Manual 020001

# FALCON

## FIRE ALARM CONTROL PANEL

Made in Portugal - EU

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# INSTALLATION & COMMISSION MANUAL

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# 1. Overview

## Introduction

This document covers the installation and commissioning of a FALCON control panel. It is intended for use by a competent and qualified installation technician.

The conventional panel FALCON system must be adapted to the needs of the building and the systems to be protected. The complete system must be designed to comply with all applicable regulations and standards. Installation must be carried out in accordance with the system design.

This manual not only specifies the components and clarifies the wiring during installation but also assists with commissioning and maintenance. It covers the installation and commissioning of a complete system.

## Symbology

Electrostatic discharge sensitive device

Device with mains earth connection

Risk of electrocution

All PCBs contain devices that are sensitive to electrostatic discharge. Ensure that appropriate precautions are taken against electrostatic discharge (ESD) when removing or installing printed circuit boards.

## Key Features

- Supports 8 monitored conventional detection zones, expandable up to 16 zones.
- Configurable as 2Wire, allowing differentiation between sounders, detectors, and manual call points within the same zone.
- Each zone accommodates up to 32 conventional devices, including optical and/or thermal detectors and call points.
- Zone capacity expansion is possible with the 4-zone module (EXP CONV 4Z2S2R), up to a maximum of 2 modules, allowing for an additional 8 zones.
- Capacitive end-of-line configurations.
- 4 monitored sounder outputs with a current output of 250mA per circuit.
- Equipped with 4 unmonitored relay outputs of 2A, 30Vdc for Fire, Fault, and 2 programmable actions.
- Includes 2 auxiliary power outputs for additional power options or power up the expansion modules. The combined AUX outputs are limited to 900 mA.
- 2 configurable unmonitored inputs for activating pre-programmed actions.
- Programmable zone timers for adjacent coincidence zones.
- Features a backlit graphic LCD display with alphanumeric support.
- Programming can be performed using the integrated keyboard or PC software.
- Event log capable of storing up to 10,000 events for comprehensive analysis.
- Compliant with EN 54-2 and EN 54-4 standards

# 2. Primary Power Supply

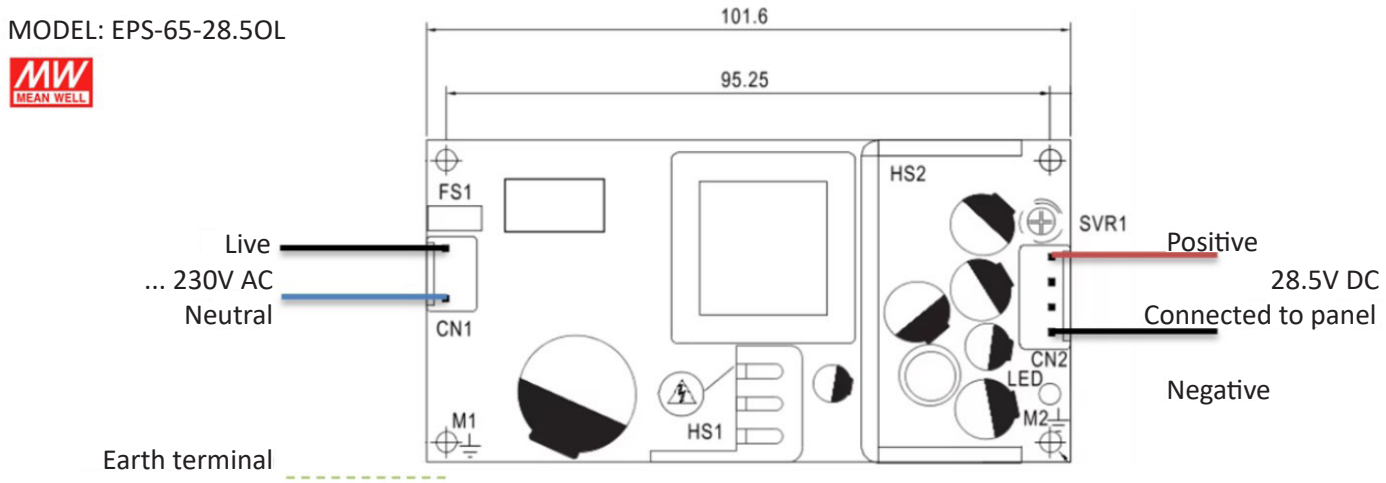



*Figure 1: External power supply model EPS-65-28.5 OL*

| Power Supply - Meanwell Model: EPS-65-28.5OL | |
|---|---|
| Mains Supply Voltage | 90~264 VAC 50/60 Hz - DC input operation possible by connecting AC/N(+), AC/L(-) |
| Internal Power Supply | Min. 20V DC - Max. 30V DC (28.5 V DC nominal) Max. Ripple 1 V peak-peak |
| Max Output Current | 2.4 A @ 230 VAC |
| System Mains Supply Monitoring | Yes |
| System Battery Charger Failure Monitoring | Yes |
| Internal Battery Capacity | 2 x 12V DC 12 Ah - Sealed lead acid batteries |
| Mains Fuse | 4A - Surge protected (slow blow) 20mm HRC |

## Power Supply Standards

**RoHS Directive:** 2011/65/EU

**Low Voltage Directive:** 2014/35/EU – EN 60950-1:2006 + A11 + A1 + A12 + A2

**EMC Directive (Electromagnetic Compatibility):** 2014/30/EU
**EMC – Emissions**
Conforms BS EN/EN 55032 (CISPR 32), Class B, BS EN/EN 61000-3-2 e 61000-3-3, EAC TP TC 020

**EMC – Immunity**
Conforms BS EN/EN 61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8 e -4-11, BS EN/EN 55035, EAC TP TC 020

## Battery Requirements

It is recommended that the batteries be installed at the end of the system commissioning process; otherwise, it may be difficult to quickly cut power if a problem occurs.

The batteries are connected to the main FALCON board. This battery connection supplies power to the panel in case of primary power failure and provides power to the auxiliary output.

Before connecting the batteries, check the voltage at the battery terminals. The value shall be 27V ± 0.5V.

## Connection Details

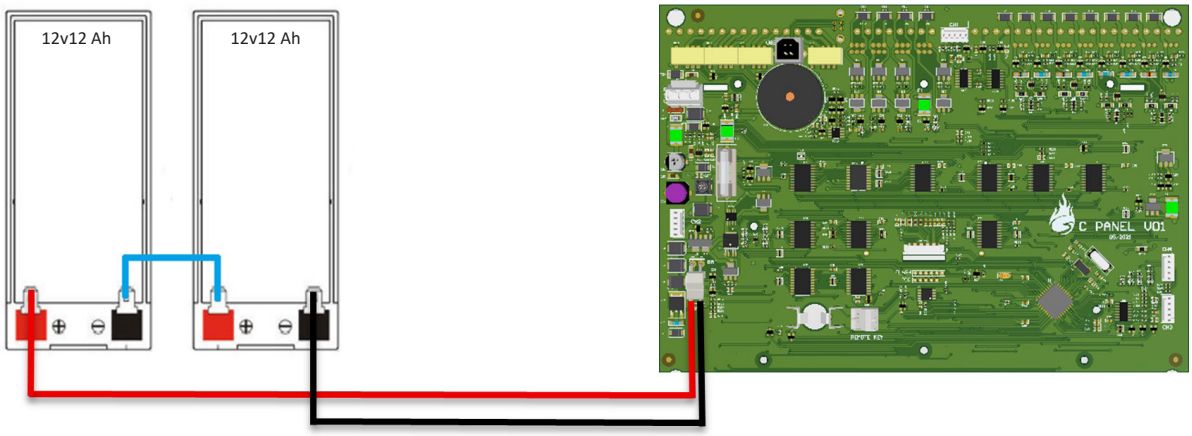



*Figure 2: Battery connections to the panel*

The maximum load capacity in terms of electric charge for a given battery group is easily calculated using the following formula:

$$\text{Battery Capacity (Ah)} = \left( \frac{\text{Total Standby Current (mA)} \times \text{Standby Time (h)}}{1000} \right) + (\text{Alarm Current (A)} \times \text{Alarm Time(h)})$$

Where:
Total Standby Current (mA): Includes the panel and all connected devices (e.g., detectors, modules).
Standby Time (h): Required autonomy time (e.g., 24h, 36h).
Alarm Current (A): Total current drawn by sounders during alarm (must not exceed 1A total or 250mA per output).
Alarm Time (h): Duration of alarm condition (e.g., 0.5h or 1h).
20% Margin: Safety buffer to account for battery aging and environmental factors.

## Battery Capacity Calculation Example

**Scenario:**

Panel standby current: 60 mA

Additional detector load: 140 mA

Sounders alarm current: 900 mA (total across 4 outputs, within 1A fuse limit)

Required standby time: 36 hours

Alarm duration: 1 hour

**Calculations:**

**Standby:**

(60+140) mA = 200 mA

200 x 36/1000 = 7.2 Ah

**Alarm:**

0.9 A x 1 h = 0.9 Ah

**Total before margin:**

7.2 + 0.9 = 9.72 Ah

**Recommended Battery Capacity:**

Use **2 × 12V 12Ah VRLA batteries** (providing 24V nominal and exceeding the calculated 9.72 Ah).

Use a battery capacity value higher than the one calculated, according to the available battery models on the market.

**WARNING:**

The total current load of all siren circuit zones and auxiliary power output connections must not exceed the panel's maximum power capacity.

Refer to the technical specifications tables for details.

## Battery Details

Battery Type: Sealed Lead-Acid (VRLA)

Minimum Capacity and Maximum Capacity: 2 × 12V DC 12Ah

Nominal Voltage: 24V DC (2 batteries in series)

Full Charged Voltage: 27V DC (2 batteries in series)

Operating Temperature Range: -5°C to +40°C

Installation Requirements: Batteries must be mounted in a ventilated compartment, in accordance with the manufacturer's instructions

