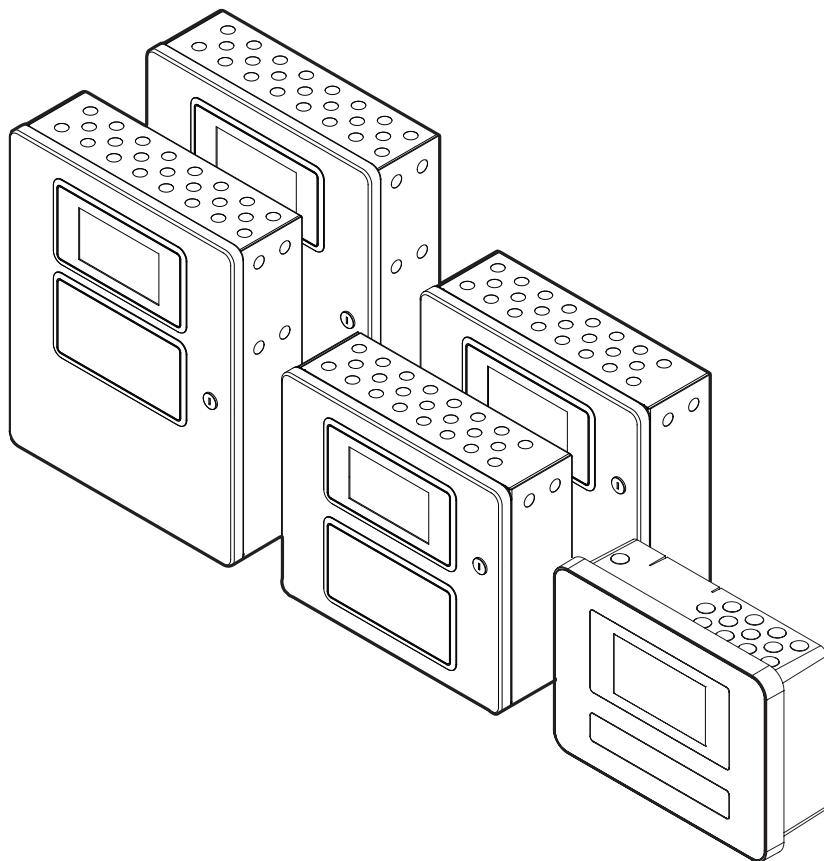


xDetect and xDetect Mini Fire Alarm Panels

Installation and operation manual



Powering Business Worldwide

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REVISION HISTORY

S.No.	Release / Change Notes	Date
G	Seventh Release	February 2022
H	Eighth Release	November 2024
I	Ninth Release	January 2026

IMPORTANT SAFETY INFORMATION

Personnel who install, maintain or repair this equipment must read the safety information below before starting work.

Definitions and symbols

 WARNING

Indicates a potentially hazardous situation, which, if not avoided, could result in serious injury or death.

 CAUTION

Indicates a potentially hazardous situation, which, if not avoided, could result in minor to moderate injury or serious damage to the product.

General product safety precautions

 NOTICE

The operating system of the control panel might be revised as a result of enhancements to the system software or hardware.

 CAUTION

RISK OF EXPLOSION IF THE BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

This product must only be disposed of in accordance with the WEEE directive.



PRODUCT CODES

Model	Brand	Description
EFXD01020	Eaton	xDetect 1-2 Loop Analogue Addressable Control and Indicating Equipment
CXD01020	Cooper	
JXD01020	JSB	
MXD01020	Menvier	
EFXD01022	Eaton	xDetect 1-2 Loop Addressable Control and Indicating Equipment
EFXD01040	Eaton	xDetect 1-4 Loop Analogue Addressable Control and Indicating Equipment
CXD01040	Cooper	
JXD01040	JSB	
MXD01040	Menvier	
EFXD01042	Eaton	xDetect 1-4 Loop Addressable Control and Indicating Equipment
EFXD02002	Eaton	xDetect 1-2 Loop Addressable Control and Indicating Equipment (Mini Enclosure)
CXD02002	Cooper	
JXD02002	JSB	
MXD02002	Menvier	

ABBREVIATIONS

Abbreviation	Definition	Description
BS	British Standard	
CAN	Controller Area Network	
CDR	Customer Data Record	Effective location of the config file on the panel
CPR	Construction Product Regulation	
EOL	End of Line	
EOLD	End of Line Device	
EOLM	End of Line Monitor	
EOLR	End of Line Resistor	
FRE	Fire Routing Equipment	
FPE	Fire Protection Equipment	
FWRE	Fault Warning Routing Equipment	
HMI	Human-Machine Interface	
MCP	Manual Call Point	

ABBREVIATIONS

PIN	Personal Identification Number	
PSE	Power Supply Equipment	Individual parts, such as the backplane and the 150W modules
PSU	Power Supply Unit	All equipment that compose the power supply
SD	Secure Digital	
SLA	Sealed Lead Acid	
SMC	Smoke Management Control	

