be shown as a list.
- Press **<ENTER>**: Access Code Prompt will be displayed.
- Enter a valid PIN: The Zones bypass list is displayed.
- Press and hold **<Right Arrow>** until a short beep is heard (Long press): The Relay bypass list is displayed.



Figure 30. Activated bypassed relays overview screen

4.3 Bypass Information Screens

A quick overview of all active bypasses may be shown in a list. Only zones with active Zone or Relay bypasses will be included.

To get information about active bypasses:

- Press **[BYP]** button: A list with only bypassed zones is displayed. The list is scrollable with the arrow keys (Figure 31). In the list view each zone bypass is shown with either **[(Z)]** **[(R)]** or **[(Z+R)]** in front of the zone description (Z stands for Zone, R for Relay).
- Pressing **[BYP]** again: The zones overview screen (Figure 32) is displayed. Each zone is represented as one character. Bypassed zones appear as:

- [z]**: Zone bypass only
- [r]**: Relay bypass only
- [b]**: Zone and relay bypass.



Figure 31. Bypassed zones & relays information screen

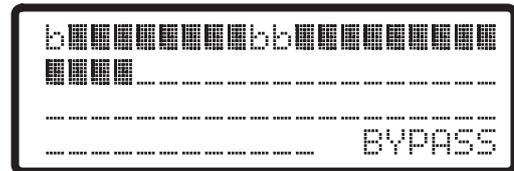


Figure 32. Bypassed zones overview screen

 **Pressing **<ENTER>** in the bypass list will activate the bypass control screen (after access level code request).**

5. Faults & Monitoring

Most of the system functions, inputs and outputs are fully supervised. When a subsystem is found to be out of accepted working parameters or not working, a fault condition is raised and the appropriate indications are displayed.

5.1 System Watchdog, Module presence faults

The main unit of the FighterXT panel implements a self checking mechanism for detection of malfunctions. This mechanism called a "watchdog" monitors the integrity of the microprocessor and the firmware execution. When an error is detected the fault relay, local buzzer and fault LED are activated.

This system is also backed up by FighterXT's modular architecture. By having multiple modules constantly communicating, a strong cross checking system is formed. Any module that is malfunctioning on the microprocessor level or communication's level, will be immediately recognized. A fault condition will be raised and properly indicated.

Monitoring and system integrity can be easily checked from the Modules Overviews screen (Figure 33).

5.1.1 Modules Overview (ALM1.4)

Figure 33 shows the ALM1.4 **[Installed Modules]**:

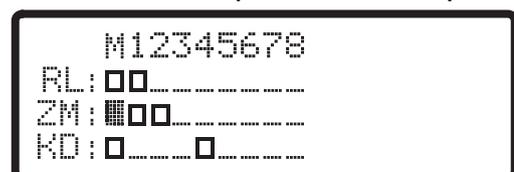


Figure 33. Installed modules screen

This screen represents the entire system on a character per module level. The possible modules are grouped into 3 lines labeled:

- [RL]**: Relay modules

|ZM|: Zone expansion modules

|KD|: Key-display units

On the first line of the screen the module ID numbers (1 to 8) are used as a ruler. The letter **|M|** indicates the Main Module's ID. The characters displayed on each position have the meaning shown below:

|█|: Module present and OK with auxiliary PSU operating properly.

|□|: Module present and OK (no auxiliary PSU installed).

|P|: Module reports connected PSU failure.

|S|: Module reports connected PSU mains power absent.

|B|: Module reports connected PSU battery failure.

|R|: Module reports connected PSU's battery needs replacing.

|F|: Module reports some other fault (e.g. zone or relay faults).

|L|: Module is lost from the bus.

|V|: Module in low voltage mode. The power that reaches the module is not sufficient for proper operation. During this condition zone modules will not detect zone input changes and relay modules will never have active relay outputs.

|2|: Keypad in access level 2.

|3|: Keypad in access level 3.

 **By pressing <i> while the "Installed modules" screen is active a help screen with the above explanations is shown.**

5.2 Zone faults, Relay Faults

All zone inputs and relay outputs are supervised for proper operation. An End Of Line (EOL) resistor must be used at the very end of every installed wire. See Figure 34 for proper input and output termination.

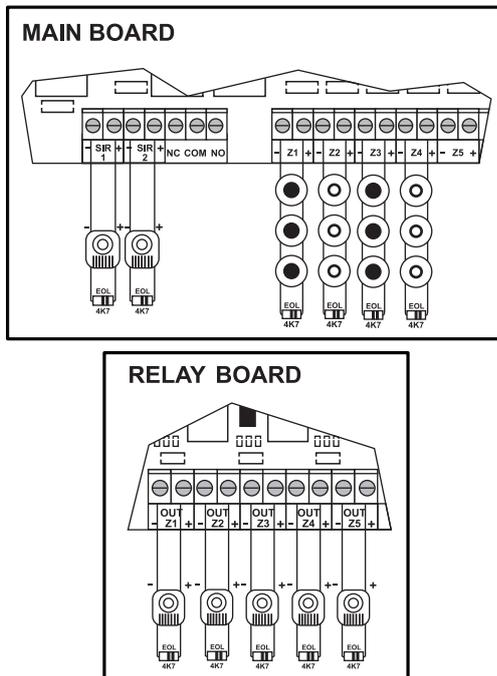


Figure 34. Input and output zones termination

The following table (Table 5) summarizes the resistance ranges and their effect on the system. Please note that all values given are for un-terminated inputs/outputs (No EOL device connected).

Zone Inputs Resistance Ranges	
0 up to 15 Ohm	Short / Fault
25 up to 600 Ohm	Alarm
1000 up to 7 KOhm	Normal
10K and up	Open / Fault

Relay Outputs Resistance Ranges	
0 up to 400 Ohm	Short / Fault
1600 up to 7 KOhm	Normal
10K and up	Open / Fault

Table 5. System's resistance ranges

A zone input or relay output that is outside the normal operating conditions will raise a fault which:

- Will activate the General Faults LED indicator.
- Will activate the General Faults relay.
- Will be automatically indicated on the faults list screen (if no alarm condition is active).
- Will be indicated in a variety of auxiliary screens upon user operation.

The fault's list is shown in Figure 35.



Figure 35. Zones & relays fault's list screen

Each zone and its corresponding relay (if installed) is represented on one line. The number of the zone is always shown on the left of each line with the zone description following. It may be preceded by **|R|** or **|F|**. The meaning of the prefix is as follows:

|Z|: Zone fault only

|R|: Relay fault only

|F|: Zone and relay faults.

Zones Overview Screen also shows faults. See section 3.4.2 above.

The zones and relays description when in fault are as shown below:

Zone Faults	
Zone 1	 ZONE 1
Zone 2	 ZONE 2
Zone 3	 HOLD BUTTON
Zone 4	 START BUTTON
Zone 5	 PRESSURE DET
Zone 6	 RELEASE DET
Zone 7	 START BUTTON 2
Zone 8	 ZONE 8

Table 6. Zone in fault description

Relay faults	
Relay 1	 EXT1 SIREN
Relay 2	 RELEASE VALVE
Relay 3	 EVAC SIGNAL
Relay 4	 PRESS DAMPER
Relay 5	 RELAY 5
Relay 6	 WARN SIGNAL
Relay 7	 RELAY 7
Relay 8	 RELAY 8

Table 7. Relay in fault description

Zone and relay faults	
Zone + Relay 1	ZONE 1+SIREN
Zone + Relay 2	ZONE 2+RLS VALVE
Zone + Relay 3	HOLD + EVAC SIGN
Zone + Relay 4	START + DAMPER
Zone + Relay 5	PRESSURE DET + R5
Zone + Relay 6	RLSD DET+WARN SIGN
Zone + Relay 7	START BUTTON 2 +R7
Zone + Relay 8	ZONE 8 + R8

Table 8. Zone and Relay in fault description

5.3 Earth Fault

An earth fault is generated when any part of the Zones, Relays or Auxiliary Power circuitry comes in contact with the protective earth of the installation. The fault will:

- activate the General Faults LED indicator
- activate the General Faults relay
- be automatically indicated on the faults list screen (if no alarm condition is active).



The Earth fault detectable resistance is below 500 Ohm.



It is very important to connect a proper protective earth to the mains terminal block connector as shown in Figure 6. If this connection is not made the Earth fault circuit is unable to operate as designed.

5.4 Power Fault, Battery fault

Power conditions are monitored on the main power supply as well as on any connected auxiliary PSUs on the expansion modules.