# 3. External Box

## Deep Box

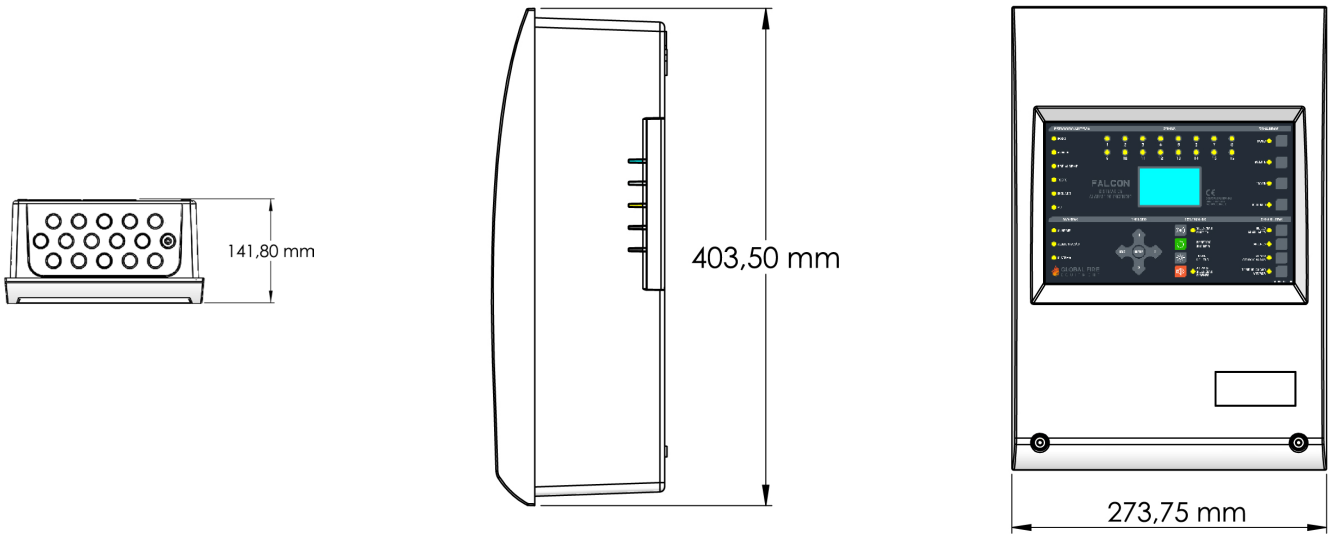



*Figure 3: Exterior box - DEEP BOX*

# 4. Internal Components

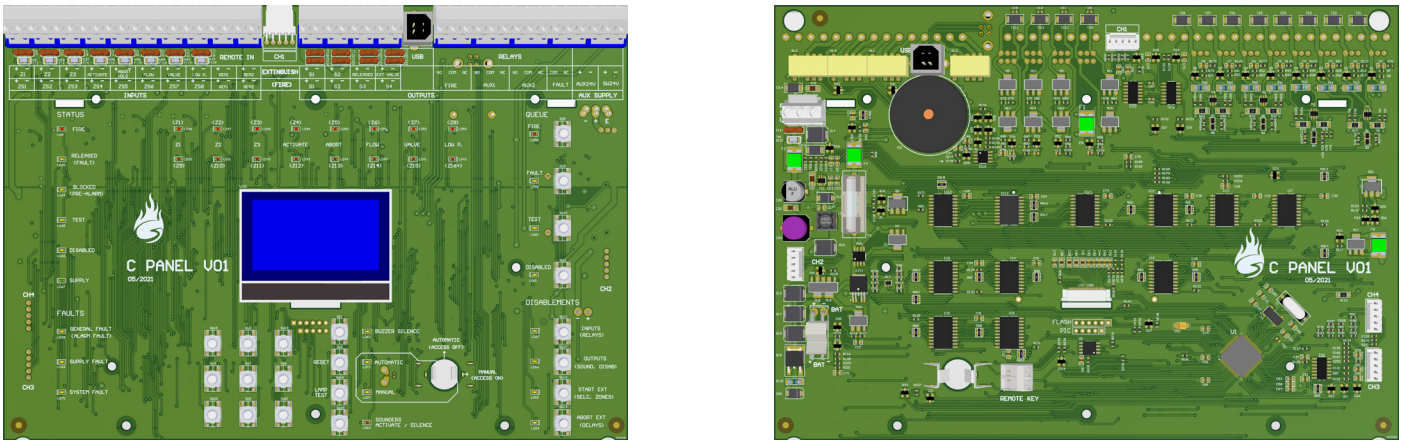



*Figure 4: cPanel motherboard*

## Deep Box Internal View

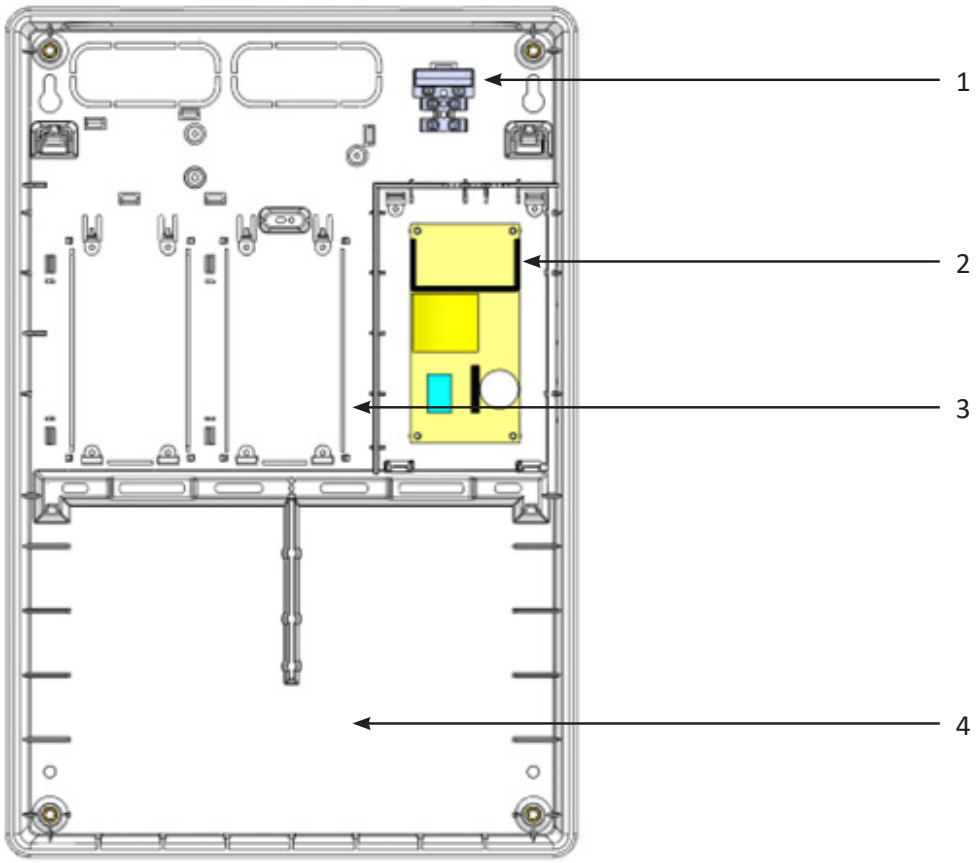



*Figure 5: Internal view*

1 - Main power supply terminal
2 - Power supply EPS-65-28.5OL
3 - Space for future modules
4 - Battery compartment space

# 5. Terms, Definitions and Abbreviations

**Conventional Sounder:** An acoustic signalling device connected to the conventional sounder output of the panel. It differs electrically from an analogue sounder powered by the detection loop, as it is polarised and activated via a DC power supply.

**Detector:** Any type of fire detector connected to the loop or detection zone.

**Device:** A detector, sounder, interface module, or manual call point connected to the detection loop.

**Evacuation:** A system status in which all sounders are activated simultaneously. Pressing the ACTIVATE SIRENS button for 3 seconds initiates the evacuation condition.

**Fibre Optic Connection:** A form of data communication that uses light signals transmitted through fibre optic cables instead of electrical signals through copper cables. This method supports longer transmission distances and reduces susceptibility to electromagnetic interference.

**Flash Memory:** Non-volatile memory used to store the panel's programming and user settings. It is highly robust and retains data without requiring power.

**NVRAM:** Memory that retains stored information even when the system is powered off. A dedicated circuit supports this memory.

**PCB:** A board used to mechanically support and electrically connect electronic components.

**System:** A set of interconnected devices forming the fire detection and alarm network.

**Zone:** A group of devices, such as detectors, connected to the system and treated as a single unit for monitoring and control.

**EOL (End of Line):** A component placed on the last device in a zone to complete the circuit.

**Access Levels:** Defined states of the Control and Indicating Equipment (CIE), as specified in the EN 54-2 standard.

**Condition:** The status of the control panel or extinguishing system, as indicated by the Control and Indicating Equipment (CIE).

- **Alarm:** When a fault is detected.
- **Fault:** The condition in which a fault has been identified by the system.
- **Disablement:** The condition in which a specific function has been intentionally disabled.
- **Quiescent:** The normal operating condition in which the panel is powered and no fault or fire condition is present.

# 6. Recommendations

Due to the flexibility and advanced functionality of this panel, configuring it to meet specific requirements can be challenging. If there is any uncertainty, it is recommended to contact technical support or the authorised distributor. Additional training may also be necessary.

If the system does not appear to be functioning as expected, take the time to carefully review the relevant sections of this manual. The ultimate goal is to ensure correct configuration and to establish appropriate cause-and-effect logic to effectively protect both equipment and personnel.

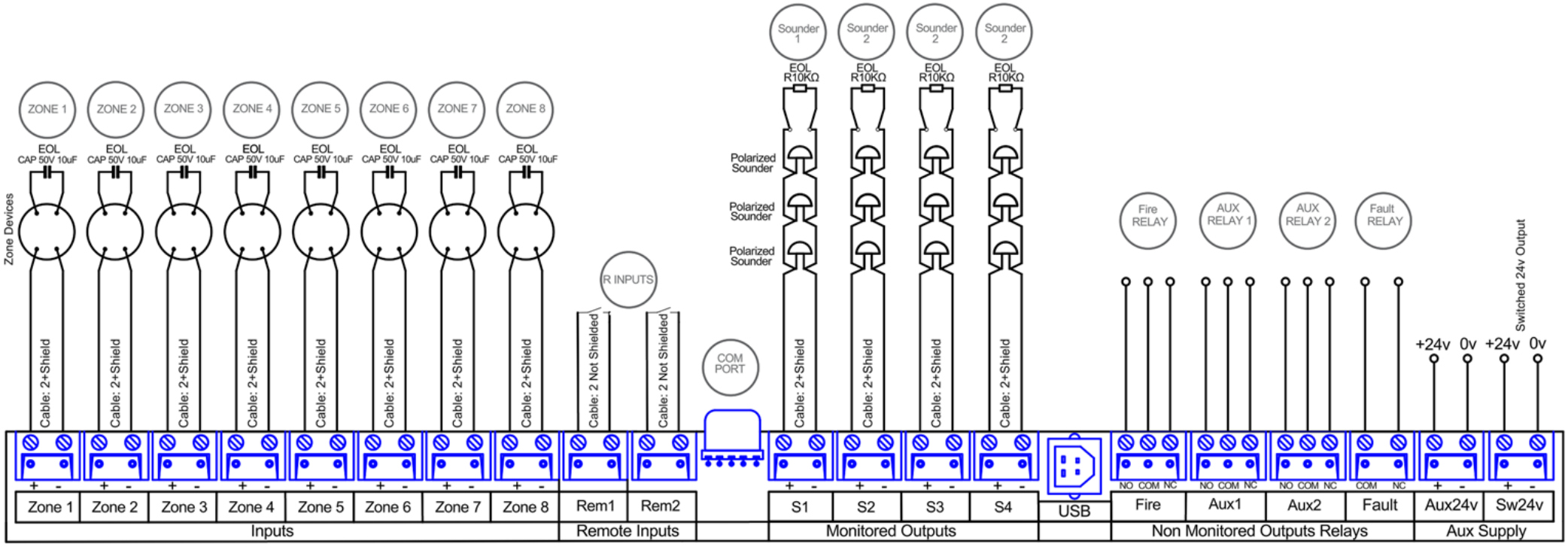
The panel's basic functions are readily accessible and become operational once power is supplied. However, certain advanced settings must be configured via the front panel buttons by navigating through the menu system. Some functions and devices may also be disabled within these menus.

The most effective way to become familiar with the panel's full programming capabilities is through hands-on experience, guided closely by the instructions provided in this manual.

**NOTE:**

If a fire occurs while the panel is in programming mode, it will automatically exit programming mode. However, if a fault is detected during programming, the fault will be reported, but the panel will remain in programming mode. In this case, it is necessary to manually exit programming mode in order to view the fault details on the LCD display.

# 7. Conventional Control Panel Wiring Diagram



# 8. Panel Inputs and Outputs Description

| | Name | Functionality | Activation | End of Line |
|---|---|---|---|---|
| **Inputs** | **Z1 to Z8** monitored zones | Standard conventional fire zone | With zone device | **CAP 50V 10 µF** |
| | **REM 1 & 2** | By default, REM1 is assigned to the panel reset function, and REM2 is assigned to the evacuation function | With an external switch | **N/A** |
| **Monitored Outputs** | **Sounder 1** | Monitored sounder S1 - Standard Fire | Sounder devices | **10K RES** |
| | **Sounder 2** | Monitored sounder S2 - default assigned to Zone 2 (configurable) | | |
| | **Sounder 3** | Monitored sounder S3 - default assigned to Zone 3 (configurable) | | |
| | **Sounder 4** | Monitored sounder S4 - default assigned to Zone 4 (configurable) | | |
| **Non Monitored Outputs** | **Fire Relay, Fault Relay and Aux 1 & 2 Relays** | Unmonitored Output (Relays) | N/A | **N/A** |
| **Aux Supply** | **24 Volt Auxiliary Supply** | Auxiliary Power Output for Supplying External Devices<br>AUX 24 – Normal<br>SW 24 - delayed (20 seconds at startup) | | **N/A** |
| | **Communications Channels** | 3 Channels:<br>x2 Master & Slave<br>x1 Data Loop or Odyssey | | **N/A** |

# 9. General

## Introduction

This section of the manual outlines the physical installation of the system, with a primary focus on the required components and their interconnections.

**IMPORTANT:**

At this stage, the system must remain unpowered—neither the mains supply nor the batteries should be connected. All panels must remain switched off.

System start-up procedures will be covered in the following section of this manual.

## Panel

The control panel must be installed in a location that allows unrestricted access to internal components and protects it from excessive temperature, humidity, vibration, and mechanical shock. A visual inspection should be carried out to identify any foreign objects or non-compliant conditions within the enclosure.

Any residual metal fragments may damage the printed circuit boards (PCBs) if present when the panel is powered on. Therefore, it is strongly recommended to remove all PCBs from the enclosure during installation. Before doing so, ensure you memorise or record the exact positions of each PCB to facilitate correct reassembly.

## Recommended Cables

**Monitored inputs, remote inputs and monitored outputs**

The following fire-resistant cables are approved for use in monitored inputs, remote inputs, and monitored output circuits:

AEI type Firetec Multicore Ref. F1C1 (1 $mm^2$) to F1C2.5 (1.5 $mm^2$) in 2-core
AEI type Firetec Armored Ref. F2C1 (1.5 $mm^2$) to F2C2.5 (1.5 $mm^2$) in 2-core
AEI type Mineral Insulated Cable (all types up to 1.5 $mm^2$)
BICC types Mineral Insulated twin twisted conductor cables, Ref. CCM2T1RG and CCM2T1.5 RG
BICC types Mineral Insulated Pyrotenax (all types up to 1.5 $mm^2$)
CALFLEX type Calflam CWZ 2 core type up to 1.5 $mm^2$
PIRELLI type FP200 Gold 2 core type from 1 $mm^2$ to 1.5 $mm^2$
FIRETUF (OHLS) FTZ up to 1.5 $mm^2$. Manufactured by Draka

All cables must be shielded.
Minimum conductor cross-section for detection zones: 0.8 $mm^2$
Maximum conductor cross-section for detection zones: 1.5 $mm^2$

**NOTE:**

When using shielded cables, the shield should be connected to the functional earth (FE) bus at only one end.

The other end, at the final device in the line, should remain unconnected.

*Figure 6: Earth busbar*

- There must be only one device zone per shielded cable.
- Conventional detection zones and conventional sounders must not operate on the same shielded cable.
- Each end of an independent mesh must be connected to the central unit's single earth bus.

# 10. Commissioning

Commissioning involves verifying that all connections have been made correctly and that all hardware is functioning properly. This requires the system to be installed in accordance with the previous section of this manual.

The control panel is supplied in Installation Mode. In this mode, the green SYSTEM ON LED will flash on and off. The console automatically detects and stores the expansion modules present in the system.

By default, the system is ready to operate and detect both extinguishing and fire events as soon as power is applied. It is therefore fully functional without requiring any additional configuration. Any further actions will tailor the system to the specific requirements of the installation.

Once all connections and hardware have been checked, the system can be commissioned quickly: simply place the system in Installation Mode for 90 seconds, then switch it to Active Mode.

**ENTER** – Confirms the entry of any data or selection.
▲ (1) – Increases the selected value or number. Also used for entering codes.
▼ (3) – Decreases the selected value or number. Also used for entering codes.
► (2) – Moves the screen cursor when required.
**ESC** – Exit key. Used to leave a particular function.