ABOUT THE FIRE ALARM SYSTEM CONTROL PANEL

1. ABOUT THE FIRE ALARM SYSTEM CONTROL PANEL

The xDetect panel is a sophisticated fire alarm system control panel that has an all-metal (mild steel) body, touchscreen controls available in a 7-inch tablet-like HMI, and is available in two sizes; Large and Small.

	xDetect Large panel	xDetect Small panel
Loops	Up to 4	Up to 2
Module card slots*	12	7
Variants	• No zonal LED indicators • 128 zonal LED indicators • 256 zonal LED indicators	• No zonal LED indicators • 128 zonal LED indicators

*The panel is supplied with 1 Gateway card and 1 Loop card by default. You can order additional cards based on your requirements.

The xDetect Mini panel is more compact in size than the xDetect (Large or Small) panel. It has a polycarbonate (PC) body, a similar touchscreen HMI, and is available in two colours; White and Grey.

	xDetect Mini panel
Loops	Up to 2
Module card slots*	4
Variants**	• No zonal LED indicators • 32 zonal LED indicators

*The panel is supplied with 1 Gateway card and 1 Loop card by default. You can order additional cards based on your requirements.

**Unlike in the case of the xDetect large and small panels (for which you can order panel doors prefitted with your preferred zonal indicator configuration), for the xDetect Mini, you can separately order a 32 zonal indicator add-on, which you can manually fit onto the cover.)

A fire alarm system controlled by xDetect or xDetect Mini has the following key features:

- Higher system resilience and flexibility due to its modular cards
- A fault-tolerant ring network design with built-in isolators
- A maximum current of 600 mA in each loop
- A maximum of 200 addresses per standard device loop (limited by the total current drawn by the connected devices)
- Support for up to 1000 zones globally in a network of up to 250 panels
- A short circuit isolator board fitted for every 32 detectors and/or manual call points (unless each device has an integrated short circuit isolator)

xDetect and xDetect Mini are designed to work with the comprehensive range of addressable ancillary devices that use the LD800 protocol. This includes optical, photo-thermal, and heat sensors, base-mounted and standalone sounders (including

ABOUT THE FIRE ALARM SYSTEM CONTROL PANEL

IP67 versions), loop-powered beacons, and a wide range of interfaces.

The panel’s design facilitates neat installation; it can be surface or flush mounted and its box has ample rear and top cable entry openings and knockouts.

You can network up to 250 panels together to work as a single system that can potentially operate a maximum of 200,000* devices.

*(200 devices x 4 loop cards) x 250 networked panels = 200,000 devices

1.1 BS EN 54-compliant optional functions

The xDetect fire alarm panel has the following optional functions (with requirements) that comply with BS EN-54-2 and BS EN-54-4 standards:

BS EN 54-2 clause	Availability on the panel	Description
7.8 Output to fire alarm devices	Available on the Sounder card	The Sounder card has 2 circuits for conventional fire alarm devices. Each circuit has a maximum total alarm load (current) of 750mA. You can wire these circuits in a loop or radial configuration. For correct operation, you must fit radial circuits with the supplied end-of-line monitoring device (EOLM) (200Ω + diode). Note: Ensure the use of only polarised equipment; even the EOLM is polarity-specific. Also, ensure that all connections adhere to the polarity requirements.
7.9 Control of fire alarm routing equipment	Available on the IO card when programmed using xDetectWorks software	The IO card has an output channel for automatically transmitting fire signals to fire alarm routing equipment (FRE) such as the fire brigade, for example. This output is fused and monitored by the supplied end-of-line monitoring device (EOLM) (200Ω + diode). This output channel provides a 24V output to an auxiliary device, such as a relay. It is current-limited to 100mA through a resettable poly-switch, but load limited to 30mA. If a fire alarm event occurs, the touch-screen HMI indicates the fire condition until the alarm is reset. Note: Ensure that all connections adhere to the polarity requirements and that the EOLM is fitted.

ABOUT THE FIRE ALARM SYSTEM CONTROL PANEL

7.9.2 Alarm confirmation input from fire alarm routing equipment

Available on the **IO card** when programmed using xDetectWorks software

The IO card has an input channel for receiving confirmations from fire alarm routing equipment (FRE) such as the fire brigade, for example.

This input is monitored by the supplied end-of-line monitoring device (EOLM) (200Ω + diode).

You must connect the feedback (confirmation or output) received from the FRE (through an auxiliary device, such as a relay) via a 200Ω resistor in parallel to the EOLM.

Note: Ensure that all connections adhere to the polarity requirements and that the EOLM is fitted.