There are 4 types of power related faults:

- Total PSU failure: No power is coming into the system by the affected PSU.
- Mains Power Failure: Mains power is not present. The PSU is providing power from the backup batteries.
- Battery failure: The PSU has disconnected or totally destroyed batteries. Power is provided by the Mains power path.
- Battery need replacing: The connected batteries have increased internal resistance. This is a state of the batteries in which limited power can be stored and provided if needed. All FighterXT PSUs have electronics that will detect this condition and raise a fault. This fault is usually caused by aged or abused batteries.



The internal battery resistance that will trigger the fault is about 3 Ohms.

Power faults will:

- activate the General Faults LED indicator.
- activate the General Faults relay.
- be automatically indicated on the faults list screen (if no alarm condition is active).

They are also indicated on the Installed Modules screen. See section 3.4.4 above.

6. Features

6.1 Intellizone - Alarm Verification

6.1.1 System Overview - Intellizone

The Intellizone feature minimizes false alarms on the FighterXT panel. The concept of alarm verification is to have the system receive a Second Alarm signal from the same or another zone in a predefined time after the First Alarm signal. The First Alarm signal can only originate from an intellizone. Only then the General Alarm condition is activated.

Please note that the terms "Alarm Verification" and "Intellizone" are treated as synonymous in the following sections.

6.1.2 System Operation - Intellizone

Each zone may be programmed to be an "Intellizone" (from ALM3.2). The sum of the intellizones form the intellizone group.

The operation of the intellizone system is as follows:

When an alarm condition is detected on an intellizone (First Alarm):

- The Intellizone Delay is activated (can be set from ALM3.3.3).
- The automatic Alarm Cancel Delay (5 minutes) is activated.
- The alarm is indicated on the LCD and General Alarm Indicator.
- The keypad and system buzzers produce a notification sound.
- The Main Siren relays and Zone relay (if installed) are NOT activated (General Alarm condition is not entered).

After the Intellizone Delay time the automatic detectors are reset.

During the above delay (Intellizone Delay) any other zone (NOT only intellizone) except the initial may provide the Second Alarm signal (see below).

The intellizone will remain active for the remaining of the 5 minutes before the initial alarm is completely canceled.

During the above delay (Alarm Cancel Delay) any zone (NOT only intellizone), including the initially triggered intellizone may provide the Second Alarm.

The Second Alarm will:

- Activate the General Alarm Condition.
- Activate the main siren relays.
- Activate the local relays of any activated zones during both delays.

The Intellizone feature may be disabled/re-enabled in Access Level 2 menu, item **|9.Intellizone cancel|**. If the system has been disabled the main screen will indicate so by displaying **|INTELLIZONE DISABLED|**.

6.1.3 Global/Local Mode - Intellizone

The Intellizone function may be programmed in two modes (from ALM3.6.4):

- **Global mode:** Any zone can provide the Second Alarm and trigger the General Alarm condition.
- **Local mode:** Only zones located on the same zone module as the intellizone that gave the first alarm may trigger the General Alarm with the Second Alarm signal. This option effectively creates localized (per module) intellizone subsystems.

For setting the desired mode see section 6.1.6.



Any Fault on the intellizone that produced the First Alarm until the Alarm Cancel Delay expires, will cause an alarm.

If the system has activated the intellizone feature, the main screen will show the setting with the following message |INTELLIZONE: ON|.

6.1.4 System Setup - Zone connections - Intellizone

The system should have one or more zones connected to automatic detectors. Manual pull stations may also be connected to intellizones but the alarm signal will be delayed by the Intellizone Delay time.

6.1.5 System Setup - Zone assignment - Intellizone

To assign zones to the intellizone group:

- Activate the A.L.3 menu by pressing [ACC] and entering the A.L.3 pin code.
- Select option |2. Zone Configuration| by pressing <2>.

The following screen appears:

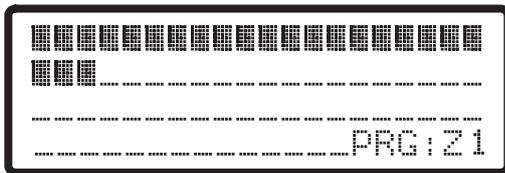


Figure 36. Zone configuration screen

Only the zones that correspond to installed modules will be displayed as square blocks. Move the blinking cursor with the arrow keys to the block character representing the zone to assign for intellizone operation. The bottom right of the screen shows the number of the zone.

Once the correct zone is selected press <1> to activate the intellizone option for the zone. After a small delay the square block character representing the zone will be changed to "i", indicating the successful operation.

Repeat the process for any other zones that are to be part of the intellizone group.

Pressing <1> on an existing intellizone will cancel the option (toggle operation). The <0> button will also reset an intellizone to a normal zone.

Once finished, press <CLR> to return to A.L.3 menu.



Zones assigned to cross-zoning cannot be assigned to the intellizone group. These zones are indicated by letters C, R or H (see Cross-zoning, section 6.3). You have to cancel the cross-zoning by pressing <0> before they can set as intellizones.

6.1.6 System Setup - Intellizone parameters

Two parameters are directly related to the intellizone system:

Intellizone Delay can be set in ALM3. -> |3.Zone Timers| -> |1.Intellizone delay|. (ALM3.3.1)

Valid values are 0 to 255 seconds. This is the delay after the First Alarm before the zone is reset. See "Operation" above for detailed description the intellizone system operation.

Intellizone Mode can be set in ALM3 -> |6.General options| -> |4.Intellizone mode| (ALM3.6.4).

Valid values are 0 for Local and 1 for Global.

- **Global mode:** Any zone can provide the Second Alarm and trigger the General Alarm condition.
- **Local mode:** Only zones located on the same zone module as the intellizone that gave the First Alarm may trigger the General Alarm with the Second Alarm signal. This option effectively creates localized (per module) intellizone subsystems.

tems.

See "System Operation - Intellizone" above for detailed description the intellizone system operation.

6.2 Day/Night (ALM3.6.1)

The day/night operation is based on the intellizone feature. It is a mechanism based on a daily timer that either activates (day mode) or deactivates (night mode) the intellizone feature on predefined times of the day.

The Day/Night mode is dependent on the intellizone feature; see Intellizone section 6.1 for a complete explanation.

When the Day/Night feature is active, it is always displayed on the main screen and the current state (day or night mode) is shown (see Figure 37 below).



Figure 37. Main screen day/night mode screen

The installer programs the following parameters:

Day/Night feature On/Off (ALM3.6.1 |Day/Night|): The feature is either **1**: enabled or **0**: disabled.

Day Start Time (ALM3.6.2 |Day start time|): This sets the time of the day in HH:MM format that the "day" mode will become active. In Day mode the Intellizone feature is active protecting some zones from false alarms.

Night Start Time (ALM3.6.3 |Night start time|): This sets the time of the day in HH:MM format that the "night" mode will become active. In Night mode the Intellizone feature is disabled.

6.3 Cross-Zoning / Extinguishing

6.3.1 Extinguishing operation overview

The FighterXT fire panel is capable of being used as fire extinguishing panel by using a relay module in the cross-zoning operation.

The Cross Zoning function is mainly used when the installation requires extinguishing operation. In this case a group of zones with relays from the corresponding module are logically grouped to create one extinguishing channel (area).

6.3.1.1 Extinguishing modes

The panel implements the extinguishing function in two different modes, namely mode 1 and mode 2. Mode 1 has less features but up to 18 areas are supported. Mode 2 has more features but is limited to one extinguishing area.

The following table summarizes the major differences of the two extinguishing modes:

Extinguishing mode	Mode 1	Mode2
Number of Inputs (zones) used per extinguishing area	4	8
Number of Outputs (relays) used per extinguishing area	4	8
Number of extinguishing areas supported	18	1
Extinguishing on expansion cabinets.(*)	YES	NO
Signal representing the flow of extinguishing agent (EN12094, § 4.18).	NO	YES
Loss of agent (EN12094, § 4.19.2).	NO	YES
Manual only mode (EN12094, § 4.23)	NO	YES
Triggering of equipment outside the system (EN12094, § 4.26)	NO	YES

Table 9. Extinguishing modes differences

* In the remaining of this section, wherever applicable, there will be a clear distinction of the operations relating only to Mode 1 or Mode 2.

6.3.2 Extinguishing Mode

6.3.2.1 Inputs/Outputs

The allocated zones with their corresponding relays and timers are listed in the following tables:

The timers (T2,T3,T4) are configurable in access level 3. They define timing as seconds before (T3) or after (T2,T4) the moment of release (for better understanding, see timing chart).