► ▲ ▼ Use the arrow keys to enter codes. Once complete, press **ENTER** to confirm.

**NOTE:**
It is not possible to enter text for labels using the front display keypad. To update label text, the FALCON CONNECTOR must be used.

## Panel Controls and Indications

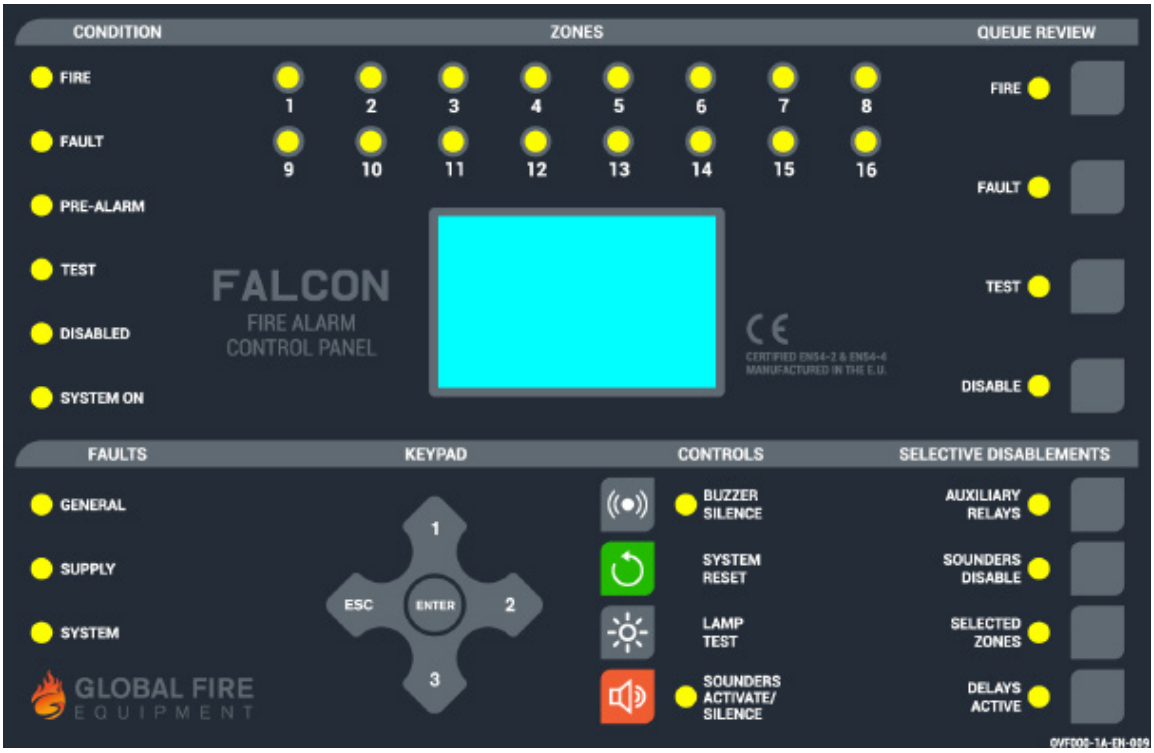


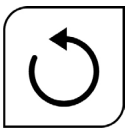

*Figure 7: Control and indication display*

### Silent Buzzer

The occurrence of any FIRE or FAULT condition will activate the internal buzzer. Pressing this button will silence the buzzer until a new FIRE or FAULT condition is triggered by the system.

### System Reset

Pressing this button will perform a system reset, clearing all active alarms and faults—unless a priority condition exists, such as an active siren. In such cases, a pop-up message will appear indicating the cause.



A standard reset is sufficient in most situations. However, a full reset can be carried out by disconnecting the main power supply—removing both the primary AC and secondary DC power sources.

**NOTE:**

If an alarm has been detected, it is necessary to silence the alarms using the SILENCE BUZZER button before the SYSTEM RESET button will function.

### LED Test

Pressing this button activates all panel LEDs and turns on the LCD backlight. The LED test functions only while the button is held down and is used to verify that all indicator LEDs are operating correctly.

## Sounders Evacuation/Silence

This button either activates or silences all sirens. If held for 3 seconds, it triggers evacuation mode, activating all sirens connected to the S1 output. The adjacent LED remains illuminated while any siren is active.

**Evacuation**

This function creates an evacuation state in which all sirens, even those that are deactivated, emit an alarm, audible or visual. This state can be triggered in the following ways:

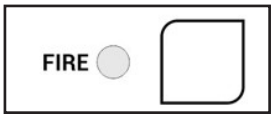
- Manual activation, with access level 2 or higher, by pressing the Activate/Silence button on the sirens for 3 seconds.
- Activation via remote input, if configured for this purpose (menu 2-2).
- Triggering via a zone or a group of zones (menu 3-4), which can be delayed using a counter defined in menu 8-1-4.

If you want to trigger the counter via configured zones, the desired mode is “Zone Mode.” To trigger the counter for any zone that is not configured, the desired mode is “Global Mode.” In the “Global Mode” case, configuration in menu 3-4 is not required.

## Event Log History

**FIRE- General User Access**

No code entry is required to access this function.

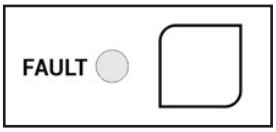



If more than one FIRE event is detected, the LED adjacent to this button will flash alternately. Pressing the button will display all detected fire events sequentially. Once all fire inputs have been acknowledged, the LED will remain steadily lit. Any new events will be added to the end of the input list, and the LED will resume alternating.

After each activation of this button, the information is displayed for 20 seconds, after which the system returns to showing the first entry in the list.

**FAULT – General Access Key**

If more than one FAULT event is detected, the LED adjacent to this button will flash alternately. By pressing the button, all detected fault events will be displayed sequentially.

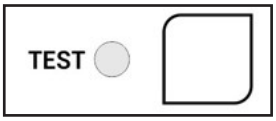



Once all fault inputs have been acknowledged, the LED will remain steadily lit. Any subsequent events will be added to the end of the input list, and the LED will resume alternating.

After each activation of this button, the information is displayed for 20 seconds, after which the system returns to showing the first entry in the list.

**TEST – General Access Key**

No code entry is required to access this function.




If the LED adjacent to this key is illuminated, it indicates that test mode has been selected in the corresponding programming menus. Pressing the key will display which sirens and zones have been selected for test mode.

Pressing the key again will allow you to view the next zone in test mode, if available. The information is displayed for 15 seconds before automatically returning to the main menu.

**NOTE:**

SYSTEM RESET function will clear all active test modes configured in the system.

**Selective Disablements**

If the LED is illuminated, it indicates that at least one disablement is currently active in the system. By pressing the button, the system will display the list of active disablements.


If there are more disablements than can be shown at once, pressing the button again will display the next set of disablements, and so on.

The information is shown for 5 seconds before returning to the default display.

Possible disablements include:

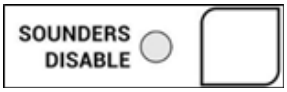
- Detectors
- Extinguishing inputs
- Conventional sirens
- Extinguishing outputs
- Auxiliary relays
- Custom timers

**Auxiliary Relays**

Pressing this button will activate/deactivate all pre-selected relays in menu 5-1.

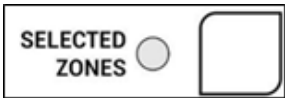

**Sounders Disable**

Pressing this button will activate/deactivate all pre-selected sirens in menu 4-1.




**Selected Zones**

Pressing this button will activate/deactivate all pre-selected zones in menu 3-1.




**Delay Active**

Pressing this button will activate the pre-selected entry and exit timers; if “Night Timer Off” is configured, the system automatically activates/deactivates the respective timers.


**Delays**

This function allows delaying the activation of the corresponding output. The outputs applicable to this function are as follows:

- Zones (menu 3-2)
- Monitored outputs (menu 4-2)
- Non-monitored outputs (menu 5-2)

The delay must be selected and can be configured in the following modes:

- **None:** In this mode, the output is not configured with a timer.
- **Detector:** In this mode, only detectors will add a timer to their output. (2Wire)

- **Push Button:** In this mode, only push buttons will add a timer to their output. (2Wire)
- **Any Device:** In this mode, any zone device will add a timer to its respective output (all devices).

Each output has its own timer, and the timing duration cannot exceed the 10-minute limit imposed by the EN54-2 standard.

It is possible to individually check the status of each output. If the counter is active, a timer can be manually added in 10-second intervals, as long as the total effective time does not exceed 10 minutes. This additional time does not affect the timer for the next activation.

For the timer to be active, the “Active Timers” button must be selected. Whenever this field is illuminated, all pre-programmed delays will be ready to add the corresponding time to the outputs.

It is possible to configure the timers to be automatically deactivated within a time interval (8-1-3) defined in menu (8-1-2) and to reactivate the timer again in the next interval.

# 11. Event Triggering Conditions

This function can only be applied to the following features:
- 2Wire Common or 2Wire Dwelling (menu 3-3)
- Zone Sirens (menu 4-3)
- Zone Relays (menu 5-3)

Each output can be activated by various conditions, whether alarm and/or failure-related, including:

**Mode:**
- Any: In this mode, any zone index included in the list signals an event will activate the corresponding output.
- Coincident: In this mode, when both zone indexes included in the list signal the event, the corresponding output will be activated.
- Coincident or Push Button: Identical to “Coincident,” but with the particularity that if one of the listed zones signals the event via a push button, the corresponding output will be activated.

The configurable events are as follows:

**Alarm:**
- None: In this mode, the output will not be activated by an alarm condition.
- Zone: In this mode, the output will be activated when the alarm condition occurs in the zone(s) that signaled the event.

**Fault:**
- None: In this mode, the output will not be activated by failure conditions.
- Any: In this mode, the output will be activated whenever a failure appears in the control panel, whether it’s a ground fault, siren issue, or communication loss with the modules.
- Power: In this mode, the output will be activated when there is a power failure, whether it’s the primary source or battery backup.
- Zone Failure: In this mode, the output will be activated when a failure condition occurs in the zone(s) that signaled the event.
- Zone or Power Failure: In this mode, the output will be activated if either a “zone failure” or a “power failure” event is detected.

If both events are set to “None,” the corresponding output will never be activated.

## Deactivate Inputs/Outputs

This feature can be applied to the following inputs and outputs:

- Zones (menu 3-1)
- Monitored outputs (menu 4-1)
- Non-monitored outputs (menu 5-1)

The deactivations are classified into two types:

1. **Permanent Deactivation:** Permanent deactivations are those whose data is stored in “NVRAM,” and the respective inputs/outputs remain in the same state as configured.
2. **Pre-selected Deactivation:** Pre-configured deactivations, assigned to “Client Data,” only take effect when the respective commands are active and displayed on the panel overlay. All pre-selected deactivations are toggled between deactivated and activated with a simple press of a button.

## Access Level Key

Depending on the panel version, it may be equipped with an access key. This function is intended to limit the level of access to the panel’s functions.

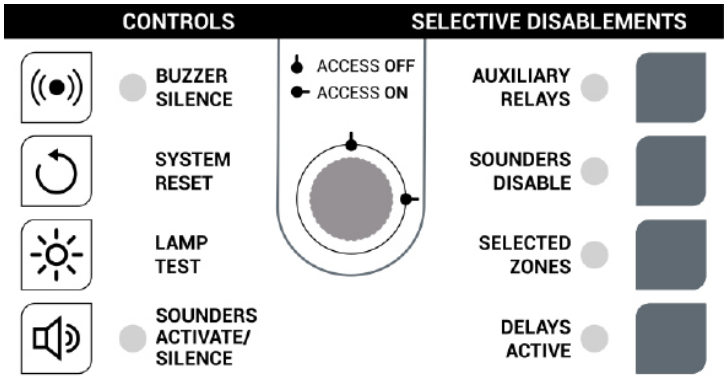



*Figure 8: Access Level Key overlay*

**ACCESS LEVEL OFF:** only access code allowed
**ACCESS LEVEL ON:** user access level

# 12. Access Levels

## Access Level 1 - Any User

This level of access does not require an access code and is therefore the most basic level. The functions available on the control panel are very limited and include only the following:

1 - LED test button
2 - Event history review button (Fire, Fault, Test and Disabled)

## Access Level 2 - General User

Unless otherwise specified, operating a given switch requires a valid User or Programming Access Code. Access at this level is granted by entering a code using the panel keypad. The user code is factory-set as ▲ ▲ ▲ ▲ ▲.
After entering each digit in sequence, press OK to confirm the entry.

Upon entering a valid User Access Code, the authorised user gains access to operate all switches on the front display panel. General User Access also permits zones to be enabled or disabled. This code can be changed.

## Access Level 3 - Authorised Installer

Access Level 3 – Press ENTER, then enter the installer access code ▲▼▲▼▲ , and press ENTER again to confirm the entry.

# 13. Primary Supply Connection

The panel must be properly earthed. The earth wire should be connected to the terminal designated for the green and yellow conductor **(PE – Protective Earth)**.

The line (phase) conductor of the power supply must be connected to the fused input terminal of the power supply unit, where the black or brown conductor **(L – Line)** is connected.

The neutral conductor must be connected to the terminal designated for the blue conductor **(N – Neutral)**.