7.10 Outputs to fire protection equipment

Available on the **IO card** when programmed using xDetectWorks software

The IO card has an output channel for automatically transmitting fire signals to fire protection equipment (FPE) controls such as door release units, for example.

This output is fused and monitored by the supplied end-of-line monitoring device (EOLM) (200Ω + diode).

This output channel provides a 24V output to an auxiliary device, such as a relay. It is current-limited to 100mA through a resettable poly-switch, but load limited to 30mA.

If a fire alarm event occurs, the touch-screen HMI indicates the fire condition until the alarm is reset.

Note: Ensure that all connections adhere to the polarity requirements and that the EOLM is fitted.

7.10.3 Output type C

(Input for FPE confirmation)
Available on the **IO card** when programmed using xDetectWorks software

The IO card has an input channel for receiving confirmations from fire protection equipment (FPE) controls such as door release units, for example.

This input is monitored by the supplied end-of-line monitoring device (EOLM) (200Ω + diode).

The feedback (confirmation or output) received from the FPE (through an auxiliary device, such as a relay) must be connected via a 200Ω resistor in parallel to the EOLM.

Note: Ensure that all connections adhere to the polarity requirements and that the EOLM is fitted.

Alternatively, an MCIM (Micro Single Channel Input Unit) connected to a loop card can also receive the FPE confirmations.

ABOUT THE FIRE ALARM SYSTEM CONTROL PANEL

7.11 Delays to outputs	Programmable using xDetectWorks software	Using xDetectWorks, you can program a delay in panel output, fire routing equipment (FRE) output, and fire protection equipment (FPE) output operation. You can configure the delay in increments of 1 second up to a maximum of 10 minutes. When configuring the panel using the HMI as a user with access level 2 or 3, you can enable or disable the programmed timers. For more information about access levels, see “10.2 User Management - Definitions of Access levels” on page 109. Using xDetectWorks, you can also program a call point (via an input interface) to provide an evacuation signal that overrides this delay.
7.12 Dependencies on more than one alarm signal	Programmable using xDetectWorks software	Using xDetectWorks, you can inhibit sounder, fire routing equipment (FRE), and fire protection equipment (FPE) output activation until one or more confirmatory signals are received from different zones.
7.13 Alarm counter	Available on the HMI screen	The panel records the number of fire condition occurrences and displays the count on the HMI screen (in the top-right corner). The maximum count is 99,999. You can clear the alarm counter when configuring the panel with access level 4. At access level 4, navigate to Commissioning > Reset Alarm Counter to perform this action. Note: To log in with access level 4, first log in as an Engineer (level 3) user and then open the panel door. If you open the door without logging in as an Engineer, a Tamper Fault occurs. For more information about access levels, see “10.2 User Management - Definitions of Access levels” on page 109.
8.9 Output to fault warning routing equipment	Available on the Gateway card	The Gateway card has an output channel for transmitting fault signals to fault warning routing equipment (FWRE). This output is fused and monitored by an end-of-line resistor (EOLR) (6k$\pm$ 5%). In Standby (quiescent) mode, this output must only be loaded with the EOLR. In Fault mode, this output switches a load of 30mA and is current-limited to 100mA through a resettable poly-switch. If a fault occurs, this output is switched to 0V dc even if the panel is powered down. Note: Ensure that all connections adhere to the polarity requirements and that the EOLR is fitted.

1.2 Optional functions (with requirements) not approved to BS EN 54-2 and BS EN 54-4

Function	Description
Italian mode	Notes: • This feature is related to 12.2(a) and 12.2(b) of the (Italian) Ministerial Decree of 9 April 1994, which states that if a fire is detected by 2 or more detectors or a manual call point (MCP), there must be a 2-minute delay before output activation. Alternatively, if a fire is detected by a single detector, there must be a 5-minute delay before output activation provided that the fire event isn't acknowledged. The delays apply to siren activation and shutting down or activation of other external equipment. Furthermore, the delays must be adjustable (based on the activities carried out in the building). • This feature is not available in MR 1.1 and MR 1.2. You can program this mode in xDetectWorks. You can set the delay timers to any value in the following ranges: • T1: 1 to 10 minutes • T2: 0 to 10 minutes • T3: 0 to 10 minutes When configuring the panel using the HMI as a user with access level 2 or 3, you can enable or disable the programmed timers. For example, you can program the panel as follows: • If a single detector detects a fire, a 5-minute delay (T1) applied before the outputs are activated. • If a second detector or manual call point (MCP) also detects the fire, a 2-minute delay (T2 or T3) applies. Note: T3 is related only to the activation of MCPs. For example, if an MCP detects the first fire event, timer T3 starts. On the other hand, if a smoke detector detects the first fire event, timer T1 starts. Unless the project documentation has different specifications, you can program the following default values for the Italian mode: • T1: 5 minutes • T2: 2 minutes • T3: 2 minutes
Day/Night	In xDetectWorks, you can program multimodal devices such as opto/heat detectors to operate in a specific mode (i.e. heat or smoke mode) or day/night mode. In day/night mode, the devices operate as heat detectors during the "day" and as both heat and smoke detectors at "night". The mechanism for switching between "day" and "night", which would determine the mode in which all devices configured to work in day/night mode operate, could be any of the following: • A trigger device, such as a key switch • The scheduler