Zone/Relay	Zone Name	Relay Name	Relay Timer
1st	Cross-zone 1	Siren Output	
2nd	Cross-zone 2	Extinguish Command Output	
3rd	Hold Extinguish Zone	Pre-Release Output	T2
4th	Manual Extinguish Zone	Pressure Damper Output	T3, T4
5th	Pressure Control Switch	First Alarm Output	
6th	Release Control Switch	Gas Released Output	
7th	Manual Extinguish 2 Zone	Pressure Damper Inversed	T3, T4
8th	Manual operation only	Verified Outflow Output	

Table 10. Allocated zones with their corresponding relays and timers

The relays that correspond to the 8 zones are also sequentially named Relays 1 to 8.

The "Extinguishant release" button on the front face of FighterXT is an accessory electrical button that should be connected to either 4th input ("Manual Extinguish Zone") or 7th input ("Manual Extinguish 2 Zone"). Activating any of these inputs, will place the panel in the "Second Level Alarm" as shown in figure 41, page 23. The operation is further described in paragraph 6.3.2.4 "Manual Extinguish"

 **This button is not certified and does not meet all the requirements of EN12094-3.**

6.3.2.2 Extinguishing system operation

Extinguishing sequence begins when both Cross-zones (1 & 2) receive an alarm from the automatic detectors. The extinguishing sequence can be also activated or paused (held) by manual call points (e.g. glass break buttons) installed on the Extinguish Zone (4th) and the Hold Zone (3rd) respectively.

The relays corresponding to the zones in cross-zoning perform the extinguishing sequence by providing the required power (24 VDC) at pre-programmed time intervals.

Important points to note are:

Timers T1, T2, T3 and T4 are defined in access level 3. Please see section 6.3.7 for more details.

Timers T2 and T4, if set to 0, cause the corresponding output to not expire (change state) until user reset.

Relay 8 (Verified outflow output) is activated only if the flow of extinguishing agent is verified. This is done through the input at zone 6 that must be connected to appropriate installed hardware.

This relay will also get activated in case a manual external activation, not initiated by the control panel is observed (from the zone 6 input). See section 6.3.2.6.

The sequence of relays activation in relation to the detection / extinguishing state and progress are depicted in the timing chart

below and further referenced in the following section.

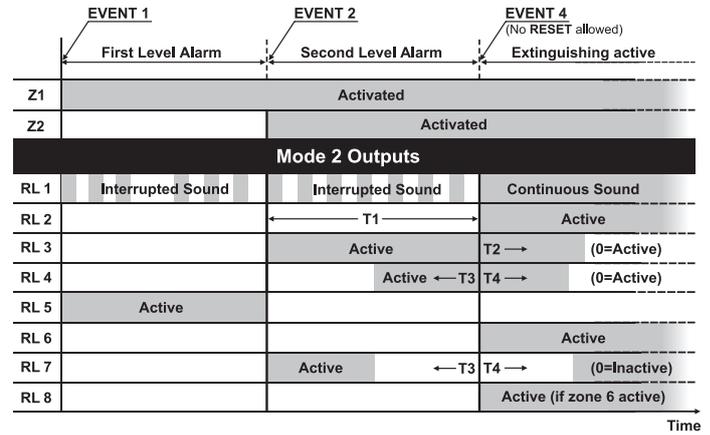


Figure 38. Mode 2 extinguishing timing chart

6.3.2.3 Extinguishing sequence

The Cross-zoning operation for mode 2 is described below in the form of **events** and system responses:

EVENT 1: One of the Cross-zones (1 or 2) triggers an alarm ("One zone triggered" or "First Level Alarm" state).

- Relay 1 is activated producing the selected alarm signal
- The General Alarm Indicator is activated
- The Main Siren Relays are activated
- The LCD shows the standard Alarm Notification Screen
- The Keypads and main buzzers are activated
- Relay 5 (First Alarm) is activated

The system will remain in this state until reset by the user or the other cross-zone detects an alarm.

EVENT 2: The other Cross-zone detects an alarm condition (Both Cross-zones in alarm, system enters the "Pre-Release" or "Second Level Alarm" state).

System starts the extinguishing sequence:

- Relay 1 produces the pre-release output pattern (see Figure 39)
- Relay 3 is activated
- The pre-release delay timer is started (set in ALM3.3.1)
- The LCD shows the Alarm Notification screen with the label **|EXT:01|** on the bottom right corner. **|01|** is the total number of extinguishing areas in fully triggered state (both Cross-zones triggered).
- Relay 5 (First Alarm) is deactivated.

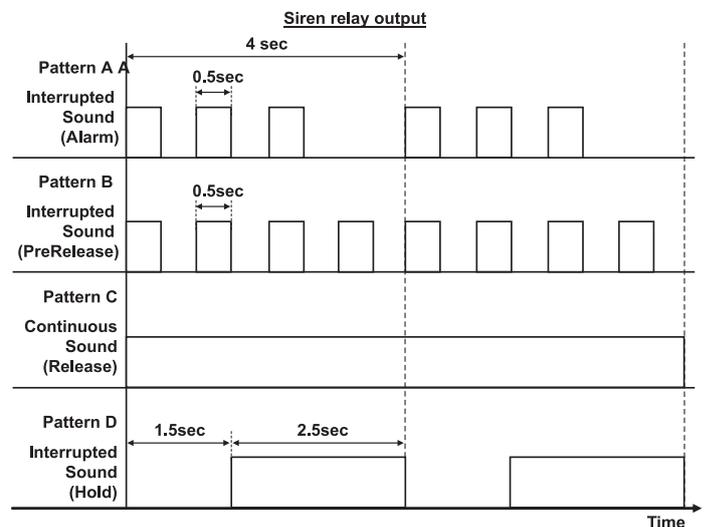


Figure 39. Cross-zoning siren output patterns

EVENT 3: T3 seconds (e.g. 10 sec) before the extinguishing (gas

release) state.

- Relay 4 (Pressure damper) is activated.
- Relay 7 (Pressure damper inverse) is deactivated.

EVENT 4: Pre-release delay timer (T1) expires (system enters the "Released" or "Extinguishing active" State).

- Relay 2 (Extinguish command) is activated.
- Relay 1 (Siren) produces the "released" sound pattern.
- The "No Reset Delay" timer is activated. Reset will not be allowed before it expires.
- T2 timer (for relay 3) and T4 timer (for relay 4) become active
- Relay 6 (Gas released) is activated
- If input Z6 is used and connected to provide the outflow verification signal, Relay 8 (Verified outflow) is activated.

EVENT 5: T2 timer expires

Relay 3 (Pre release) is deactivated. If the T2 value is 0 the relay remains active until user reset.

EVENT 6: T4 timer expires

- Relay 4 (Pressure damper) is deactivated. If the T4 value is 0 the relay remains active until user reset.
- Relay 7 (Pressure damper inverse) is activated. If the T4 value is 0 the relay remains inactive until user reset.

The system remains in this state until the "No Reset Delay" timer expires and the user performs a reset operation. A reset operation will NOT affect the relays of the extinguish area while this timer is active. This ensures the proper release of the extinguishing agent.

During the cross-zoning Pre-release and Released phases the | **Alarms Zone Overview** | displays information about the state of the extinguishing. The four characters that represent each cross zone area will show the following indications:

- | **A** ■ ■ ■ ■ | : One cross-zone in Alarm.
- | **A** ■ ■ **H** ■ | : One cross-zone in Alarm, Hold button pressed.
- | **X034** | : Pre-release phase timer countdown active, where 034 is a live indication of the remaining time in seconds before the released phase is reached.
- | **H034** | : Pre-release phase timer countdown active with Hold button engaged. Release state will be prevented when timer expires.
- | **HOLD** | : Release Hold. Pre-release timer expired but Hold button active. No release allowed.
- | **RLSD** / | **0053** | Released phase. The extinguishing agent has been released. The "No Reset Timer" is active and it's remaining seconds are briefly shown every 2 seconds (instead of | **RLSD** | (0053 is an example of the timer countdown).
- | **Rlsd** | : Released state. The extinguishing agent has been released and the "No Reset Timer" has expired. Reset of cross zone relays is now allowed.
- | **B034** | : Pre-release phase with extinguish relay bypassed
- | **B000** | : Release phase reached but extinguish relay bypassed (No extinguishing agent released).

 *In extinguishing Mode 2, the above indications are also presented on the main screen of the panel.*



Figure 40. Mode 2 extinguishing main screen



The siren output of an extinguishing area (Relay 1) will not follow the constant or ANSI option for audible devices. The output patterns is always as shown on Figure 39, "Cross-zoning siren output patterns".