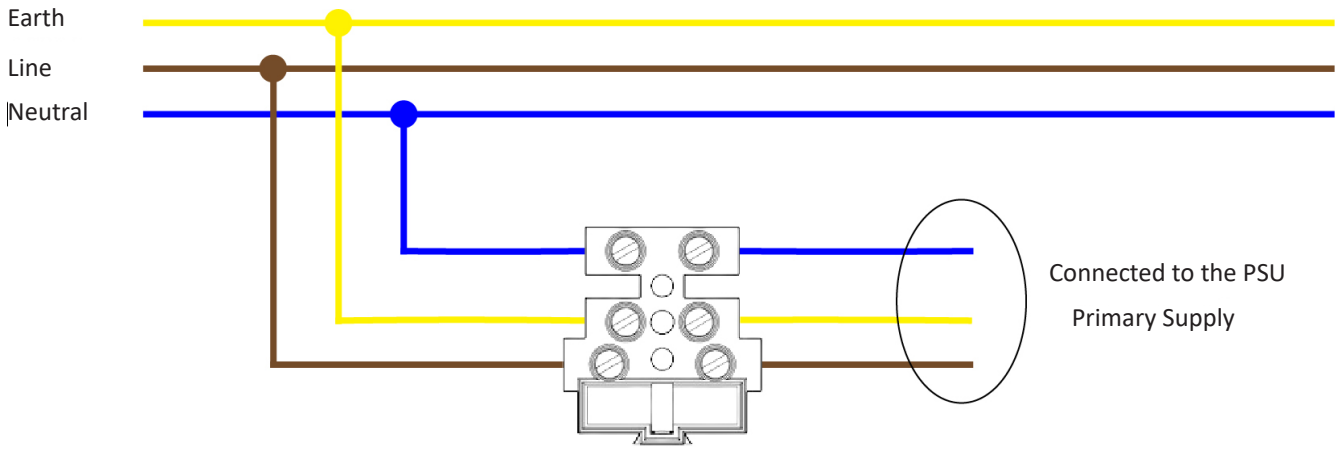


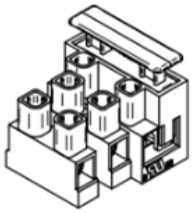

*Figure 9: Primary supply connections*

## Fuse Replacement Procedure

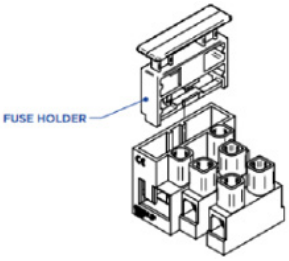
**Important:**
Before beginning any servicing:
Disconnect the mains power and battery.
Use anti-static precautions when handling internal components.

**Procedure:**
1. Open the enclosure:
Unscrew the front panel using the appropriate tool.
Locate the power supply unit (PSU). Refer to Figure 5 in this manual.

2. Identify the fuse:
The main fuse is a 4A slow-blow (HRC) 20mm fuse.
It is typically located near the AC input terminals.



3. Remove the faulty fuse:
Use a fuse puller or an insulated tool.
Inspect the fuse for visible damage (e.g. blackening or a broken filament), or test continuity using a multimeter.




4. Install the new fuse:
Ensure the replacement matches the required specification: 4A slow-blow, 20mm HRC.
Insert the fuse securely into the holder.

5. Reconnect power:
Reconnect the battery and mains supply.
Verify that the panel powers up correctly and check for any fault indicators.

# 14. Monitored Inputs

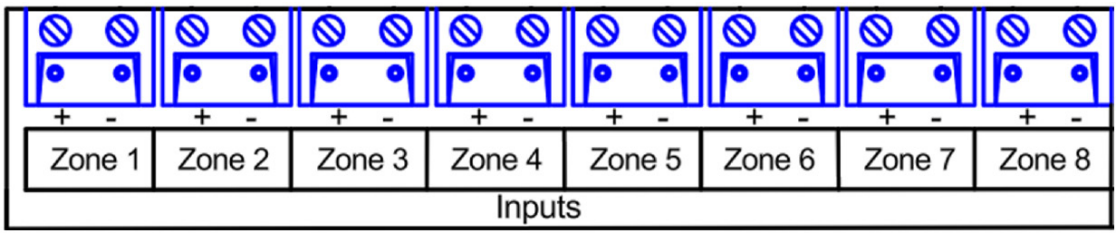



*Figure 10: Monitored input ports*

## Zones Z1 to Z8 Connections

Alarm detection zones using detectors and/or manual call points, with the possibility of integrating sirens in 2 Wire configuration mode. The end-of-line is capacitive, 50V 10uF. Up to 32 detectors per zone are allowed.

Each zone can be configured with one of the following characteristics:
Conventional zone exclusively for monitoring alarms/faults from manual actuators and/or optical and/or thermal detectors. Up to 32 units can be used. The last device requires EOL for its terminals.

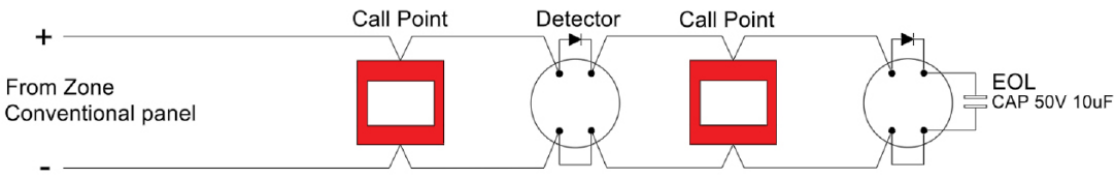



*Figure 11: Standard Zone Schematic*

## 2-Wire

This conventional zone functions identically to the previous configuration, with the addition of conventional sirens and Visual Alarm Devices (VADs). Up to 16 devices of this type can be used alongside traditional devices, with a maximum total of 32 units per zone.

A specific two-wire end-of-line device must be connected to the last unit in the circuit to ensure proper termination and monitoring.

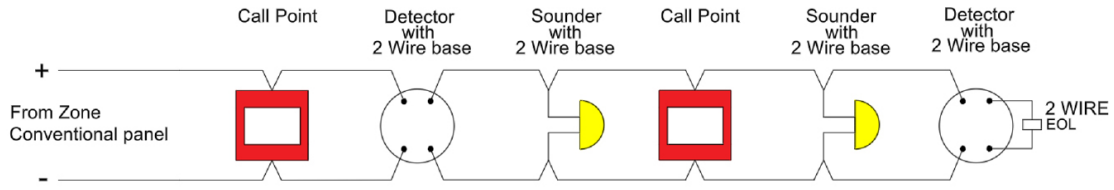



*Figure 12: 2-Wire Schematic*

## Remote Input Connection

The 'Remote Inputs' triggers a pre-programmed action in menu 2-2 whenever the input terminals are activated. These inputs can be configured to function as RESTART, EVAC./SILENCE, SELECTED INPUT, SELECTED OUTPUT, SELECTED I/O.

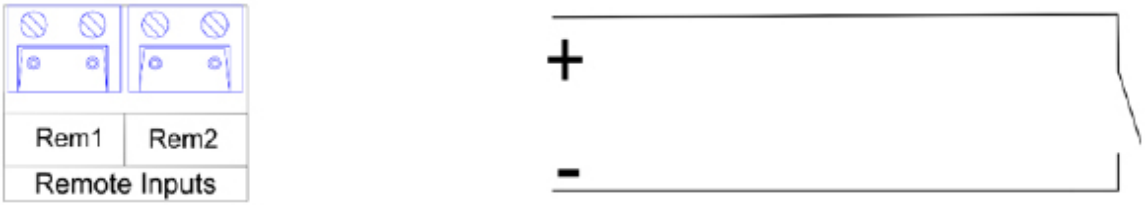



*Figure 13: Remote Input ports and Schematic*

# 15. Monitored Outputs

Robust output, allowing up to 250 mA per circuit, with multiple safety controls including protection against short circuits, temperature, overvoltage, inrush current, current limitation, and polarity reversal caused by inductive loads.

This type of output has an intrinsic limitation; however, a general fuse is used to restrict the outputs according to each application:

**Panel:** 1A fuse. The user is responsible for managing this budget to ensure it is not exceeded. A recommended limit of less than 250 mA per output is advised.

The monitoring technique for these outputs involves polarity inversion to verify the end-of-line voltage. Therefore, if non-polarised devices are used, a diode must be installed to prevent them from being powered by the monitoring circuit. Each monitored output can be assigned, via menu 2-3, to one of the following functions:

## Conventional Sounders - S1, S2, S3 and S4 connections

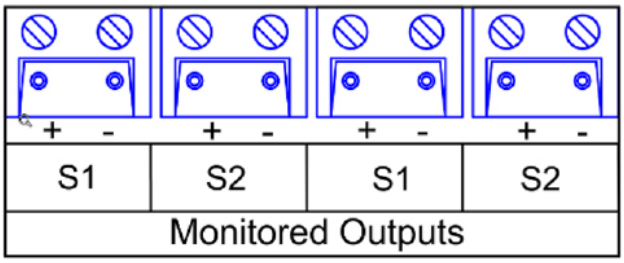



*Figure 14: Sounder output ports*

The fire sounder outputs activate conventional sounders continuously whenever a new fire or evacuation event is detected. These outputs feature individual short-circuit protection

Monitoring is carried out using the reverse polarity method with a 10k Ohm resistive end-of-line

Connected devices—such as sounders, beacons, bells, or pyrotechnic activators—must be polarised.

Non-polarised devices will trigger a fault on the control panel circuit. To prevent this, a polarisation diode can be added in series with the device when using bipolar components.

Pressing the “Activate/Silence Sounders” button for 3 seconds initiates evacuation mode and activates these outputs

By default, S1 is dedicated to the standard fire output, while S2, S3, and S4 are assigned to zonal sounders. These last three outputs are configurable, allowing customisation according to the system’s requirements.

**POLARISED SOUNDERS**

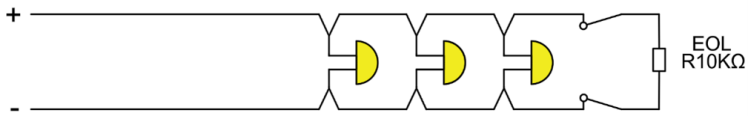



*Figure 15: Polarised Sounders*

**NON-POLARISED SOUNDERS**

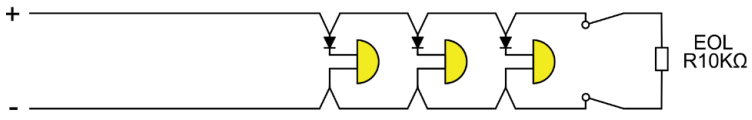



*Figure 16: Non-Polarised Sounders*

For non-polarised devices, place the diode as shown in the figure above.
Diode reference: 1N400x.

# 16. Non-Monitored Outputs

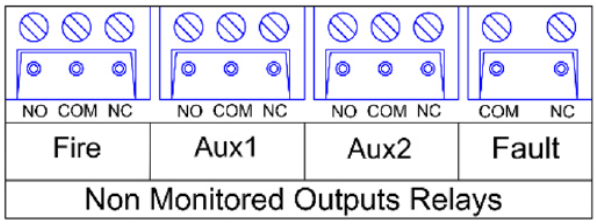
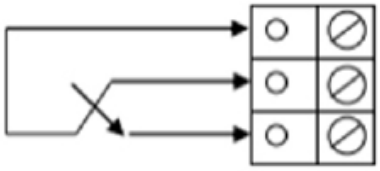



*Figure 17: Non-Monitored Outputs, Fire, AUX1, AUX2, and FAULT relays*

The panel is equipped with four relay outputs, as shown in the figure above.
The maximum rated contact current for each relay contact set is 1 A at 50 V DC (resistive load) or 0.5 A at 125 V AC (resistive load).
Each output is controlled by a relay with switching contacts, rated for a maximum contact current of 2 A at 30 V DC (resistive) or 0.5 A at 125 V AC (resistive), and a maximum switching power of 60 W.



Fire and fault outputs cannot be modified within the system.
Auxiliary non-monitored outputs 1 and 2 can be assigned to one of the following functions:

## General Fire Relay

Triggered whenever a new alarm condition occurs.

## General Fault Relay

Triggered whenever a new fault condition occurs.

## Relay Activation by External Key

Triggered when the switch is in the user code override position on the panel (Fire Key).

## Zone Relay

The auxiliary relay activates when all previously configured conditions are met.

This type of relay can be triggered by alarms in one or multiple zones—whether simultaneous or not—by faults in specific zones, power failures, and/or any other type of fault.

## Fail-Safe

Any of the characteristics can be used in safety mode.

The general fault relay uses this mode by default. In safety mode, the relay is energised during standby, and when triggered by an event, it switches off.

As a result, if the system shuts down, the output remains in an abnormal state.

## Auxiliary Supply

These outputs provide an unmonitored auxiliary 24 V power supply.

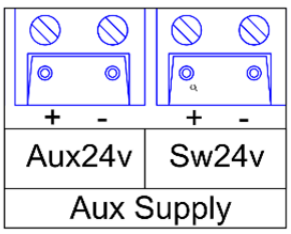



*Figure 18: Switched and permanent auxiliary power output*

## Aux 24V Output

Provides continuous output power at the system's nominal voltage. The output voltage is 28 V when powered by the main supply. If the main supply is interrupted, the voltage ranges between 21 V and 26 V, depending on the nominal voltage of the battery.

## Switched 24V Output

Power output at the system's nominal voltage, controlled by a pre-programmed action. The output voltage is 28 V when powered by the main supply. If the main supply is interrupted, the voltage ranges between 21 V and 26 V, depending on the nominal voltage of the batteries. The combined AUX outputs are limited to a maximum of 1 A.

**NOTE:**

The total current available for the two auxiliary ports (AUX 24 and SWITCHED 24V) is limited to 1 A, which is shared between both outputs depending on the connected load.

**WARNING:**

The total current load of all detection zones, sounder circuits, and auxiliary power outputs must not exceed the control panel's maximum power capacity. Please refer to the technical specification tables for detailed limits.

# 17. Expansion Modules

The CONV EXP 4Z2S2R expansion module is designed to extend the capabilities of the main control panel by providing additional inputs and outputs.

Each module adds:

- 4 additional zones for device connection
- 2 additional sounder outputs
- 2 additional relay outputs for programmable control actions

Up to two expansion modules can be connected to a single system, allowing a maximum of 16 zones in total.