ABOUT THE FIRE ALARM SYSTEM CONTROL PANEL

Ability to commission loops	When commissioning the panel at access level 3 or 4, you can navigate to Commissioning > Auto-Learn and select any of the following options to learn the system's loops in different ways: • Full Auto-Learn • Maintenance Auto-Learn • Pre-Addressed Auto Learn For each option, you can select the loops (one or multiple) that you want to learn.
Alarm verification	In xDetectWorks, you can program a delay of up to 180 seconds before detector activation. In the event of a fire, the detector's LED lights up and the panel indicates a fire condition. However, the alarm does not immediately sound. Instead, the detector is monitored for the duration of the delay to verify whether the signals that activated it are persistent. The alarm is activated only if the detector still indicates a fire at the end of the delay period. Otherwise, the detector is reset.
Investigation timers	In xDetectWorks, you can set the investigation timers (T1 and T2) to any value between 1 and 600 seconds. Note: Refer to your local standards for the maximum delay you can program. For example, if you have set T1 to 300 seconds and T2 to 120 seconds, then if a fire is detected, the following happens: • For the first 5 minutes, the fire event is only indicated on the screen without any output activation. • If the alarm is acknowledged, the second delay of 2 minutes applies, during which the fire can be investigated, and the alarm can be reset if required. • If either delay times out first, the outputs are activated. When configuring the panel using the HMI as a user with access level 2 or 3, you can enable or disable the programmed timers.
Ability to override timers through manual call points	In xDetectWorks, you can set the investigation timers (T1 and T2) to any value between 1 and 600 seconds. Note: Refer to your local standards for the maximum delay you can program. You can also program the system to activate the outputs instantly if a manual call point is triggered, overriding the alarm. However, if either delay times out first, the outputs are activated. Furthermore, when configuring the panel using the HMI as a user with access level 2 or 3, you can enable or disable the programmed timers.

ABOUT THE FIRE ALARM SYSTEM CONTROL PANEL

1.3 Ancillary Functions

Function	Description
Relays/auto-dialers and auxiliary equipment	You can connect a wide variety of relays and other equipment to the fire alarm system with the following constraints: • The panel provides monitored and unmonitored outputs to drive fire and fault relays mounted in external equipment. These outputs are available in the IO card or using devices connected to the loops. • External relays must be suppressed. When using a non-suppressed relay, connect a diode to suppress any reverse EMF on the release of the relay (that might cause the panel to malfunction). • A 24V DC output is provided at the panel to easily connect ancillary equipment. Although the panel can supply a continuous quiescent load of up to 30 mA, BS 5839-1 precludes this practice, and any ancillary equipment you connect must only consume power in the alarm or fault mode to meet the requirement of BS 5839-1.
Connectivity card	You can exchange information between the panel and the EFGVS and xDetectWorks software packages using the Message Queuing Telemetry Transport (MQTT) protocol, which facilitates secure communication. The Connectivity card, which is a programmable module card that you can optionally fit onto the panel, enables this exchange through its RJ45 port.

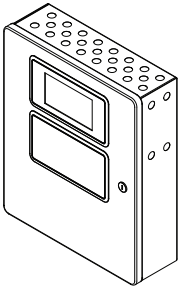
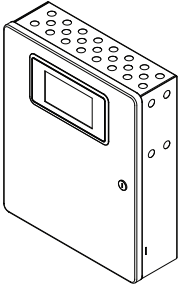
OVERVIEW

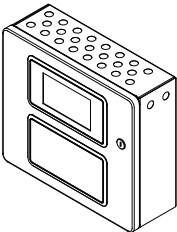
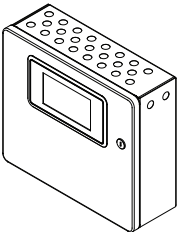
2. OVERVIEW

2.1 xDetect panels

2.1.1 Variants

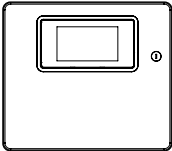
The xDetect panel is available in the following variants:

Variant	Brand	Model	Description	Details
Large	Eaton	EFXD01042	xDetect 1-4 Loop Addressable Control and Indicating Equipment	 xDetect panel (large enclosure with 128 zonal indicators)
	Eaton	EFXD01040	xDetect 1-4 Loop Analogue Addressable Control and Indicating Equipment	 xDetect panel (large enclosure)
	Cooper	CXD01040		
	JSB	JXD01040		
	Menvier	MXD01040		