6.3.2.4 Manual Extinguish (zones 4 and 7)

If the "Manual Extinguish Zone" (zone 4) or the "Manual Extinguish 2 Zone" is triggered (for example by a glass break button) it will force the system into the beginning of the "Pre-release" ("Second Level Alarm") state. Consequently it will cause the sequence of actions as described in the **Both Cross-zones in alarm** above.

The LCD screen will show the Alarm Notification Screen and the activated zone will be the "Force Extinguish Zone". The bottom right of the display shows the progress of the extinguishing sequence as described in section 6.3.2.3.

6.3.2.5 Pressure control input (Zone 5)

The 5th Input (zone 5) is used for monitoring the pressure switch of the extinguish agent containers. If a low pressure condition is detected then a fault condition is raised. The display shows the following message:



Figure 41. Pressure detection screen

For information on the electrical connection of this input please refer to section 6.3.2.12 below.

6.3.2.6 Release control input (Zone 6) - Mode 2

The purpose of this input (through zone 6) is to inform the system of a manual operation that released the extinguishing agent. This operation does not originate from the panel for example a manually operated flow valve that is monitored through an electrical switch.

Upon detection of manual activation, the panel goes immediately to the ""Released" ("Extinguishing active") state and activates the equivalent outputs as shown above (see EVENT 4, section 6.3.2.3)

For the electrical connections to this input please see section 6.3.2.10 below.

6.3.2.7 Manual only operation (Zone 8)

The 8th input (zone 8) may be used to force manual only operation. This isolates the automatic detectors thus preventing any automatically initiated extinguishing. While in "manual only" operation, the LCD display shows the following message:



Figure 42. Manual extinguishing operation screen

The device that activates this input has a light indicator as a warning that the system is in manual only mode. An extra output in the form of normally open dry contacts is also provided from the activation device.

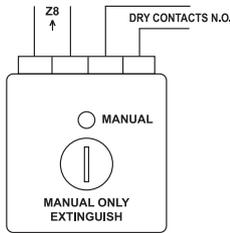


Figure 43. Manual mode activation device

6.3.2.8 Manual extinguish from keypad (ALM3.6.5 | Evac from keypad |)

IMPORTANT!! This operation is only available in extinguishing Mode 2 (see section 6.3.1.1).

When this option is enabled, any user without elevated access level rights may start the manual extinguishing sequence from any installed keypad by pressing and holding buttons <1> and <3> for 3 seconds. The following screen appears for confirmation (Figure 44).



Figure 44. Manual extinguish from keypad screen

6.3.2.9 System Setup - Extinguishing

In mode 2, only one extinguishing area is supported and this is allocated to the 8 zones and corresponding relays of the main PCB.

To setup a cross-zoning area the user must:

- Reserve the 8 zones of the main PCB.
- Have the relay module corresponding to the main PCBs zones.
- Connect automatic detectors and activation devices as described below.

6.3.2.10 System setup - Connections - Extinguishing

Typical extinguishing connections for the zone inputs can be seen in Figure 45.

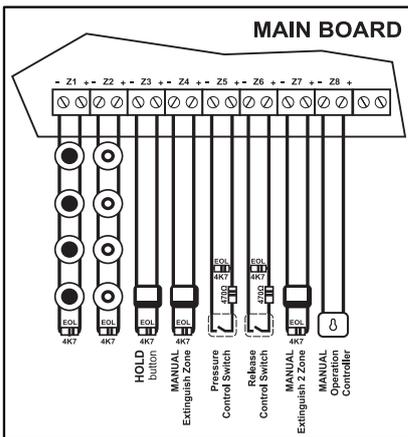


Figure 45. Mode 2 zones 5-8 connections for Extinguishing

The connections on the relay board are as shown in Figure 46.

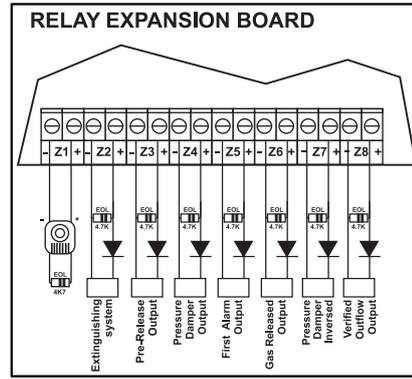


Figure 46. Mode 2 relay 5-8 connections for Extinguishing

6.3.2.11 System setup - Zone assignment - Extinguishing

To enable cross zoning 8 zones must be allocated to the function with the following procedure:

- Press [ACC], enter Access Level 3 PIN: A.L.3 menu is displayed.
- Press <2> for [2. Zone Configuration].
- Use Arrow keys to move the blinking cursor to any of the first 8 zones. The zone number is displayed on the lower right corner of the LCD.
- Make sure that all 8 zones belonging to the cross-zone are not assigned to any other function (e.g. intellizone) or an error will tell you so and the following operation will fail.
- Press <2> to activate cross-zoning for the 8 zones. The screen will now look like. Note that all 8 required zones are automatically selected and assigned.

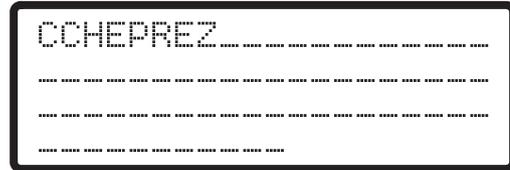


Figure 47. Mode 2 Extinguishing configuration screen



If the attempted operation for a cross-zoning includes any zones preassigned to intellizone, an error message will be displayed and the operation will fail. In this case you can free the zones by moving on their representing "i" character and pressing <0>.

Attempting to assign zones for cross-zoning that do not have corresponding relays will fail with an error message informing you so.

6.3.2.12 System setup - Zone inputs - Extinguishing

The two zones (1st and 2nd) should be connected to automatic detectors that are installed in the protected area. A common practice is to install different types of detectors. For example the first zone has a photoelectric smoke detector and the second zone has a temperature detector (Rate of Rise Heat detectors). This minimizes false alarms as a fire condition is not only verified by two zones but also from two physical characteristics (e.g. smoke and heat).



It is very important that the types of detectors installed on each zone are all the same.

Extinguish area zones 3, 4 and 7 should also have a break glass button for manual extinguishing (4th and 7th) or hold (3rd). These buttons are usually installed outside but close to the protected area.

The button on the 3rd zone (of the extinguishing area) operates in a "Hold Extinguish" fashion for the fire extinguishing procedure.

The buttons on the 4th and 7th zones (of the extinguish area) operates like an “Manual Extinguish” call point for the extinguishing procedure.

The 5th zone (pressure control switch) is used as an input to the system, providing the information that a container with the extinguish agent is low on pressure (or weight). This creates a fault that must be handled by the person responsible for maintenance.

The connection of this input is monitored for faults. A 4.7 KOhm resistor must be used at the end of the wiring. For activation a 470 ohm resistor must be presented at the input. The following diagram shows in detail a typical connection of this feature.

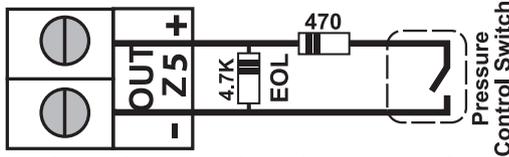


Figure 48. Pressure Control Input connection

Zone 6 (Release control switch) is used as an input to the system, providing the information of an external release of the extinguishing agent.

The connection of this input is monitored for faults. A 4.7 KOhm resistor must be used at the end of the wiring. For activation a 470 ohm resistor must be presented at the input. The following diagram shows in detail a typical connection of this feature.

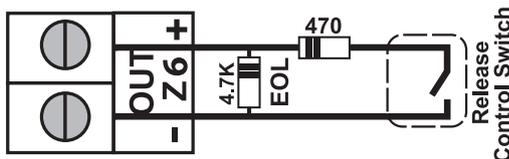


Figure 49. Release Control Input connection

6.3.2.13 System setup - Relay outputs - Extinguishing

One or more notification devices (e.g. sounders, strobes) are connected to the first relay of the cross-zoned area.

The trigger mechanism for the extinguishing agent must be connected on the 2nd relay of the area (e.g. relay2). This is usually an extinguishing gas release valve.

The third relay is usually connected to visual and audible notification for area evacuation. They are used once the system has entered the pre-release phase and the release of the extinguishing agent is going to happen soon, thus the area must be evacuated.

The fourth relay will be activated at the time set in timer T3 (seconds) before the release of the extinguishing agent. Timer T4 defines how many seconds it will remain active after the release event. It is usually used for activation of automatic doors, ventilation systems control, pressure dampers etc.