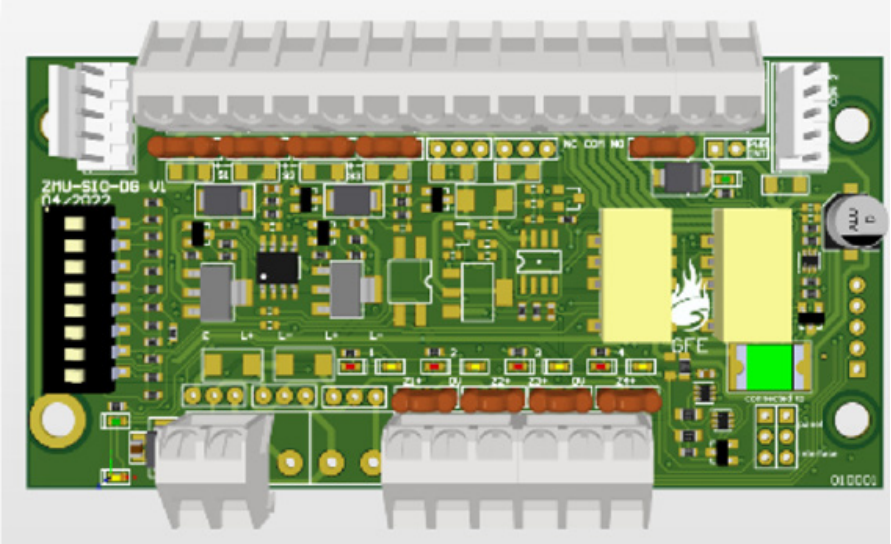


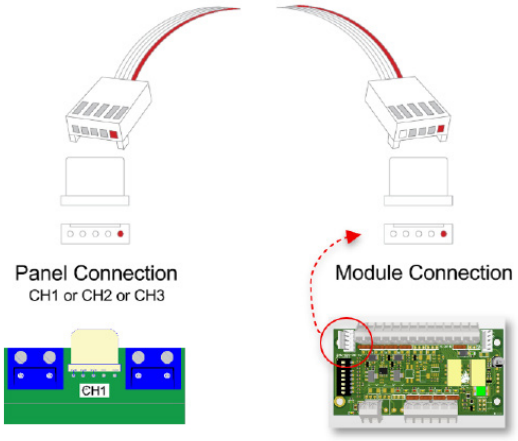
*Figure 19: Expansion Module*

## Expansion Module to Panel connection

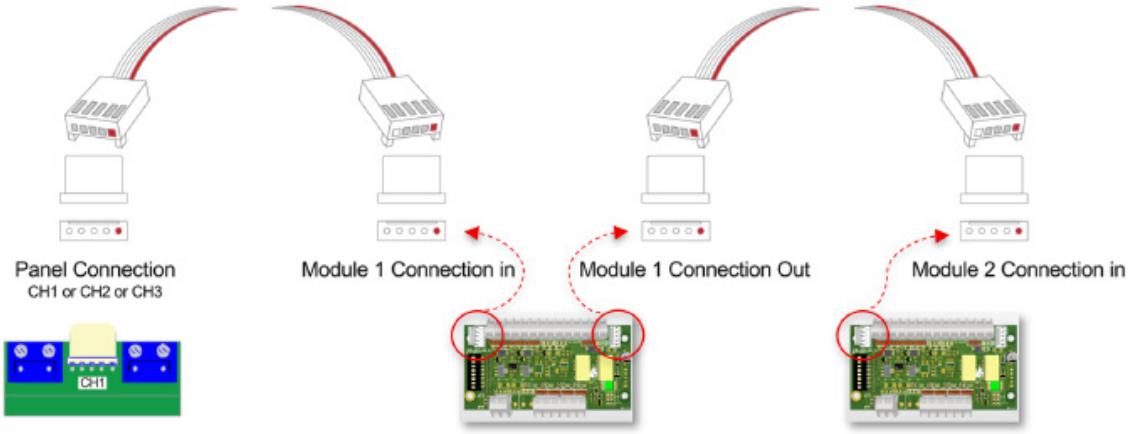
Connection to the main panel can be made through any of the available channels (CH1, CH2, and CH3), using a flat cable that links the panel channel to the module.

Additionally, when two expansion modules are used, the interconnection between them is also made using a flat cable, connecting the first module to the second.

### Example with 1 CONV EXP 4Z2S2R Connected to Channel 1 of the Panel




### Example with 2 CONV EXP 4Z2S2R Connected to Channel 1 of the Panel

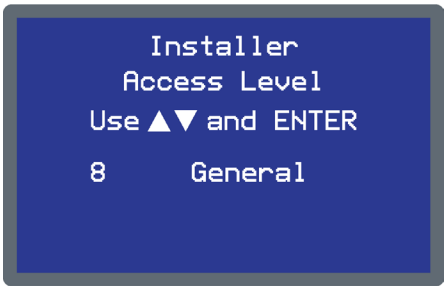


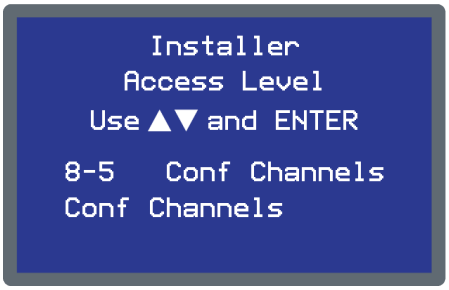

**NOTE:**

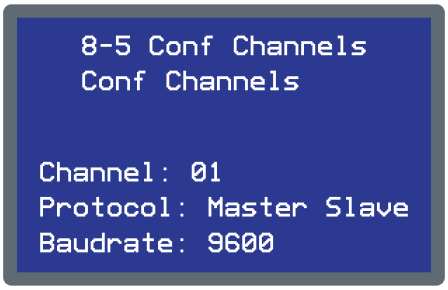
On 16-zone panels, the first expansion module is typically connected by default to CH3.

## Panel setup

Example with CH1 as the panel output, as defined in the previous image.




- Enter the Level 3 access code ▲▼▲▼▲ and select menu 8
- Select submenu 8-5
- Configure or verify that the channel assigned to the modules (1) is set to use the Master-Slave communication protocol, and that the baud rate is set to 9600

It is recommended that the batteries be installed at the end of the system commissioning process. Otherwise, it may be difficult to quickly disconnect power if a problem occurs.

The batteries are connected to the main board of the FALCON panel. This connection not only supplies power to the control panel in the event of a primary power failure, but also provides a charging output to keep the batteries fully charged. Before connecting the batteries, check the voltage across the battery connection terminals.

**WARNING:**

Risk of electric arc and fire. Never short-circuit the battery terminals. Always connect the blue wire between the batteries last.

# 18. Logging In and Accessing Functions

To access all panel functions, you must log in using one of the two available access levels.

- The panel must be powered on and fully initialised — it should not display the message ‘INITIALISING’.
- Press ENTER on the keypad.
- You will then be prompted to enter your Installer Access Code.
- There is no limit to the number of attempts, but if code entry is not started within 10 seconds, the panel will return to the default screen.

Programming functions are organised through a menu system.

Use the ▲ and ▼ keys to navigate through functions or submenus.

- Press ENTER to select a function.
- Press ESC to move up one menu level.

## Main Menus

1. Historical Log Review
2. Remote Input
3. Zones
4. Sounders
5. Relay Outputs
7. Monitor Counts and Zone Tests
8. General

Most functions operate consistently using the standard keys. The item being modified is typically highlighted by a blinking cursor.

# 19. Completion of Installation and Operation

## Powering Up the Panel

Ensure all connectors are firmly seated and all connections are tightened, with no loose wires.
If an expansion board has been added to the panel, verify that it is correctly installed, powered by the auxiliary supply, and that the flat Molex cable is connected to CH3.

Connect the power terminals. The LCD screen should display the software version and the message 'INITIALISING', followed by the date and time.

The SYSTEM ON LED on the front of the panel should be flashing green. This indicates that the system is in Installation Mode.
If the LED is solid green, the system is in Active Mode and must be switched to Installation Mode—refer to the programming section for instructions on how to do this.

If the SYSTEM ON LED is flashing and information is displayed on the LCD, the panel is operational.

## Check Panel Operation

Press and hold the LED TEST button on the panel.
All LEDs should illuminate, and the LCD backlight should turn on.

## Identifying Equipped Zones

1. Enter programming mode by entering the installer access code.
2. If site-specific data has not been pre-programmed, select Function 8-3-1: Clear Client Flash Memory.
3. Select Function 8-3-2: Clear Non-Volatile RAM and clear NVRAM.
4. The system will automatically identify the connected devices and report any faults.
5. Enter programming mode and navigate to Menu 7 – Zone Monitoring and Testing.
6. Select Function 7-1: Zone Status. Use ▲▼ to select the device and confirm that all zones are present with no fault reports. In case of a fault, check for short/open circuits or an undetected End-of-Line (EOL) device.
7. Select Function 7-2: Monitored Output Status. Use ▲▼ to select the device and confirm that all outputs are present with no fault reports. In case of a fault, check for short/open circuits or an undetected End-of-Line device.

8. Select Function 7-3: Relay Status. Use ▲▼ to select the device and confirm that all outputs are present. All energised relays will be indicated as “On”.
9. Select Function 7-6: Expansion Modules. Use ▲▼ to select the device and confirm that all expansion modules are present.
10. Once all faults have been cleared and the system has remained in Installation Mode for 90 seconds, it can be switched to Active Mode.

## Zone Monitoring Check

- Inspect each zone output for any signs of short or open circuit conditions.
- To conduct an open circuit test, disconnect either the + or – OUT terminal of Zones 1 to 8 or 16. A fault condition should be detected and displayed within a few seconds.
- Reconnect all wiring and press SYSTEM RESET to clear any fault indications.
- Ensure that a capacitive End-of-Line (EOL) device is properly installed on the last device in each zone to maintain correct supervision and circuit integrity.

## Zone Test

- Enter programming mode and select Function 7-5: Test Zones, which allows you to choose the zones to be included in the test.
- Select the zone to be placed in test mode.
- Choose the siren output mode and set the sound duration.
- Exit programming mode, but do not press SYSTEM RESET, as this will clear all test modes.
- In test mode, whenever a detector is activated, its LED will illuminate and the event will be reported on the control panel for 15 seconds. If enabled, the sirens will also sound for the preconfigured duration.
- Press the TEST button to activate test mode. The display will then show the zones currently in test mode.

## Conventional Sounders Check

- When the building is unoccupied, press and hold the ACTIVATE SOUNDERS / SILENCE ALARMS button for more than 3 seconds.
- All sirens will activate and continue to sound until the button is pressed again.
- If the building is occupied, it is strongly recommended to use the built-in siren test feature in programming mode:
  - Enter programming mode.
  - Navigate to Menu 7-4: Test Sounders.
- This function triggers all sounders to sound for 2 seconds, followed by a 9-second silence cycle.
- Ensure an End-of-Line (EOL) resistor is properly installed on the last device in each zone to maintain correct supervision and circuit integrity.

## NFC KEY - Optional NFC Key Function

The control panel supports the use of NFC Fire Key modules to unlock the system.
Up to 10 NFC keys can be stored, each configured with the same access level.

Configuration steps:

- Connect CN1 to the FALCON communication port. Do not power the panel at this stage, as this may cause damage.
- Check the communication channel settings via Menu 8-5: Channel Config to ensure it is set to the Master-Slave protocol.
- Access Menu 8-9-1: Access Config, select the tag number to configure, and assign the access level (User, Installer, or Master).
- Select Get Tag ID — LED 1 will turn green. The user then has 60 seconds to bring the NFC key tag close to the reader.
- Once the tag is detected, the screen will display “Tag Read” and the green LED will turn off. Select Save, then press Enter.
- Repeat these steps for up to 10 cards/tags.

**WARNING:**

If the same card/tag is programmed twice with different access levels, the highest level will be applied. For example, if both “User” and “Installer” levels are stored on the same tag, the panel will always use the higher level—in this case, “Installer”.

At this stage, the user can configure the more advanced features of the system. The basic minimum usually involves assigning text labels to the zones. Once this is completed, don’t forget to take the following steps:

- Connect the batteries to the panel as described in the relevant sections of this manual.
- Test the battery monitoring function by temporarily disconnecting the blue wire between the batteries. After a few seconds, a fault should be registered on the panel. Once the blue wire is reconnected, pressing SYSTEM RESET should clear the fault report.
- Test the primary power supply monitoring and ensure the battery system is functioning correctly. Disconnect the AC power supply to each power unit on the panel. After a few seconds, the panel should report a fault.
- Reconnect the AC power supplies and press SYSTEM RESET. Confirm that the system is in Active Mode — the SYSTEM ON LED should remain steadily lit.

## Programming Function via FALCON CONNECTOR Software (Optional)

To configure devices, zone text messages, and other advanced features, it is essential to use the FALCON CONNECTOR PC-based software.

The FALCON CONNECTOR software can be downloaded from the official GFE website. Once downloaded and installed on your computer, follow these steps:

- Connect the panel’s USB cable to the computer running FALCON CONNECTOR
- On the panel, select Menu 8-4-2, then press the right-hand key.
- On the keypad, download the panel firmware, then customise the configuration data as needed.
- Upload the updated content back to the panel.

# 20. Menu Panel Functions

## 1 REVIEW HISTORIC LOG

**Accessible to all levels**

All the functions associated with reviewing events and settings.

### 1-1 Display Historic Log

**Accessible to all levels**

The dashboard records all events in an internal event log, capable of storing up to 10,000 entries. When the log reaches full capacity, the newest entry is added, and the oldest entry is automatically deleted.