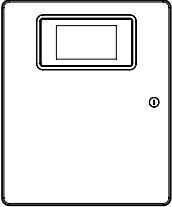
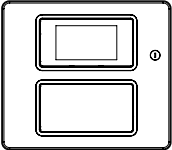
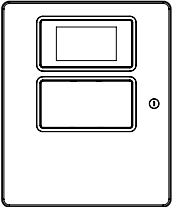
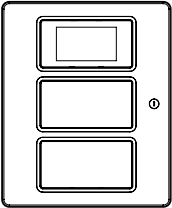
Small	Eaton	EFXD01022	xDetect 1-2 Loop Addressable Control and Indicating Equipment		xDetect panel (small enclosure with 128 zonal indicators)
	Eaton	EFXD01020	xDetect 1-2 Loop Analogue Addressable Control and Indicating Equipment		xDetect panel (small enclosure)
	Cooper	CXD01020			
	JSB	JXD01020			
Menvier	MXD01020				

2.1.2 Door options

You can additionally purchase a panel door fitted with your required configuration of zonal indicators:

Order code	Details	
EFXD05091	xDetect CIE door (Small) with HMI only	

OVERVIEW

EFXD05092	xDetect CIE door (Large) with HMI only	
EFXD05093	xDetect CIE door (Small) with 128 zonal indicators	
EFXD05094	xDetect CIE door (Large) with 128 zonal indicators	
EFXD05095	xDetect CIE door (Large) with 256 zonal indicators	

2.1.3 Module cards, backplanes, and spares (for all variants)

By default, your xDetect panel is supplied with only a Gateway card and Loop card. Based on your fire alarm system’s design and requirements and the card capacity of your panel, you can purchase and fit the following additional cards.

To install and operate more than 2 Loop cards in the (Large) panel, you must connect a second PSE, for which you require a dual-PSE backplane board. You can purchase this backplane and additional power supply unit.

You can also purchase spares of the following components.

Type	Order code	Details
Cards	EFXD05001	Loop card (1L protocol 800)
	EFXD05003	Connectivity card
	EFXD05020	Sounder circuit card (2 outputs)
	EFXD05030	Programmable I/O card
	EFXD05040	Network card
Power supply unit	EFXD05051	xDetect CIE Int. Power supply 150W
Backplane	EFXD05052	xDetect CIE int. dual PSE backplane
	EFXD05053	xDetect CIE int. single PSE backplane
	EFXD05081	xDetect CIE backplane (large enclosure)
	EFXD05082	xDetect CIE backplane (small enclosure)
Zonal indicator board	EFXD05060	xDetect zonal indicator board – 128 zonal indicators

2.1.4 Physical characteristics

The xDetect panel has the following physical characteristics:

Specification	xDetect Large panel variants	xDetect Small panel variants
Material	1.5mm Mild Steel	
Dimensions (L x W x D)	527mm x 433mm x 153.6mm	374.4mm x 426.4mm x 153mm
Weight (excluding batteries)	(xDetect Large) 10.9kg (xDetect Large with 128ZI) 11kg	(xDetect Small) 8.3kg (xDetect Small with 128ZI) 8.4kg
Cable entry knockouts	Top x 23 Each side x 4 Base x 2	Top x 23 Each side x 2 Base x 2
	Diameter of each knockout: 20mm	Diameter of each knockout: 20mm
Dimensions of rear rectangular knockout (L x W)	35mm x 284mm	
Power supply	230Vac +10%, -15% 50/60Hz	
Security	Lockable and tamper-protected door	
Memory	Micro SD card	

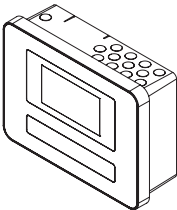
OVERVIEW

Batteries	FIT ONLY APPROVED BATTERIES	
	2 x 12V, 12Ah SLA battery (YUCEL batteries Y12-12 / YUASA NP12-12) OR 4 x 12V, 12Ah SLA battery (YUCEL batteries Y12-12 / YUASA NP12-12) if 2 PSE modules are fitted in the xDetect Large panel	2 x 12V, 12Ah SLA battery. (YUCEL batteries Y12-12 / YUASA NP12-12)

2.2 xDetect Mini panel

2.2.1 Variants

The xDetect Mini panel is available in the following variants:

Brand	Model	Description	Details
Eaton	EFXD02002	xDetect 1-2 Loop Addressable Control and Indicating Equipment (Mini Enclosure)	
Cooper	CXD02002		
JSB	JXD020002		
Menvier	MXD02002		

xDetect Mini panel

Currently, each variant is available in grey and white colour.

2.2.2 Module cards, backplanes, and spares

By default, your xDetect Mini panel is supplied with only a Gateway card and Loop card. Based on your fire alarm system's design and requirements, you can additionally purchase and fit up to two of the following cards.