Relay 5 is only activated during the "first level alarm". Usually used for system integration (BMS systems).

Relay 6 is the same as relay 2 and maybe used for extra agent release sub-systems, systems integration etc.

Relay 7 is the inverse of relay 4. Care must be taken during the installation design, as using the output of this relay will create a permanent load on the system. Typically used in special cases of pressure dampers.

Relay 8 is usually used for systems integration as it carries the verified information (from input zone 6) of the release of extinguishing agent.



The diodes shown on Figure 46 & Figure 50 are extremely important. They are used to block the fault sensing current from unintentionally activating the gas releasing device. Also isolates any loads that may cause the fault circuitry from proper operation.

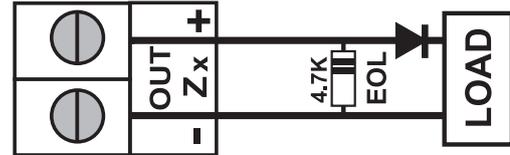


Figure 50. Relay output Load connection

6.3.3 Hold Extinguish

The function of the Hold Extinguish button is to prevent the release of the extinguishing agent for as long as it is depressed (engaged).

The "Hold Extinguish Zone" input must be connected to a toggle type manual call point. The user should be able to engage and disengage it with manual operation.

The panel implements both types of “Emergency hold device” as per EN12094-1 section 4.20.3a and 4.20.3b.

The main differences between the two modes are the behavior of the system during HOLD (hold button engaged) and upon HOLD cancellation (hold button disengaged) as shown below:

	Mode a	Mode b
Pre-release timer while HOLD button is active	Stopped	Running down
Action upon deactivation of HOLD button	Reset the timer to its initial value and count-down for the duration of the preset time before extinguishing operation is started.	Continue the count-down if timer has not expired while on HOLD, or go immediately in extinguishing mode if timer expired while on HOLD.

Table 11. HOLD button mode differences

The mode of operation is selectable from access level 3:

- Press **[ACC]**, enter Access Level 3 PIN: A.L.3 menu is displayed.
- Press **<3>** for **|3. Zone Times|**.
- Press **<0>** for **|0. Hold Mode|**

6.3.3.1 Hold Extinguish Mode A

This operation implements the “Emergency hold device” as per EN12094 – 4.20.3.a.

The system behaves as follows:

While the HOLD button is engaged:

- During Idle system operation or "Released" state it produces a fault.
- During "One zone triggered" state it changes the siren output pattern to "HOLD" see or Figure 39.
- During "Pre Release" state the siren output pattern is kept to "HOLD". The countdown of the pre-release delay is stopped and indicated as |Hxxx| where xxx is the time at the moment of the activation of the button.
- Relays 3, 4 (and 7 in mode 2) are set to the initial state of the pre-release phase and kept there, ready to commence their pre-release sequence if and when the Hold button is disengaged.

When the HOLD button is disengaged:

- During Idle system operation the fault condition is restored.
- During the "One zone triggered" state the siren output relay

returns to pattern A.

- During the "Pre Release" state the siren output relay returns to pattern A. The countdown of the pre-extinguish timer returns to the initial value and starts counting down towards the extinguishing phase. The countdown is indicated normally, eg |X032|.

If the <Hold Extinguish> button has been left pressed during normal system operation (no alarm detected) an audible and visible fault indication will be produced on all keyboards with the General Fault indicator active and the display in the zones faults list.

6.3.3.2 Hold Extinguish Mode B

This operation implements the "Emergency hold device" as per EN12094 – 4.20.3.b.

The system behaves as follows:

While the HOLD button is engaged:

- During Idle system operation or "Released" state it produces a fault.
- During "One zone triggered" state it changes the siren output pattern to "HOLD", see Figure 39.
- During "Pre Release" state the siren output pattern is kept to "HOLD". The countdown of the pre-release delay is not stopped but indicated, eg |H032|.
- During "Release Hold" state (when the pre-release delay times out with the Hold button pressed) the siren output pattern is kept to "HOLD". The 4 zones status is indicated as |HOLD|. The Extinguish Relay (Relay 2) is NOT activated.
- Relays 3, 4 (and 7 in mode 2) are not affected (activated/deactivated at their corresponding timer events).

When the HOLD button is disengaged:

- During Idle system operation the fault condition is restored.
- During "One zone triggered" state the siren output relay returns to pattern A
- During "Pre Release" state the siren output relay returns to pattern A. The countdown continues normally as it was NOT stopped during HOLD. The countdown is indicated normally, eg |X032|.
- During "Release Hold" state the extinguish relay (relay 2) is immediately activated. This state is reached when the pre-release timer has expired but the Hold button is engaged.

If the <Hold Extinguish> button has been left pressed during normal system operation (no alarm detected) an audible and visible fault indication will be produced on all keyboards with the General Fault indicator active and the display in the zones faults list.



IMPORTANT!! *The HOLD zone will be considered active even if it is in fault (open, short or left pressed).*

In other words a fault condition on the Hold zone input will prevent the extinguish sequence from releasing the extinguishing agent. This is a demand in the EN 12094 standards.

HOLD button must include visual indication that illuminates when button is active.

6.3.4 RESET Operation during Extinguishing

The system will also respond to the system RESET operation from any installed keypad. During any phase of the extinguishing sequence except the "No Reset" time right after release, the system RESET operation will reset the system to normal state. Of course if the initial conditions that triggered the system have not been eliminated, the system will reenter the appropriate state.

6.3.5 Zone Bypasses - Extinguishing

Any of the zones belonging to a cross-zone area may be bypassed. Bypassing each zone, disables the operation that corresponds to this zone. The following rules apply:

Bypassing the two cross zones is only allowed during idle or "only one zone activated" states. Bypassing one or both of the Cross-zones (1 & 2) while permitted will:

- Add the zones in the bypass list of the keypad
- Will NOT indicate a possible alarm state on the corresponding zone(s).
- Prevent the system from entering the "pre-released" and "released state".
- Will NOT prevent the effect of the "Force Extinguish Zone" forcing the system into "Released State"
- Will not change the actual electrical state of any triggered automatic detectors.

If a bypassed triggered zone is un-bypassed the system will:

- Indicate the Alarm Condition again.
- If both zones are now active the cross-zoning will enter the pre-release state with the pre-release timer reset.

Bypassing the "Force Extinguish Zone" will:

- Indicate the zone in the bypass list of the keypad.
- Prevent the effect of the "Extinguish Zone" forcing the system into "Released State".

Bypassing the "Hold Extinguish Zone" will:

- Indicate the zone in the bypass list of the keypad.
- Prevent the effect of the "Hold Extinguish Zone" canceling the extinguishing sequence as described above.

6.3.6 Relay Bypasses - Extinguishing

The relays corresponding to the cross-zones may be individually bypassed. In this case the cross-zoning operation stays unaffected but the bypassed relay will never perform the assigned operation as described above.

The following rules apply to relay bypasses:

- Bypassing of the Extinguish relay (relay 2) is Not allowed during Released state.
- Bypassing the Alarm Relay (relay 1) will automatically bypass the Extinguishing relay (relay 2)
- Un-bypassing the Extinguishing relay is not permitted when the Alarm relay is bypassed
- When the Extinguish relay is bypassed the extinguishing agent will not be released.
- Bypassing the Extinguish relay will not affect the Pre-release timer count down. The indication will be |B032| (32 being an example of the remaining seconds). When the timer expires the indication will be |B000|. The Extinguish relay will NOT be activated. The remaining relays will operate as usual.
- Un-bypassing the Extinguish relay during Pre-release delay or Released (but not active due to bypass), will reset the Pre-release time-out and start the extinguishing sequence from the beginning.

Bypasses are a good means for testing the system operation without having to disconnect the gas release devices. Make sure that in the case of a test the system is reset with the system RESET operation before the zones are restored to the enabled state. Failure to do so will result in the activation of the extinguishing cycle according to the triggered zones/buttons.

6.3.7 Extinguishing system timers

6.3.7.1 Extinguish Delay

A very important parameter of the cross-zoning is the pre-release delay (see section 6.3.3). This can be set in **ALM.3.3.2 | Cross-Zone Delay**. Default value is 60 seconds with a maximum value of 250 seconds. Please note that the EN12094 limit this time to 60 seconds.

6.3.7.2 Reset Delay (Extinguishing)

The "No Reset Delay" is the time after gas release that no reset of the relays is allowed, ensuring the proper and complete flow of the extinguishant to the protected area. This time can be set in **ALM.3.3.3 | Cross Reset Delay**. The units entered is minutes.