Help is displayed automatically upon entering the function, as it is not possible to view a log entry and help text simultaneously. To navigate through the log and select a specific entry, use the ▲ and ▼ keys.

### 1-3 Read/Clear Automatic Start-Up Count

**Accessible at levels 2 and 3**

The autostart counter can be read and reset via Remote Input 2.

## 2 CONFIG IO'S

**Accessible only at level 3**

Functions to configure inputs and outputs.

### 2-1 Zones

**Accessible only at level 3**

Allows defining the behavior of available zones. It can operate as Standard Fire (default), 2 Wire Common, and 2 Wire Dwelling.

| ZONES | BEHAVIOUR TYPE | EOL |
|---|---|---|
| 1-8 | STANDARD FIRE | CAPACITOR OR RESISTOR |
| | 2-WIRE COMMON | EOL 2-WIRE |
| | 2-WIRE DOUBLE KNOCK | EOL 2-WIRE |
| | NONE | CAPACITOR OR RESISTOR |

### STANDARD FIRE

This is the default configuration for a conventional zone.

### 2-WIRE COMMON

A zone configured as 2-Wire Common must operate with specific equipment. The system alternates the zone output voltage to differentiate whether it is in alarm or standby.

## 2-WIRE DOUBLE KNOCK

Similar to the previous case, the difference here is that the alarm is confirmed after one minute, which restarts the corresponding zone. If the alarm triggered by a detector remains active, the system-wide alarm is validated.

If, during this initial minute when the control panel is indicating that a detector has detected fire, another device also detects fire, the control panel receives a second confirmation and immediately enters fire mode.

If, after the reset, no detector detects fire, the zone remains signalled until either a new fire is detected or the system is manually reset.

## 2-2 Remote Inputs

**Accessible only at level 3**

Allows you to define the behaviour of the available remote inputs. These can be configured to operate as Reset, Evacuation, or pre-selected Deactivation functions.

| Remote Inputs | Available Option |
|---|---|
| 01 | NONE<br>RESTART<br>EVAC./SILENCE<br>SELECTED INPUT<br>SELECTED OUTPUT<br>SELECTED I/O<br>CLASS CHANGE |
| 02 | |

**NONE:** Remote input not active.
**RESTART:** If the contact is closed for 3 seconds, the control panel will restart.
**EVAC. / SILENCE:** When the contact is closed, the control panel activates the evacuation process.
**SELECTED INPUT:** When the contact is closed, the selected inputs configured to be disabled will be disabled.
**SELECTED OUTPUT:** When the contact is closed, the selected outputs configured to be disabled will be disabled.
**SELECTED I/O:** When the contact is closed, the selected inputs and outputs configured to be disabled will be disabled.
**CLASS CHANGE:** When the contact is closed, it toggles the control panel's status between silent mode and siren activation.

## 2-3 Monitored Outputs

**Accessible only at level 3**

Allows you to define the behaviour of the available monitored outputs, specifically the sounder outputs. These can be configured to operate as Zone Sirens or Fire Sirens.

| OUTPUTS | BEHAVIOUR MODE | VAD SYNCHRONISATION | |
|---|---|---|---|
| S1-S4 | ZONAL SOUNDER | Yes | No |
| | FIRE SOUNDER | Yes | No |
| | NONE | Yes | No |

**NONE:** Remote input not active.
**ZONAL SOUNDER:** Sounder output associated with a specific zone (to be configured in menu 4-3).
**FIRE SOUNDER:** Sounder output activated in response to a fire, regardless of the zone.

## 2-4 Non-Monitored Outputs

**Accessible only at level 3**

Allows you to define the behaviour of the available unmonitored outputs. These can be configured to operate as a general fire relay, general fault relay, or zone-specific relays. The fire relay and fault relay are fixed and cannot be reconfigured, always maintaining their default behaviour.

| OUTPUT | BEHAVIOUR MODE | SECURITY CONFIGURATION |
|---|---|---|
| **Fire Relay** | Fire Relay only | N/A |
| **Relay Aux 1** | None<br>Zonal Relay<br>Fire Relay<br>Fault Relay<br>Access Relay | Yes |
| **Relay Aux 2** | | |
| **Fault Relay** | Fault Relay only | N/A |

**NONE:** The relay is deactivated.
**ZONAL RELAY:** The relay can be associated with a specific zone for activation (configured in menu 5-3).
**FIRE RELAY:** The relay is activated in the event of a fire.
**FAULT RELAY:** The relay is activated when a fault is detected.
**ACCESS RELAY:** The relay is activated when the firefighter key is engaged on the panel.

# 3 ZONES

**Accessible at levels 2 and 3**

All functions are related to zone management.

## 3-1 Disable Zones

**Accessible at levels 2 and 3**

This function allows zones to be permanently or selectively disabled or enabled. The selected configuration only takes effect when the Zone Disable input button is pressed.

A zone can be set to one of the following states:
**UNAFFECTED** – These zones are not affected when the Zone Disable key is used.
**SELECTED DISABLED** – Zones configured in this mode will be disabled when the SELECTED ZONES key is active.
**DISABLED** – These zones are permanently disabled. All associated devices will cease to function.

To configure a specific zone:

- Use the ▲ and ▼ keys to select the desired zone.
- Press ENTER.
- Use the ▲ and ▼ keys again to choose between Unaffected, Selected Disabled, or Disabled (permanent disable).

## 3-2 Config 2-Wire Delay

**Accessible only at level 3**

Allows you to set a delay in the activation of sirens within a 2-wire zone. This function is only visible if a zone has previously been configured as 2-Wire in menu 2-1. It serves to delay only the activation of the zone (i.e. the change in power supply from 17V to 27V).

Delay Activation Modes:
**DETECTOR:** The delay is triggered only if the fire is detected by a detector.
**CALLPOINT:** The delay is triggered only if a callpoint is activated.
**ANY DEVICE:** The delay is triggered by any device.

After selecting the activation mode, you must define the delay time in minutes and seconds. This function is only active if the delay activation button is enabled, indicated by the corresponding LED.

## 3-3 Config 2-Wire Trigger

**Accessible at levels 2 and 3**

This configuration allows you to define the activation conditions for 2-wire zones. Zones can be activated by either alarms or faults.

**Alarm Activation**
Zones can be configured to be triggered by other zones. This requires selecting which zones will influence the activation of the zone being configured.

**Coincident Mode:** The configured zone will follow any alarm that occurs in the selected zones.
**Coincident + Manual Call Point:** Behaves as above, but also activates the configured zone if any manual call point is triggered in any zone of the control panel.

**Fault Activation Options**
**ANY:** Activated by any fault.
**SUPPLY:** Activated by power supply faults.
**ZONAL:** Activated by faults within a zone (e.g. short circuit or open circuit).
**ZONAL + SUPPLY:** Activated by either a power supply fault or a fault in the zone.
**NONE:** Fault activation is disabled.

This menu is only accessible if at least one zone has been configured as 2-Wire in menu 2-1.

## 3-4 Select Zones for Evac. Options

**Accessible at levels 2 and 3**

Allows the activation of the evacuation timer and the definition of its duration.

The evacuation timer operates in parallel with all other events. Once triggered, it begins counting down. At the end of the countdown, all sirens—including those that were previously silenced—are activated.

This setting is linked to menu 8-1-4, which allows configuration of the evacuation timer parameters.

### 3-6 Select Zones for Non-Latching

**Accessible at levels 2 and 3**

By setting zones as non-blockable, the system may retain the ability to recover from alarm conditions.

## 4 SOUNDERS

### 4-1 Disable Sounders

**Accessible at levels 2 and 3**

This function allows sounders to be permanently or selectively disabled or enabled. The selected configuration only takes effect when the Sounder Disable button is pressed.

A sounder can be set to one of the following states:
**UNAFFECTED** – Pressing the Sounder Disable key does not affect sounders configured in this mode.
**SELECTED DISABLED** – Sounders configured in this mode will be disabled when the SOUNDERS DISABLE key is active.
**DISABLED** – Sounders configured in this mode are permanently disabled. All associated devices will cease to operate.

To configure a specific sounder:
Use the ▲ and ▼ keys to select the desired sounder.
Press ENTER.
Use the ▲ and ▼ keys again to choose the desired option.

### 4-2 Sounder Delay Setup

**Accessible only at level 3**

Allows you to program a delay timer for siren activation, defined in minutes and seconds. If enabled, the delay is triggered based on one of the following conditions:

- Any Device
- Detector
- Call Point

### 4-3 Trigger Zonal Sounders

**Accessible at levels 2 and 3**

Siren activation conditions can be configured in three modes:

**ANY:** The siren output is activated by any alarm or fault condition.
**COINCIDENT:** The siren output is activated only when all alarm conditions coincide, or all fault conditions are present.
**COINCIDENT OR CALL POINT:** Same as the Coincident mode, but with the added condition that if any manual call point is activated in any zone, the siren output is immediately triggered.

Activation Type Selection
After choosing the activation mode, you can select the activation type—either Alarm or Fault.

Alarm Activation Options:
**NONE:** Disables alarm-based activation.
**ZONAL:** Enables activation through zones in alarm.

Fault Activation Options:
**ANY:** Activated by any fault in the panel.
**SUPPLY:** Activated by power supply faults.
**ZONAL:** Activated by faults in a zone (e.g. short circuit or open circuit).
**ZONAL + SUPPLY:** Activated by either power supply faults or faults in a zone.
**NONE:** Disables fault-based activation.

Whenever an alarm or fault trigger is selected that involves zones (e.g. ZONAL or ZONAL + SUPPLY), the relevant zones must be selected to enable proper validation.

### 4-4 New Alarm Silenced Sounders

**Accessible only at level 3**

This setting allows you to configure how the sounders behave after they have been silenced.

Two options are available:
**REMAIN SILENCED** – In the event of a new alarm after silencing, the sounders will remain silent.
**RESOUND ALL SOUNDERS** – In the event of a new alarm, all previously silenced sounders will be reactivated.

## 5 RELAYS

### 5-1 Disable Relays

**Accessible at levels 2 and 3**

This function allows relays to be permanently or selectively disabled or enabled. The selected configuration only takes effect when the Relay Disable button is pressed.

A relay can be set to one of the following states:
**UNAFFECTED –** Pressing the Relay Disable key does not affect relays configured in this mode.
**SELECTED DISABLED –** Relays configured in this mode will be disabled when the AUXILIARY RELAYS key is active.
**DISABLED –** Relays configured in this mode are permanently disabled.

To configure a specific relay:
Use the ▲ and ▼ keys to select the desired relay.
Press ENTER.
Use the ▲ and ▼ keys again to choose the desired option.

## 5-2 Relay Outputs Delay Setup

**Accessible only at level 3**

This function allows you to set a timer to delay the activation of a relay, defined in minutes and seconds. If enabled, the delay is triggered based on one of the following activation sources:

- Any Device
- Detector
- Call Point

## 5-3 Trigger Zonal Relays

**Accessible only at level 3**

This setting allows you to define the activation conditions for relays, which can be triggered by alarms or faults.

Alarm Activation
Relays can be configured to respond to alarms from specific zones. This requires selecting the zones that will influence the activation of the relay being configured.

**Coincident Mode:** The relay will activate whenever an alarm occurs in any of the selected zones.
**Coincident + Manual Call Point:** Functions as above, but also activates the relay if any manual call point is triggered in any zone of the control panel.

Fault Activation Options
**ANY:** Activated by any fault.
**SUPPLY:** Activated by power supply faults.
**ZONAL:** Activated by faults within a zone (e.g. short circuit or open circuit).
**ZONAL + SUPPLY:** Activated by either a power supply fault or a fault in the zone.
**NONE:** Fault activation is disabled.

# 7 MONITOR ZONES COUNTS AND TESTS

## 7-1 Zone Status

**Accessible at levels 2 and 3**

Use this function to verify that all zones are present.

In Installation Mode, all information is active — meaning the zone count and the status of each zone are automatically updated in real time.

To navigate to a specific zone, use the ▲ and ▼ keys.

## 7-2 Monitored Outputs Status

**Accessible at levels 2 and 3**

Use this function to verify that all monitored outputs are present.

In Installation Mode, all information is active — meaning the count and status of monitored outputs are automatically updated in real time.

To navigate to a specific output, use the ▲ and ▼ keys.

## 7-3 Relay Status

**Accessible at levels 2 and 3**

Use this function to verify that all unmonitored outputs are present.

Please note that in Installation Mode, all information is active — meaning the count and status of unmonitored outputs are updated automatically.

To navigate to a specific output, use the ▲ and ▼ keys.

## 7-4 Test Sounders

**Accessible at levels 2 and 3**

Use this function to test the audibility of the sirens in a more comfortable manner than by pressing AUDIBLE ALARMS.

The panel's standard sirens will sound for 1 second, followed by 9 seconds of silence.

## 7-5 Test Zones

**Accessible at levels 2 and 3**

Select the zones you wish to place in Test Mode. Exit Programming Mode, but DO NOT press SYSTEM RESET, as this will clear all test modes.

While in Test Mode:

- When a detector is activated, its LED will illuminate.
- The event will be displayed on the screen (and any repeaters) for 15 seconds.
- If enabled, the sirens will also sound for 1 second.

Pressing TEST QUEUE REVIEW will display the zones currently in Test Mode.

## 7-6 Expansion Modules

**Accessible at levels 2 and 3**

The FALCON Fire system supports up to two EXP CONV 4Z2S2R expansion modules and one GFE NFC-KEY module. To connect a module to the panel, you must configure the appropriate protocol and communication port via menu 8-5.

# 8 GENERAL

## 8-1 Time/Date & Timers

### 8-1-1 Set Date & Time

**Accessible only at level 3**

Allows you to set the system's date and time. The date and time are displayed on the control panel when there is no fault or fire condition.