You can also order spares of the following components.

Type	Order code	Details
Cards	EFXD05001	Loop card (1L protocol 800)
	EFXD05003	Connectivity card
	EFXD05030	Programmable I/O card
	EFXD05040	Network card
Power supply unit	EFXD02053	xDetect Mini PSU (LRS-75-24)
Backplane	EFXD02052	xDetect Mini backplane

Zonal indicator board	EFXD02051	32 Zonal LED indicators add-on
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2.2.3 Physical characteristics

The xDetect Mini panel has the following physical characteristics:

Specification	Values
Material	Polycarbonate
Dimensions (H x W x D)	271mm x 361mm x 117mm
Weight	2.6kg
Cable entry knockouts	Top x 13 Diameter of each knockout 20mm
Dimensions of rear rectangular cable entry knockout (H x W)	25mm x 138mm
Power Supply	230Vac +10%, -15% 47-63Hz
Security	Tamper-protected door, ability to fix the cover onto the box using screws
Memory	Micro SD Card
Batteries	FIT ONLY APPROVED BATTERIES 2 x 12V 9Ah SLA batteries (YUASA Y9-12 YUVOLT) OR 2x 12V 7Ah SLA batteries (YUASA Y7-12 YUVOLT) (optional, only for 1-loop systems)

TECHNICAL SPECIFICATIONS

3. TECHNICAL SPECIFICATIONS

3.1 xDetect panels

The xDetect panels have the following technical specifications:

Power Supply	xDetect Large panel		xDetect Small panel
Mains voltage (nominal)	230Vac +10%, -15% 50/60Hz		230 Vac +10%, -15% 50/60Hz
Mains current (maximum) (@195V)	2A		2A
Internal input fuses	2.5A		2.5A
I max a	0.64A (VB1)	0.42A (VB2)	0.5A (VB1)
I max b	3.92A (VB1)	1.76A (VB2)	3.03A (VB1)
I min	0.41A (VB1)	0.25A (VB2)	0.4A (VB1)

Batteries/Charger

Number of batteries	2 (connected in series) for each SPSM power supply, maximum of 4 altogether
Approved manufacturer	YUCEL Y12-12, YUASA NP12-12 (FIT ONLY APPROVED BATTERIES)
Capacity	12Ah
R int max	0.6Ω
Battery fuse	7A SLO - BLO
Charge current	1.3A (+/-0.1A)
Maximum current drawn with mains disconnected	6A
Final voltage	21V

Environmental

Temperature	-5°C to +40°C
Humidity (non-condensing)	20 to 95%
Altitude	<2000m
IP	30
Storage temperature	-10°C to +50°C
Environment class (EN 12101-10)	Class 1

PSE backplane	xDetect Large (Dual)	xDetect Small (Single)
Mains voltage nominal	230Vac +10%, -15% 50/60Hz	230 Vac +10%, -15% 50/60Hz
Mains current maximum (@195 V)	4A	2A
Output (VB1)		
Voltage	20.4-28.1V	20.4-28.1V
Current (maximum)	6A	6A

Output (VB2)

Voltage	20.4-28.1V	N/A
Current (maximum)	6A	N/A
Recommended cable	FP200≤2.5mm ² csa (1.5mm ² csa recommended)	

Transmission path ratings

Conductor resistance (maximum) (@20°C)	7.4Ω/km
Core - core capacitance (maximum)	98nF/km

Loop card

Number of inputs/outputs	1
Input/output type	Loop output
Output voltage	27.24 - 28.34V
Input current (maximum)	N/A
Output current (maximum)	0.6A
Output current (limited)	1.1A
Cable length (maximum)	2km

Sounder card

Number of inputs/outputs	2	
Input/output type	Spur output	Loop output
Output voltage	27.24 - 28.34V	27.24 - 28.34V
Input current (maximum)	N/A	N/A
Output current (maximum)	0.75A per output	0.75A per output
Output current limit per trip	3A	
Cable length (maximum)	0.5km	Loop 2km

Gateway card

Number of inputs/outputs	4				
Input/output type	Fault output		5V Ext. Battery Input	Ethernet Port	Printer Port
	General Fault output	FWRE Output			
Output voltage	N/A	20.4 - 28V	Not used	Not Used	Not Used
Input voltage	30V	N/A	Not used	Not Used	Not Used
Input current (maximum)	0.03A	N/A	Not used	Not Used	Not Used
Output current (maximum)	N/A	0.03A	Not used	Not Used	Not Used
Fuse (resettable PTC)	0.1A	0.1A	Not used	Not Used	Not Used
Cable length (maximum)	2km	2km	Not used	Not Used	Not Used