6.3.7.3 Relay 3 Post release timer (T2)

Timer T2 defines the time after the release event that relay 3 remains activated. It is set in **ALM.3.3.4 | RL3 Post RLSE time**. The time is defined in seconds. If a value of 0 is used, the relay remains active until reset by the user. See and Figure 38, timer T2.

6.3.7.4 Relay 4 Pre release timer (T3)

Timer T3 defines the time before the release event that relay 4 remains activated. It is set in **ALM.3.3.5 | RL4 Pre RLSE Time**. The time is defined in seconds. See and Figure 38, timer T3.

If Ext.mode 2 is used, the timer also affects relay 7 which is the inverse logic of Relay 4.

6.3.7.5 Relay 4 Post release timer (T4)

Timer T4 defines the time after the release event that relay 4 remains activated. It is set in **ALM.3.3.6 | RL4 Post RLSE Time**. The time is defined in seconds. If a value of 0 is used, the relay remains active until reset by the user. See and Figure 38, timer T4.

If Extinguishing Mode 2 is used, the timer also affects relay 7 which is the inverse logic of Relay 4.

6.4 Evacuation

This is a feature of the panel that uses relay module to signal the evacuation to all available relays (except any possible cross-zoning relays). It is used in big installations where a number of distributed usually smaller notification appliances have been installed.

In a normal alarm condition the main Siren relays with the relays corresponding to zones in alarm are activated. During an evacuation condition all available zone relays, not only the ones corresponding to energized zones are activated.

There are a number of options that affect the way the evacuation procedure is started and some that affect the way the systems behaves after during the evacuation:

Global evacuation from zone (ALM3.6.6 | Evac from zone|): When this option is enabled any zone that triggers an alarm will also start the Evacuation procedure.

Global evacuation from Keypad (ALM3.6.5 | Evac from keypad|):

 **IMPORTANT!! This operation is only available in extinguishing Mode 1 (see section 6.3.1.1).**

When this option is enabled, any user without elevated access level rights may start an evacuation from any installed keypad by pressing and holding buttons <1> and <3> for 3 seconds. The following screen appears for confirmation (Figure 51).

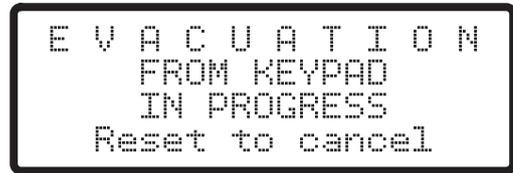


Figure 51. Set global evacuation from keypad screen

Pressing <ENTER> confirms the action and the evacuation is started. The display units show the screen shown below (Figure 52).



Figure 52. Global evacuation from keypad confirmation screen

Global evacuation for cross-zoning (ALM3.6.7 | Evac from Ext zone|): When this option is activated the following conditions will activate the evacuation:

- Cross Zone 1 and Cross Zone 2 of any cross-zoning area (both zones) get activated.
- Force Extinguish Button of a cross-zoning is activated.

The Relay No 1 (Siren Output) of any cross-zoning area will be activated during any evacuation regardless of this setting.

The global evacuation may also be started by menu item 1 |**1.Evacuation start**| in access level 2 menu



To cancel an evacuation the system must be reset with the <RST> button. This is an Access level 2 or 3 operation.

6.5 Periodic Test (ALM2.6)

The installer may program the FighterXT fire panel to create a reminder at a preset time interval that the system must be checked. The user performs a system check and at Access Level 2 (A.L.2) confirms the good operation of the system. This action is kept in the system log along with the date of the event.

The reminder screen is shown in Figure 53.

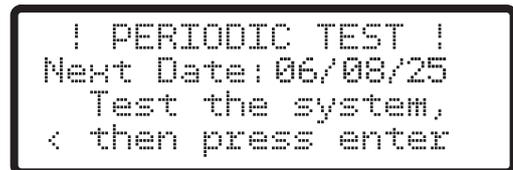


Figure 53. Access Level 2 Periodic Test screen

The system is described below:

The installer activates in ALM3.5 |**Periodic test**| the time of the day and every how many days that reminder will get automatically activated (see Figure 54 below).

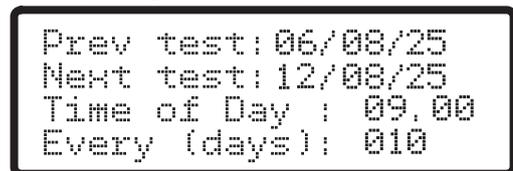


Figure 54. Set Periodic Test screen

Once the pre-programmed period expires the system displays the reminder screen and sounds the notification buzzers (see Figure 55 below).

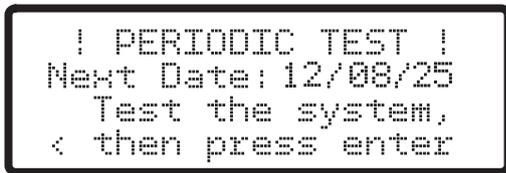


Figure 55. Periodic Test screen

The user must perform a system test (possibly a walk test and/or any other test dictated by the installation components).

Once the test is satisfactory, the user must either press <ENTER> in the reminder screen, or use menu item ALM2.6 |**Periodic Test**| to confirm the good operation of the system. Upon confirmation a message screen as shown in Figure 56 confirms and renews the automatic reminder timer.

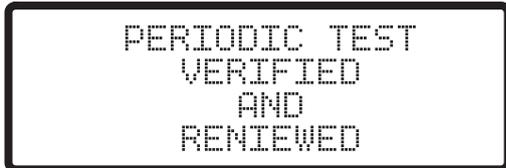


Figure 56. Periodic Test confirmation screen

The user may perform a system test anytime before the test period expires. He/she then uses ALM2.6 |**Periodic Test**| menu to review the automatic notification for the number of days programmed in ALM3.5 |**Periodic test**|.

In ALM3.5 |**Periodic test**| screen, the user may press the <left> and <right> arrow keys to switch between the Previous test date and the Next programmed test date.

6.6 Time/Date Adj. (ALM2.7)

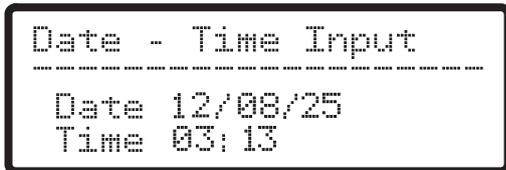


Figure 57. Time/Date adjust screen

Entering the screen will show the current date and time. To perform changes press <ENTER>. Enter Date, Month, Year, Hours and Minutes pressing <ENTER> after each entry. After all 5 data fields have entered, press <ENTER> to finalize and accept changes, or [CLEAR] to cancel.



On initial system power up, the real time clock is not set. In this case all display units present a scrolling reminder of this condition on the main system screen.

6.7 Walk Test (ALM2.8)

The walk test is an Access level 2 operation. During the walk test the fire detection of the system is altered so it produces a short siren sound and automatically resets. This behavior gives the operator the ability to "walk" through the installation and test one by one the installed detectors by triggering them (e.g. with smoke spray canister/tester).

During a walk test the system activates a timer which when expired, will automatically cancel the test and return the system to normal operation. This timer is automatically renewed with every alarm signal coming from any zone/detector.

To activate the walk test:

- Enter ALM.2 by pressing [ACC] key: Pin request screen appears.
- Enter A.L.2 pin: ALM.2 appears.
- Select menu item |**8. Walk test**|: The automatic cancellation time of the walk test is requested (see Figure 58 below).

low). The default/last used value is already in the entry box. If a different value is required it must be keyed in with the numeric keys. Valid values are 10 to 300 seconds.



Figure 58. Set Walk Test cancellation time screen

- Press <ENTER> key to confirm and start the walk test: The Walk test appears (Figure 59 below).



Figure 59. Walk Test screen

This screen shows the remaining time in seconds that will cause the automatic termination of the test condition if no alarm is received before it expires.

During a walk test:

- The system is NOT OPERATIONAL as a fire alarm panel.
- The [TEST] button/indicator is lit on all installed keypads.
- The user can press the <CLR> button to cancel the test (only on the keypad that initiated it).
- Any additional installed keypads are showing the walk test condition.
- Faults are signalled with the *FAULT* indicator, sound buzzers and fault relay but not the fault LCD screen.
- Any other keypad is not allowed to enter ALM.2 or ALM.3.

An alarm signal will:

- Trigger the Siren relays for about 2 seconds.
- Reset the system after about 3 seconds.
- Re-enable the test detection on the zones after about 10 seconds (this delay is needed for the practical need to clear any remaining smoke from automatic smoke detectors).