It is important to set the correct date and time, as they are used in the event log.

There is only one clock in the system. If the date or time is changed on the panel or on a repeater, the change will apply to all panels and repeaters in the system.

### 8-1-2 Define Day & Night

**Accessible only at level 3**

Defines the sunrise and sunset times for the system.

### 8-1-3 Delay Off at Night

**Accessible only at level 3**

This function allows siren timers and I/O activations to be disabled during night-time operation.
Available Options:

UNAFFECTED: The system operates normally, regardless of whether it is day or night.
OFF: Timers and activations are disabled during the night. However, outputs are activated immediately if a fire is detected.

Sunrise and sunset times are configured using function 8-1-2.

### 8-1-4 Config Evacuate Timer

**Accessible only at level 3**

Allows you to configure the evacuation timer and define its duration when triggered.

The evacuation timer can be set to:
**DISABLED:** The timer is inactive.
**ZONAL MODE:** The timer starts when a predefined zone (configured in menu 3-4) detects a fire.
**GLOBAL MODE:** The timer starts when a fire is detected, regardless of the zone.

**NOTE:**
For ZONAL MODE to function, at least one zone must be configured to start the timer in menu 3-4.
Once started, the evacuation timer cannot be interrupted by pressing SILENCE ALARM, although this button will still silence the sirens after activation.

## 8-3 Memory - Beware Engineers Only

**Accessible only at level 3**

Programming functions related to the management of the control panel's memory.

### 8-3-1 Clear Customer Flash Memory

**Accessible only at level 3**

This function deletes all data related to panel settings and configurations.

DO NOT delete this data if you have been provided with pre-programmed installation data.

If the Customer Flash Memory is erased, you will lose information such as:

- Zone text will be deleted
- All zone settings will be deleted
- Company name will be deleted
- All timer settings will be deleted
- The language will reset to English
- All pre-selected I/O deactivations will be erased

**NOTE:**

The installer access code will not be deleted.

### 8-3-2 Clear Non-Volatile RAM

**Accessible only at level 3**

Clearing the NVRAM deletes all installation settings, and the system is automatically placed into Installation Mode.

On the panel, this will result in:

- All permanently disabled zones being reactivated
- All permanently disabled sirens being reactivated
- All permanently disabled relays being reactivated
- The event history being erased
- The automatic reset count being cleared
- All checksums being erased and recalculated

### 8-3-3 Calculate Customer Flash Checksum

**Accessible only at level 3**

Calculates and stores the checksum of all data in the customer's Flash memory. When settings are modified using the programming functions, the checksum is recalculated as required.

Customer data downloads also trigger an automatic checksum update. The stored checksum is regularly compared (approximately every 2 minutes) to detect any memory corruption.

### 8-3-4 Calculate Programme Flash Checksum

**Accessible only at level 3**

Unlikely to be required under normal circumstances, this function calculates and stores a checksum for the program Flash memory.

When software updates are downloaded, the panel detects the change and automatically calculates and stores a new checksum. The stored checksum is regularly compared (approximately every minute) with a newly calculated checksum to detect any memory corruption.

## 8-4 Other Features

### 8-4-1 Active/Installation Mode

**Accessible at levels 2 and 3**

An essential feature. The system should always be left in ACTIVE mode unless it is being installed or undergoing setup and testing.

When the system is set to Installation Mode, the green SYSTEM ON LED on the front panel of the Panel and Repeaters will flash. After the system has been in Installation Mode for 90 seconds, it can be placed into Active Mode.

Note: There is no definitive end to Installation Mode, as the system continuously scans and learns. However, if the system is switched to Active Mode before Installation Mode has had sufficient time to identify all system components, it will quickly report errors related to the presence of unexpected devices.

### 8-4-2 Upload/Download Link to PC

**Accessible only at level 3**

Use this function to download or upload the FALCON settings via USB, using the connector provided on the main board of the control panel. Please refer to the FALCON CONNECTOR software manual for further guidance.

### 8-4-3 Battery Status

**Accessible only at level 3**

This function allows you to check the battery status value.

### 8-4-4 Display Contrast Adjustment

**Accessible at levels 2 and 3**

Use the UP and DOWN arrow keys to adjust the contrast of the LCD display.

### 8-4-6 Select Language

**Accessible at levels 2 and 3**

This function allows you to set the system language. Please proceed carefully, as you will need to return to this function to change the language again if needed. All system text will be updated to reflect the selected language. The change will take effect once you press ENTER.

### 8-4-7 Set User Access Code

**Accessible only at level 3**

This function allows the installer to change the Customer Access Code. Use the ►, ▲ and ▼ keys to modify the code sequence.

### 8-4-8 Set Installer Access Code

**Accessible only at level 3**

This function allows you to change the Installer Code without needing to know the Factory Code. Use the ►, ▲ and ▼ keys to modify the code sequence.

The display will show:

- ENTER PRESENCE CODE and PRESS OK
- ENTER NEW CODE and PRESS OK

## 8-5 Channel Configuration

**Accessible at levels 2 and 3**

This function allows the assignment of available protocols to physical channels and the selection of higher transmission rates.

- **Master-Slave:** Protocol used for expansion modules. The baud rate must be specified.
- **Data Loop:** Protocol used for repeaters and BMS (Building Management System) applications.
- **ODYSSEY:** Protocol used for BMS applications.

## 8-6 Ethernet Interface Settings

**Future developments.**

### 8-6-1 Configure IP Address & Netmask

**Future developments.**

### 8-6-2 Configure Gateway & External Server

**Future developments.**

### 8-6-3 Configure DNS Address

**Future developments.**

### 8-6-4 Configure Interface Operation Mode

**Future developments.**

### 8-6-5 Configure Interface Dataloop Role

**Future developments.**

### 8-6-6 Configure Interface Access Ports

**Future developments.**

## 8-8 Ethernet Interface Options

### 8-8-1 Apply Changes to Ethernet Interface

**Future developments.**

## 8-9 Access Configuration

### 8-9-1 Apply Changes to Ethernet Interface

**Accessible only at level 3.**

This function allows you to configure NFC keys to unlock the control panel, provided an NFC Fire Keys module is connected. Within the configuration settings, you can select the type of access to assign to each key.

# 21. General Maintenance Procedures

Regular maintenance of the FALCON control panel is essential to ensure proper operation and safety of fire detection systems. The following procedures should be performed by qualified technicians in accordance with applicable local standards.

## Visual Inspection

- Check the panel and internal components for physical damage, corrosion, or foreign objects.
- Ensure all wiring is secure and properly connected.
- Check the Event Log (Access Level 2 menu) for intermittent faults.

## Power Supply Check

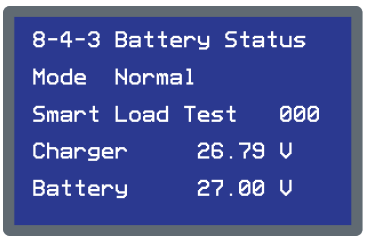
- Measure the main power voltage (AC): should be between 230V ±15V.
- Verify the internal power supply output: 28.5V DC ±0.3V.
- Confirm battery charger operation and terminal voltage (27V ±0.5V).
- Inspect the main fuse (4A, slow blow, 20mm HRC) and replace it if necessary.

## Battery Testing

- Measure battery voltage using a multimeter.
- Ensure voltage is within operating range (27V ±0.5V).
- Go to Menu 8-4-3: Battery Status and check the values of the Charger and the Battery.

Perform an automatic load test to check:

- Navigate to menu 8-4-3:




- Click on Start Load Test to begin the test.
- If all parameters are correct, the panel will operate without displaying any faults.
- However, if the battery test fails, the panel will display a General Fault, and the Fault LED will turn on.

## Zone and Input Verification

- Test Zones Z1, to Z8 for the main board and Z9 to Z16 if the expantions modules are installed and connected, by simulating alarm and fault conditions.
- Verify operation.
- Ensure End-of-Line (EOL) devices are properly installed.

## Output Testing

- Activate conventional sounders (S1 to S4) and verify operation.
- Check relays (FIRE, FAULT, AUX1, AUX2) and auxiliary outputs (AUX 24V and SW 24V).
- Ensure all outputs are free of short circuits and properly monitored.

## LED and Display Testing

- Press the LED Test button and verify full illumination.

## Communication Check

- Verify operation of communication channels (Master/Slave, Data Loop).
- Inspect communication cables and connectors.

## Cleaning and Preservation

- Clean the panel using a dry or slightly damp cloth (do not use abrasive products).
- Avoid dust accumulation on internal components.
- Ensure adequate ventilation in the installation area.

## Maintenance Logging

- Record all maintenance actions in the panel history.
- Use the Event Log function to confirm operations performed.
- Maintain physical or digital records as required by local standards.

## Recommended Maintenance Schedule

**Monthly**

- Sounder and zone tests
- Visual inspection

**Quarterly**

- Battery checks
- Communication checks

**Annually**

- Full system test
- Relay and I/O verification

# 22. Fault Diagnosis

There may be faults in the system that either the user or the installer should be able to diagnose.

## Main Power Supply Fuse Failure (AC Power Supply)

This fault may occur when AC power is absent. To resolve the issue, follow these steps:

1. **Check AC Power Supply**

Use a multimeter to verify the presence of a 230V AC power supply.

- The measurement between L (Live) and N (Neutral) should be 230V ±15V.

2. **Inspect the Fuse**

- Ensure the fuse is rated correctly at 4A.
- Check the fuse using a multimeter to confirm it is functioning.

3. **Verify Terminal Connections**

- Confirm that all terminals are making good contact and are securely connected.

4. **Measure PSU Output**

- Use a multimeter (DC voltage setting) to measure the output of the power supply.
- Connect the multimeter to the red and black power supply wires.
- The reading should be between 28.3V and 29V DC (target: 28.5V DC).

## Battery Charger Failure (Batteries)

1. **Power Down**

- Turn off the control panel and remove the batteries.

2. **Simulate Battery Load**

- Connect a 10 kΩ, ¼ watt resistor across the positive and negative battery wires.

3. **Power On & Measure Voltage**

- Power on the panel and measure the voltage at the battery charger circuit terminals on the motherboard.
- Expected range: 27.5 VDC to 28.5 VDC.

4. **Adjust PSU if Needed**

- If the voltage is below this range, adjust the potentiometer on the power supply unit (PSU) accordingly.

5. **Replace Motherboard if Voltage Is Too Low**

- If the voltage is below 21 VDC, replace the motherboard. After replacement, recheck the voltage.
- If the fault persists, this confirms a motherboard failure.

6. **Auxiliary Power Supply Failure**

- This fault may occur if the electronic fuse for the auxiliary power supply, located at the back of the motherboard, is blown.
- It can be identified using a digital multimeter when the 28.5 VDC voltage is not present.
- Potential causes include excessive current draw from third-party circuits or a short circuit at the auxiliary power supply terminals.

## General Fault

When a fault occurs in a zone, the fault LED on the siren circuit will illuminate amber. To troubleshoot the issue, follow these steps:

1. Check that the EOL capacitor (10 µF, 50 VDC) is present in the zone circuit.
2. Verify the presence of the EOL resistor (10 kΩ, ¼ watt) in the siren circuit.
3. Check whether the wiring is short-circuited, causing an imbalance in resistance.
4. Ensure that power is being supplied to both the zone and siren circuits.
5. Inspect the zone or siren wiring for short circuits or EOL components that may be shorted, possibly located inside the panel.
6. Check whether the Master/Slave modules are missing or faulty.

## Earth Fault

When an earth connection is mixed with the AC or DC power supply, a fault may occur. It is important to be patient, as this type of fault typically becomes apparent after 5 to 7 minutes. To diagnose the issue, follow these steps:

1. Disconnect all cables from the panel and power it using batteries only.
2. Wait approximately 5 minutes and observe whether the earth leakage fault persists.
3. If the fault remains, investigate whether the motherboard is short-circuited to earth.
4. Measure the voltage between the earth terminal block and the motherboard's earth terminal.
   - It should range between 6V and 8V DC.
   - If not, the motherboard should be inspected by GFE.
5. If the test in step 4 gives satisfactory results, reconnect the main power supply (230 VAC) and repeat the test from step 4.
   - If the voltage is outside the expected range, the issue lies with the main power supply.
6. Gradually reconnect the cable sets (zones, siren circuit, communications, etc.) to the panel one by one, repeating step 3 each time until the source of the fault is identified.
7. If the fault does not occur, check whether the TZ9 component is short-circuited using a multimeter.

## System Fault

A System Fault occurs when the panel detects a critical internal error. It is indicated by:

- Fixed System Fault LED
- Fixed General Fault LED
- Activation of the internal buzzer

These faults **do not clear automatically** and may include:

- Microprocessor watchdog failure
- Corrupted site or programme memory
- Faulty Main Control PCB (e.g. component burning)

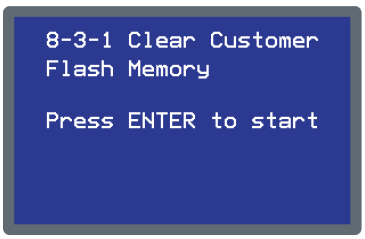
**Microprocessor Watchdog Failure**

- Restart the panel by performing a hard reset and observe its behaviour.
- Check the motherboard for any signs of burning or damage.
- If necessary, consider replacing the motherboard to confirm whether it is faulty or damaged.