TECHNICAL SPECIFICATIONS

IO card

Number of Inputs/outputs	5			
	4 x Programmable IO			
Input/output type	Voltage Monitored Output	Voltage Free Output	Input	Aux Output
Input voltage	N/A	30V	30V	Not used
Output voltage	20.4 - 28V	N/A	N/A	Not used
Input current (maximum)	N/A	2A	0.06A	Not used
Output current (maximum)	0.055A	N/A	N/A	Not used
Fuse (resettable PTC)	0.1A	2.5A	0.1A	Not used
Cable length (maximum)	2km	2km	2km	Not used

Network card

Number of Inputs/outputs	3		
Input/output type	RS485 (A, B connections)		Aux Output
Input voltage	0 - 3.3V		Not used
Output voltage	0 - 3.3V		Not used
Input current (maximum)	0.028A		Not used
Output current (maximum)	0.028A		Not used
Fuse (resettable PTC)	N/A		Not used
Cable length (maximum)	2km		Not used

Connectivity card

Data speed (maximum)	1000 Mbps
Voltage levels	±2.5V (over twisted pairs)
Recommended cable type	CAT6e

Zones / Addresses / Fire alarm devices

Addressable points per loop circuit (maximum)	200
Load per loop (maximum)	0.6A (inputs & outputs)
Addressable points per panel (maximum)	400 (2 loop panel) 800 (4 loop panel)
	1000
Zones per global network (maximum)	Note: If a network has only a single panel, up to 1000 zones can be created for that panel. If the network has multiple panels, up to 1000 zones can be created altogether.

Fire alarm devices (maximum)	Current-dependent based on loop calculator in xDetectWorks
Conventional fire alarm devices per Sounder card output	Current-dependent based on loop calculator in xDetectWorks
Fire alarm devices per panel (maximum)	Current-dependent based on loop calculator in xDetectWorks Note: Up to 100 fire alarm devices can be connected per loop

3.2 xDetect Mini panel

The xDetect Mini panel has the following technical specifications:

Power Supply **Mean Well LRS-75-24**

Mains voltage (nominal)	230Vac +10%, -15% 47-63Hz
Mains current (maximum) (@195V)	850mA/230Vac
Output power	75W
Output voltage	28.5V
I max a	0.448A
I max b	1.618A
I min	0.13A
Residual ripple	350mVpp

Batteries/Charger

Number of Batteries	2 (connected in series)
	YUASA, YUVOLT Y9-12
	OR
Manufacturer	YUASA, YUVOLT Y7-12 (optional, only for 1-loop system)
	(FIT ONLY APPROVED BATTERIES)
Capacity	9Ah or 7Ah (optional, only for 1-loop system)
Rint max	0.7Ω
Battery Fuse	7A SLO - BLO
Charge Current	0.7A (+/- 0.1A)
Maximum current drawn with mains disconnected	1.9A
Final Voltage	21V

Environmental

Temperature	-5°C to +50°C
Humidity (non-condensing)	20 to 95%

TECHNICAL SPECIFICATIONS

Altitude	<2000m
IP	30
Storage temperature	-10°C to +50°C
Environment class (EN 12101-10)	Class 1

Transmission path ratings

Recommended cable	FP200≤2.5mm ² csa (1.5mm ² csa recommended)
Conductor resistance (maximum) (@20°C)	7.4Ω/km
Core - core capacitance (maximum)	98nF/km

Loop card

Number of inputs/outputs	1
Input/output type	Loop output
Output voltage	27.24 - 28.34V
Input current (maximum)	N/A
Output current (maximum)	0.6A
Output current (limited)	1.1A
Cable length (maximum)	2km

Gateway card

Number of inputs/outputs	4				
Input/output type	Fault output		5V Ext. Battery Input	Ethernet Port	Printer Port
	General Fault output	FWRE Output			
Output voltage	N/A	20.4 - 28V	Not used	Not used	Not used
Input voltage	30V	N/A	Not used	Not used	Not used
Input current (maximum)	0.03A	N/A	Not used	Not used	Not used
Output current (maximum)	N/A	0.03A	Not used	Not used	Not used
Fuse (resettable PTC)	0.1A	0.1A	Not used	Not used	Not used
Cable length (maximum)	2km	2km	Not used	Not used	Not used

Network card

Number of Inputs/outputs	3
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Connectivity card

Data speed (maximum)	1000 Mbps
Voltage levels	±2.5V (over twisted pairs)
Recommended cable type	CAT6e

TECHNICAL SPECIFICATIONS

Input/output type	RS485 (A, B connections)	Aux Output
Input voltage	0 - 3.3V	Not used
Output voltage	0 - 3.3V	Not used
Input current (maximum)	0.028A	Not used
Output current (maximum)	0.028A	Not used
Fuse (resettable PTC)	N/A	Not used
Cable length (maximum)	2km	Not used