6.8 Communicator

The FighterXT fire panel includes a PSTN communicator. Using a PSTN telephone line all the events that are created during the operation of the system may be sent to a remote receiving station. The protocol used is the well established Contact I.D. (CID).

6.8.1 PSTN System connection

Figure 60 shows the required phone line connections. Under normal conditions (no data transmission) the phone line enters the Main PCB from the TIP-RING block connector pins and is routed to the T-R pins. The T-R pins are used to provide PSTN service to the rest of the installation.

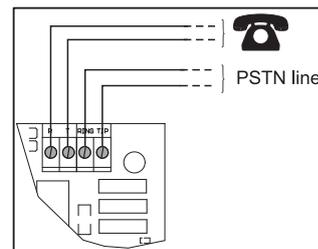


Figure 60. System required phone line connection

When a signal must be transmitted to the receiving station the PSTN line is isolated from the rest of the installation and is routed to the internal PSTN interface. This gives priority to the

fire panel over any other communication on the same PSTN line.



It is important to install the fire panel as the first device on the incoming PSTN line as this will ensure it has priority over other uses.

6.8.2 Communicator settings (ALM.3.4 | Comm Settings|)

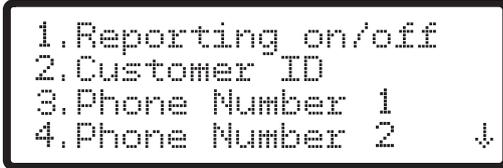


Figure 61. Communicator options screen

There is a set of options that affect the communicator feature (Figure 61). They are grouped in A.L.3 menu, item ALM.3.4 | **Comm Settings|** and are explained below:

|1.Reporting on/off|: Enables (1) or disables (0) the feature. If the communicator is disabled no events will be ever transmitted

|2.Customer ID|: This is a unique customer identifier that is transmitted with every communication message. It identifies the client to the receiving station. Valid values for each of the 4 digits is 0-9, A-F (hexadecimal number).



Tip: To avoid switching between numeric and alphanumeric keys, you can use the Up/Down arrows to change the number under the cursor.

|3.Phone Number 1|: The first central station's telephone number that the communication will use. (Default: empty)

|4.Phone Number 2|: The second central station's telephone number that the communication will use. (Default: empty)

The telephone numbers that the reporting will take place. The two numbers are used as a backup of the second to the first; If the event is successfully transmitted to Phone Number 1, it will not be sent to Phone Number 2



A pause can be inserted anywhere in the phone number by using the dot character ".". The pause will cause 2 seconds delay.

|5.Test Reporting|: This number sets every how many hours a test signal will be sent to the receiving station. 0 disables the feature.

|6.TLM delay|: Telephone Line monitoring delay. This is the minimum required time in seconds that a telephone line must be found in error before a fault conditions is raised.

|7.Alarm TX delay|: This is the delay in seconds before an event is sent to the receiving station. If more than one events have been cued up while this delay was active, they will be sent all at once and not delayed any further. This setting is used to minimize communication costs by grouping events together for transmission.

|8. Max Dial Attempts|: This is the number of successive failed attempts to send an event to a receiving station that will create a fault and will stop the re-transmission process. Every new event will restart the re-transmission mechanism. Any lost events are kept in the internal memory and will be transmitted with the first successful communication.

|9. Attempts Delay|: This is the delay in seconds that the system will wait before re-dialing after an unsuccessful transmission attempt.

7. Menu Reference

7.1 Access Level 1 (A.L.1)

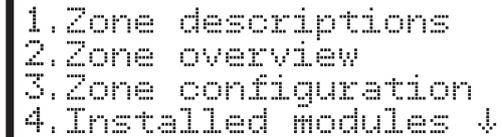


Figure 62. Access Level 1 menu screen

The items of the A.L.1 menu is as follows:

1. Zone descriptions (see section 3.4.1)
2. Zone overview (see section 3.4.2)
3. Zone configuration (see section 3.4.3)
4. Installed modules (see section 3.4.4)
5. Power levels (see section 3.4.5)
6. System info (see section 3.4.6)
7. Contact info (see section 3.4.7)

7.2 Access Level 2 (A.L.2)

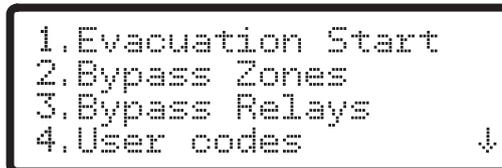


Figure 63. Access Level 2 menu screen

The items of the A.L.2 menu is as follows:

1. Evacuation Start (see section 6.4)
2. Bypass Zones (see section 4.1)
3. Bypass Relays (see section 4.2)
4. User codes (see section 3.3)
5. Zone descriptions (see section 3.4.1)
6. Periodic Test (see section 6.5)
7. Time/Date Adj. (see section 6.6)
8. Walk Test (see section 6.7)
9. Intellizone Cancel (see section 6.1)

7.3 Access Level 3 (A.L.3)

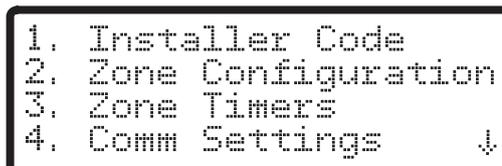


Figure 64. Access Level 3 menu screen

The items of the A.L.3 menu is as follows:

1. Installer Code
2. Zone Configuration
3. Zone Timers
4. Comm Settings (see section 6.8.2)
5. Periodic Test (see section 6.5)
6. General Options
7. TCP/IP Options
8. Additional Options
9. Save Modules List
10. Restore to Default

7.3.6 Additional Options (ALM3.8)



Figure 71. Additional Options menu screen

[1.Change logo]: Changes the main's screen display logo therefore any company can use it's own.

[2.Contact Tel 1]: This is the primary emergency telephone number that the user can view in the display. This number can be the fire department's number, the police, the installation company etc.

[3.Contact Tel 2]: This is the secondary emergency telephone number that the user can view in the display. This number can be the fire department's number, the police, the installation company etc.

[4.CrossZone mode]: This option may be either "1" or "2". It is explained in detail throughout section 6.3, Extinguishing system. It defines the behavior of the panel if extinguishing is required.

7.3.7 Save Modules List (ALM3.9)

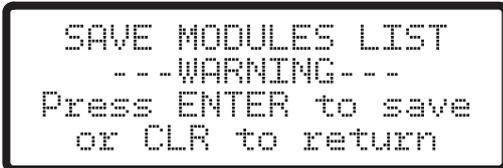


Figure 72. Save modules list screen

Saves the installed modules list. If the system restarts and a module from the saved list is not present then the panel produces a fault indication. The fault can be suppressed by the silence procedure and can only be restored if the module restores or the list is saved again with the current setup from access level 3.

7.3.8 Restore to default (ALM3.0)

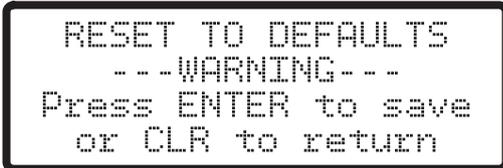


Figure 73. Restore to default screen

Resets the panel to it's default parameters.

8. Recommended Cables for Zone Inputs

Recommended cables for installations and maximum lengths are shown on Table 12. The cables must be in compliance with EN standards, with resistance to flame / temperatures up to 830°C for 15 minutes (EN50200 standard, PH30 category minimum).

Maximum wire length				
Current required [A]	18 AWG (0.823 mm ²) [ft / m]	16 AWG (1.31 mm ²) [ft / m]	14 AWG (2.08 mm ²) [ft / m]	12 AWG (3.31 mm ²) [ft / m]
0.25	584 / 178	950 / 290	1460 / 445	2170 / 660
0.50	292 / 89	474 / 144	730 / 222	1084 / 330
0.75	194 / 58	316 / 96	486 / 148	722 / 220
1.00	146 / 44	236 / 72	364 / 111	542 / 165
1.25	116 / 35	190 / 58	292 / 89	434 / 132
1.50	92 / 28	158 / 48	242 / 74	362 / 110
Resistance 1000 ft/ 304.8m	13 Ohm	8 Ohm	5.2 Ohm	3.5 Ohm

Vcdrg"340Maximum wire lengths

9. Maintenance

9.1 Preventative Maintenance

Before commencing testing, notify all personnel within the areas where the alarm sounds or locations that monitor alarm and trouble transmissions that testing is in progress.