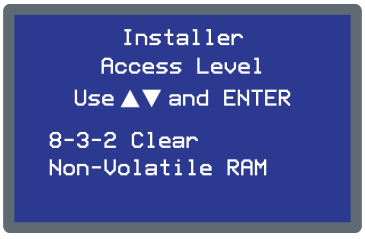
**Corrupted Site or Programme Memory**

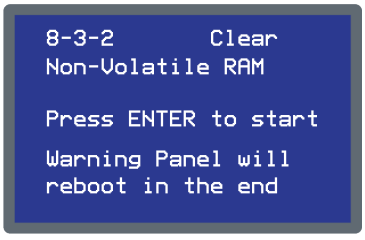
- Navigate to menu 8-3-1 and press enter to clear the Costumer Flash Memory





- Navigate to menu 8-3-2 and press enter to clear the Clear Non-Volatile RAM


- The panel will reboot.
- Check if the fault condition remains after the restart.

## Communication Failure

Communication failures may occur, particularly with expansion modules during system operation. In such cases, a communication fault will be displayed on the screen. To resolve the issue, follow these steps:

1. Ensure that all communication cables are properly connected.
2. Restart the panel and check whether the fault clears.

## Zone Fault

Zone faults may occur due to short circuits or open circuits within the zone. This happens when continuous zone monitoring fails to detect the EOL in the zone:

1. Ensure that the EOL is connected in the zone.
2. Check that there are no interruptions in the wiring.
3. Restart the panel and observe whether the fault clears.

# 23. Technical Specifications

Please note that these specifications apply to the FALCON, which is equipped with a 2.4 Amp power supply operating at a nominal 28.5V DC.

| FALCON | |
|---|---|
| MAINS SUPPLY VOLTAGE | 90~264 VAC 50/60 Hz – DC input operation possible by connecting AC/N(+), AC/L(-) |
| INTERNAL POWER SUPPLY | 28.5V DC @ 2.4A 65W |
| MAIN FUSE | 4A - Surge protected (slow blow) 20mm HRC |
| MAX OUTPUT CURRENT | 2.28A @ 230V AC |
| INTERNAL BATTERY CAPACITY - MAXIMUM | 2x 12V DC 12Ah - sealed lead acid batteries; Ri < 1ohm |
| MAINS SUPPLY/BATERY CHARGER FAILURE MONITORING | Yes |
| BATTERIES MONITORING | Yes |
| EARTH FAULT MONITORING | Yes |
| FIRE ZONE DETECTION | 8, 12 or 16 Fire Zones detection with programmable coincidence zone capability. |
| MAX COMBINE DETECTORS & CALL POINTS PER CIRCUIT | 32 devices |
| MAX CABLE LENGTH PER CIRCUIT | 500m |
| QUIESCENT CURRENT (WITHOUT DEVICES) | 40 mA |
| I MIN.; I MAX A; I MAX B | 50 mA; 1 A; 1400 mA |
| MAXIMUM CURRENT OUTPUT FROM BATTERY | 1400 mA |
| BATTERY CHARGING CURRENT | 500 mA |
| ZONE MONITORING TO OPEN, SHORT CIRCUITS, FAULTS | Yes, as per EN54-2 and EN54-4 |
| ZONE END OF LINE VALUE | Active EOL – 10μF/50 Bipolar Capacitor |
| NUMBER OF CONVENTIONAL SOUNDER CIRCUITS | 4x Monitored outputs – expandable to 8 with external module |
| | 1x Standard Fire and 3x Zonal Fire |
| LINE MONITORING TO OPEN, SHORTS CIRCUITS, FAULTS | Yes, as per EN54-2 and EN54-4 |
| SOUNDERS OUTPUT RATING | 21V DC to 30V DC 4 x 250mA per circuit;<br>Protected with 1.1 A Resettable fuse |
| SOUNDERS END OF LINE RESISTOR VALUE | 10 kΩ |
| REMOTE INPUTS | 2x Non monitored ports (Programmable inputs - Reset; Evac/Silence; Selected I/O |
| NUMBER OF AUXILIARY OUTPUTS | 1 x 24V DC + 1 x 24V DC SWITCHED, both divided by 900mA total available.<br>Protected with 1.1 A Resettable fuse |
| KEYSWITCH | Access level |
| FIRE RELAY AUXILIARY OUTPUT | 1x Nominal voltage @ 30V DC resistive load / 0.5 @ 120V AC resistive load/<br>0.25A @ 240V AC non-configurable resistive load |
| FAULT RELAY AUXILIARY OUTPUT | 1x Nominal voltage 2A @ 30V DC resistive load / 0.5 @ 120V AC resistive load /<br>0.25A @ 240V AC non-configurable resistive load |
| AUXILIARY OUTPUTS 1 and 2 | 2x Nominal voltage 2A @ 30V DC resistive load / 0.5 @ 120V AC resistive load /<br>0.25A @ 240V AC configurable resistive load |
| GRAPHICAL LCD | Yes |
| COMMUNICATION CHANNELS | 3 Configurable Channels |
| COMMUNICATION USB PORT | USB Type B |
| EVENT LOG | 10,000 events |
| OPERATING TEMPERATURE | -5°C to +40°C |
| HUMIDITY | Max. 95% RH |
| DIMENSIONS | Deep box: 273 (L) x 404 (H) x 142 (W) mm |
| WEIGHT | 2 kg without batteries |
| IP RATING | IP30 (Indoor use only) - Type A |
| COLOUR | White (RAL 9003); Red (RAL 3001); Anthracite (RAL 7016) |

# 24. EN54 Specifications

The FALCON fire detection control panel complies with the requirements of the standards. In addition to the requirements of the standard, the equipment conforms to the following optional functions:

| Options | EN54-2 Clauses |
|---|---|
| Outputs for fire alarm devices | 7.8 |
| Timer for the outputs | 7.11 |
| Total loss of electrical power | 8.4 |
| Test condition | 10 |

| Standard | Title |
|---|---|
| EN54-2:1997 + EN54-2:1997/A1:2006 + EN54-2:1997/AC:1999 | Fire Detection and Fire Alarm Systems – Part 2: Control and Indicating Equipment |
| EN54-4:1997 + EN 54-4:1997/AC:1999 + EN 54-4:1997/ A1:2002 + EN 54-4:1997/A2:2006 | Fire detection and fire alarm systems – Part 4: Power supply equipment |
| EN50130-4:1995 + EN 50130-4:1995/A1:1998 + EN 50130-4:1995/A2:2003 | Alarm systems – Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder, hold-up, CCTV, access control, and social alarm systems |

# 25. CE Marking Specifications

| CE 25 | CE 25 |
|---|---|
| **0370-CPR-7925** | **0370-CPR-7925** |
| GLOBAL FIRE EQUIPMENT S.A.<br>Sítio da Barracha Parque Industrial Municipal<br>Caixa Postal 610-A, 8150-017, São Brás de Alportel, Portugal | GLOBAL FIRE EQUIPMENT S.A.<br>Sítio da Barracha Parque Industrial Municipal<br>Caixa Postal 610-A, 8150-017, São Brás de Alportel, Portugal |
| DoP_xxxx_FALCON_251023 | |
| **FALCON**<br>Control and Indication Equipment for Fire Detection and Alarm Systems in Buildings<br>**EN54-2: 1997 + AC: 1999 + A1:2006** | **FALCON**<br>Power Supply Equipment for Fire Detection and Fire Alarm Systems in Buildings<br>**EN54-4: 1997 + AC: 1999 + A1: 2002 + A2: 2006** |
| **Options Available:**<br>7.8 - Outputs for Fire Alarm Devices<br>7.11 - Output Timing<br>8.4 - Total Loss of Electrical Power<br>10 - Test Conditions | |

# 26. Limitations

To ensure maximum protection, the **system must be regularly tested and inspected by personnel qualified in fire alarm system installation**. All inspection and testing should be carried out in accordance with the relevant local standards.

# Attachment A

## Input/Output Specification Table

| Type of Port | Electrical specification Minimum voltage / current | Electrical specification Maximum voltage / current | Input/ Output | Fuse | Recommended Cable Type | Number of Conductors | Shieled/ Unshielded Cable | Remarks |
|---|---|---|---|---|---|---|---|---|
| EPS-65-28.5OL Input | 90 VAC 50/60 Hz | 264 VAC 50/60 Hz | INPUT | 4A - Surge protected (slow blow) 20mm HRC | H05VV-F 3G1,5mm2 (L+N+PE) | 3 conductors of 1.5mm² | Unshielded | From power grid to PSU input terminal |
| Z1 to Z16 | 17V / one device current | 12V / 50mA | INPUT | N/A | ACF - 2G1,5mm2 | 2 conductors of 1.5mm² + shield | Shielded | From ZONE input terminal to ZONE DEVICE |
| Remote Input 1 and 2 | N/A | N/A | INPUT | N/A | ACF – 2G1,5mm2 | 2 conductors of 1.5mm² | Unshielded | NORMALY OPEN CONTACT |
| S1; S2; S3 & S4 | -10V / one device current | 27.5V / 250mA each circuit | OUTPUT | SMD 1.1 A Resettable fuse | ACF – 2G1,5mm2 | 2 conductors of 1.5mm² +shield | Shielded | From SOUNDERS OUTPUT terminal to SOUNDER DEVICE |
| Fire Relay | N/A | NO; C; NC Contacts Nominal voltage @ 30V DC resistive load / 0.5 @ 120V AC resistive load / 0.25A @ 240V AC non-configurable | OUTPUT | N/A | H05VV-F 3G1,5mm2 | 3 conductors of 1.5mm² | Unshielded | Relay related to the fire event. Non-configurable |
| Aux 1 Relay & Aux 2 Relay | N/A | NO; C; NC Contacts Nominal voltage @ 30V DC resistive load / 0.5 @ 120V AC resistive load / 0.25A @ 240V AC configurable by software | OUTPUT | N/A | H05VV-F 3G1,5mm2 | 3 conductors of 1.5mm² | Unshielded | Configurable Relays outputs |
| Fault Relay | N/A | C; NC Contacts Nominal voltage @ 30V DC resistive load / 0.5 @ 120V AC resistive load / 0.25A @ 240V AC non-configurable | OUTPUT | N/A | H05VV-F 2G1,5mm2 | 2 conductors of 1.5mm² | Unshielded | Relay related to the fault event. Non-configurable |
| Aux 24V | 27,5 V | 28,5/900mA | OUTPUT | SMD 1.1 A Resettable fuse | H05VV-F 2G1,5mm2 | 2 conductors of 1.5mm² | Unshielded | The maximum output current is shared by AUX 24 & SW24 Recommended 900mA maximum |
| SW 24V | 27,5 V | 28,5/900mA | OUTPUT | SMD 1.1 A Resettable fuse | H05VV-F 2G1,5mm2 | 2 conductors of 1.5mm² | Unshielded | |

# Attachment B

## Quick Installation Guide

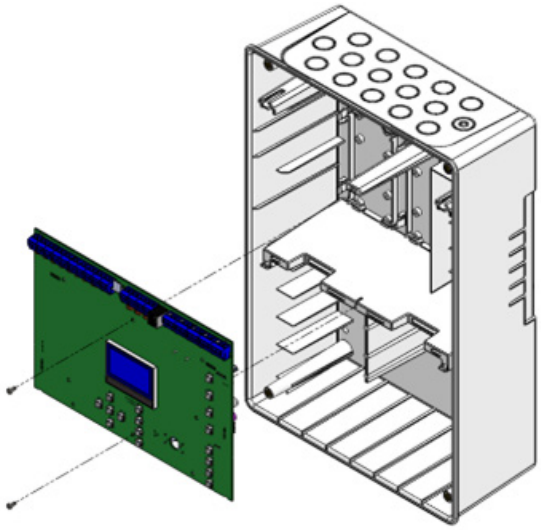
Wall Installation Guide – FALCON Control Panel

**1. Location Selection**

- Choose a dry, ventilated, and easily accessible indoor location.
- Avoid direct sunlight, excessive heat, vibration, or humidity.
- Recommended height: between 1.4 m and 1.6 m from the floor to the centre of the panel.

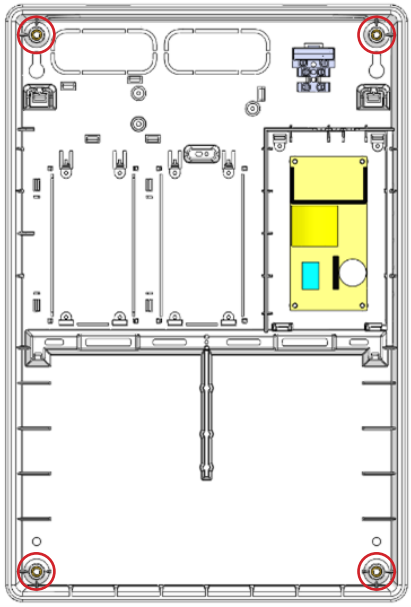
**2. Internal Preparation**

- Remove all PCBs before drilling or handling the enclosure to avoid damage from metal particles.
- Carefully disconnect the cable between the PCB and the power supply.
- Record or photograph the position of each PCB and wire before removal.



**3. Mounting the Enclosure**

- Use the deep box with dimensions: 273 mm (W) × 404 mm (H) × 142 mm (D).
- Mark the wall using the mounting holes of the enclosure.
- Drill and insert appropriate wall plugs.
- Secure the box with screws, ensuring it is level and firmly fixed.



**4. Earth Connection**

Connect the PE (Protective Earth) wire (green/yellow) to the designated earth terminal.

**5. Power Supply Connection**

Connect L (Live) and N (Neutral) wires to the EPS-65-28.5OL power supply.

Ensure the power supply is protected by a 4 A slow-blow fuse.

Reinstall the PCBs and ensure all connectors are properly seated.

**6. Battery Installation**

Install 2 × 12 V 12 Ah VRLA batteries in series (24 V total) only after commissioning.

Check voltage at terminals before connecting (should be 27 V ± 0.5 V).

Connect the blue wire last to avoid electrical arcing.

**7. Final Steps**

Reinstall the PCBs and ensure all connectors are properly seated.

Close the panel securely with screws.

Proceed with commissioning as per system design.