- Records of all testing and maintenance shall be kept as required by the authority having jurisdiction.
- Required tools:
 - Slotted screwdriver, insulated
 - Digital multimeter
 - 470 Ohm, 1 W resistor
 - 40 cm jumper lead with alligator clips
 - Panel's main switch key
 - Panel's door key
 - Sound level meter
- A complete check of installed field wiring and devices should be made at regular intervals in accordance with European Standards requirements. This includes testing all alarm and supervisory initiating devices and circuits.
- Panel operation should be verified in the alarm, trouble and standby modes.
- To ensure that the panel can be powered when primary power is lost, the batteries should be periodically inspected, tested, and replaced (at least) every three years.

Batteries Maintenance

1. The batteries must be inspected semiannually as follows:

- Visually to verify that they are free of damage.
- Voltage tests under load.

2. An annual charger test.

The system is performing an automatic battery test by loading the batteries with the system current and measuring the voltage. In case of a battery or charger problem a battery fault will eventually be indicated.

Preventative maintenance schedule

For detector sensitivity and functionality testing, refer to the detector manufacturer's installation instructions.

Tests for grounds, opens, and shorts requires that you test ground fault, open circuit, and short circuit indications.

For ground fault tests, directly short one wire of a zone circuit to chassis ground. The ***FAULT*** LED must light and the on board buzzer sounds.

For AUX power short circuit testing, place a short across the +24 V and -24 V at the panel. The ***FAULT*** LED must light. At the same time the on board buzzer sounds.

For signaling device output open circuit test, remove the EOL resistor from the device. The ***FAULT*** LED must light and the on board buzzer sounds.

For signaling device output short circuit test, place a short across the terminals of sounder output. The ***FAULT*** LED must light and the on board buzzer sound. Never short the terminals of signaling device (notification appliance) output while the panel is in alarm state, otherwise the signaling device protection fuse will be blown.



It is recommended that all tests from the user should be performed periodically, in order to detect any malfunctions of the system.

Appendix A: Panel Technical Specifications

Mains Supply		220-240 VAC
Bus voltage		24VDC typical
Current at 24Vdc per PSU		1.8 A
Main board current draw	Standby	112 mA
	Alarm	350 mA
Relays Module current draw	Standby	40 mA
	Alarm	230 mA
Keypads current draw	Standby	25 mA
	Alarm	110 mA
Auxiliary output		24VDC +/- 10%, 800 mA max, current limited, monitored
Batteries		2x 12V, 7Ah sealed lead acid gel, self regulated
Battery replace Resistance		Greater than 3 Ohms ±10%
Zone Inputs Voltage		16.3 VDC ±10%, 0,5 V max ripple voltage
Zone Reset Operation		0,5 VDC max voltage, duration 3,1 sec
Max total detector's standby current per zone		15 mA
Max Zone Input Ratings		10 Ohm max Wiring resistance, 5uF max capacitance
Signaling devices outputs		24VDC ±10%, 1A max, fused and monitored
Fault relay contacts rating		Dry contacts (NO/NC) 30 VDC, 3 Amps
BUS system		4 wire RS485 bus system
Bus Max capacitive load		400 nF
Bus max length		1200m using typical RS485 cables
Main board zones		8 zones (configurable as 8 normal zones, 8 intellizones, 2 cross-zone areas)
Expansion Keypads		Up to 8 keypads 2 models of keypads currently exists (long type and short type)
Communicator		Build-in DTMF communicator supports Ademco C.I.D. format
Module address allocation		Addressable expansion modules. Addresses are selected with the on-board dip-switch.
IP rating		IP30
Construction		1.2mm steel sheet powder coated in grey colour
Environmental		Class A temperature range: -5 to 40 °C (23 to 104 °F) Humidity: 5 to 95% RH, non condensing
Terminal blocks rating		All terminals rated for 12 to18 AWG (0.75 to 2.5 sq mm)
Dimensions (HxWxL [cm])		Main unit: 31 x 45 x 9 Stand Alone LCD keypad KSDA: 15,5 x 11 x 2,8

Appendix B: Calculations

Battery calculation worksheet

Use this worksheet to determine the minimum capacity required for the panel's standby battery. You can obtain operating current requirements for notification appliances from their respective installation sheets.

	Standby Current (mA)	Alarm Current (mA)	
Total panel's consumption ^[1]	<input type="text"/> A	<input type="text"/> B	
+			
Aux current (max 1A)	<input type="text"/>	<input type="text"/>	
+			
Detector's consumption	<input type="text"/> ^[3]	<input type="text"/> One activated detector per zone	
Total current	= <input type="text"/>	<input type="text"/>	
Required times	x <input type="text"/> Standby time 24hr	x <input type="text"/> Alarm time	5 min = 0.083 hr 10 min = 0.167 hr 15 min = 0.250 hr 30 min = 0.500 hr
	= <input type="text"/> mAh	+ <input type="text"/> mAh	= <input type="text"/> mAh
			÷1000
			Battery amp hour total = <input type="text"/> Ah
			x 1.2
			Minimum battery size ^[2] = <input type="text"/> Ah
			÷7
			Total sets of Power Supplies with two 12V / 7Ah batteries = <input type="text"/>

Boards consumption calculation

	QT pcs		Standby Current (mA)	Alarm Current (mA)		Total Standby Current (mA)	Total Alarm Current (mA)
Main panel (PCB board)	1	x	<input type="text"/> 112	<input type="text"/> 350 ^[4]	=	<input type="text"/>	<input type="text"/>
Relays Module	<input type="text"/>	x	<input type="text"/> 40	<input type="text"/> 230	=	<input type="text"/>	<input type="text"/>
Keypads	<input type="text"/>	x	<input type="text"/> 25	<input type="text"/> 110	=	<input type="text"/>	<input type="text"/>
Other Loads	<input type="text"/>	x	<input type="text"/>	<input type="text"/>	=	<input type="text"/>	<input type="text"/>
Total						<input type="text"/> A	<input type="text"/> B

[1] The total panel's consumption includes the total calculation of the below boards consumption calculation with no load, only EOL resistors. Consumption on Standby mode: See Appendix A.

[2] The maximum battery size the panel can charge is 2x7 Ah.

[3] Use maximum value or actual calculated value from the Form below.

[4] All zones in alarm.

Appendix C: Contact ID Event Codes

EVENT	CODE
ZONE ALARM	110
ZONE CALLPOINT	115
MAIN POWER FAIL	301
MAIN POWER RESTORE	
FLASH CORRUPTED	303
BUS RESET	305
BATT REPLACE	309
BATT REPLACE RESTORE	
EARTH FAULT	310
EARTH FAULT RESTORE	
BATT FAIL	311
BATT RESTORE	
RESET CMD	313
RELAY FAULT	320
RELAY FAULT RESTORE	
SIREN FAULT	323
SIREN RESTORED	
MODULE FAILED	333
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FighterXT Fire Alarm Control Panel Operation Summary

RESPONDING TO ALARM SIGNALS

1. Evacuate the area.
2. Notify the proper authorities immediately and state the nature and location of the emergency.
3. Be prepared to provide directions to firefighters when they arrive.

TO SILENCE ALARM NOTIFICATION SIGNALS

Alarm notification signals should not be silenced until after all occupants have been evacuated.

1. Press the Silence button.
2. Enter A.L.2 user code.

The Silenced button turns ON and all audible notification circuits turn OFF. New alarm events turn the notification circuits back ON.

TO RETURN THE SYSTEM TO NORMAL AFTER AN ALARM

1. Make sure all smoke detectors are free from smoke and all manual pull stations are reset
2. Press Reset.
3. Enter A.L.2 user code

TO PERFORM A LAMP TEST (panel and remote annunciators)

1. Press and hold the Test button.

RESPONDING TO TROUBLE SIGNALS

1. Investigate the cause of the trouble by pressing the **[FAULT]** button and notify the authorized service personnel immediately.

 *Trouble conditions may affect the panel's ability to provide early detection and indication of a fire. Clear trouble conditions immediately.*

TO SILENCE THE PANEL BUZZER

1. Press the **[SLNC]** button.
2. Enter A.L.2 user code.

The buzzer turns OFF. Any new events turn the buzzer back ON. Trouble conditions not cleared resound the buzzer after a predetermined time.

PERIODIC TEST RECOMMENDATIONS

See "Maintenance," in the FighterXT Manual (Section 9).

Installed by

Name: _____

Company: _____

Address: _____

Phone: _____

For service contact

Company: _____

Address: _____

Phone: _____

Acceptance Inspection by

Date: _____

DEVELOPED BY

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