IO card

Number of Inputs/outputs	5			
	4 x Programmable IO			
Input/output type	Voltage Monitored Output	Voltage Free Output	Input	Aux Output
Input voltage	N/A	30V	30V	Not used
Output voltage	20.4 - 28V	N/A	N/A	Not used
Input current (maximum)	N/A	2A	0.06A	Not used
Output current (maximum)	0.055A	N/A	N/A	Not used
Fuse (resettable PTC)	0.1A	2.5A	0.1A	Not used
Cable length (maximum)	2km	2km	2km	Not used

SMC card*

Number of inputs/outputs	1
Input/output type	Loop output
Output voltage	27.24 - 28.34V
Input current (maximum)	N/A
Output current (maximum)	0.6A
Output current (limited)	1.1A
Cable length (maximum)	2km

*Using the SMC card is optional

Backplane board

Number of Inputs/outputs	3				
	Programmable IO				
Input/output type	Voltage Monitored Output	Voltage Free Output	Input	Programmable Input	Aux Output
Input voltage	N/A	30V	N/A	30V	N/A
Output voltage	20.4 - 28V	N/A	20.4 - 28.2V	N/A	20.4 - 28.2V
Input current (maximum)	N/A	2A	N/A	0.0023A	N/A
Output current (maximum)	0.03A	N/A	0.1A	N/A	0.1A

TECHNICAL SPECIFICATIONS

Fuse (resettable PTC)	0.1A	2.5A	0.1A	N/A	0.1A
Cable length (maximum)	2km	2km	2km	2km	2km

Zones / Addresses / Fire alarm devices

Addressable points per loop circuit (maximum)	200
Load per loop (maximum)	0.6A (inputs & outputs)
Addressable points per panel (maximum)	400 (2 loop panel)
	1000
Zones per global network (maximum)	Note: If a network has only a single panel, up to 1000 zones can be created for that panel. If the network has multiple panels, up to 1000 zones can be created altogether.
Fire alarm devices (maximum)	100 per loop

4. COMPATIBLE EQUIPMENT

For a complete list of compatible equipment, see the [xDetect - Peripheral compatibility guide](#).

INSTALLATION

5. INSTALLATION

5.1 Suitable installation environments

- Install the panel in a clean, dry, and reasonably well-ventilated place, and not in direct sunlight.
- Avoid temperatures in excess of 40°C and below -5°C. If in doubt, consult Eaton.
- Install the panel away from any potential hazard, at a position where it can be readily accessed by authorised staff and the fire services. Ideally, you can install it on the perimeter of a building near a permanent entrance.
- Mount the panel to the wall using the dimensions provided in the following sections.
- Do not drill through the panel into the wall as dust will contaminate the panel's circuitry.

5.2 Installation instructions

- Never carry out insulation tests on cables connected to electronic equipment.
- **DO NOT OVERTIGHTEN TERMINAL CONNECTOR SCREWS (Max. 4.5 lb-inch).**
- Always use the correct type of cables, which are specifically designed for fire detection and alarm circuit operation.
- Always adhere to the voltage drop limitation when sizing cables.
- Always observe polarity throughout. Permanently identify any non-colour-coded conductors.
- Maintain screen continuity throughout the entire loop circuit, including at each junction point and at each device. Each device has terminals to facilitate this.
- Earth the screen at the connection point provided at the panel and not at any other point. Connect both the loop start and loop end to the appropriate earthing points. Do not connect the screen to the earthed body of any metal devices, enclosures, cable containment, or building earth. Do not consider the screen or drain wire of the loop cables as safety earth, and therefore, do not connect them to terminals marked with the earth symbol, except at the panel. Also, do not insulate them with green and yellow sleeving
- The panel uses intelligent soft addressing technology to simplify installation and commissioning processes. After the fire alarm system is installed and the panel's auto-learn function is initiated, the panel automatically scans the detection loops and allocates each device with an address number that corresponds with its position on the loop. This avoids the traditional need for manually addressing the system's devices, which is time consuming and has the potential for error.
- It is critical to keep accurate details of the exact wiring route to determine which address has been allocated to each device

- Read all the installation instructions before commencing the installation. This panel must be installed by a suitably qualified or trained person. The installation must comply with IET wiring regulations (BS 7671) and BS 5839-1.
- **The electronic components within the fire panel are Static Sensitive. Do not touch the electronics directly.**

5.3 Mounting

1. Take the unit out of the packing material.
2. Validate the contents of the box against the checklist provided in the Quick Start Guide.
3. Remove wire entry point knockouts as required.
Note: The panel contains knockouts at its top, base, rear, and sides for wire entry. Double tag knockouts are available to facilitate easy removal.

Location on the panel	Variant	Number and dimensions
Top	xDetect Large panel (all variants)	23 x 20mm (diameter)
	xDetect Small panel (all variants)	
	xDetect Mini panel	13 x 20mm (diameter)
Side	xDetect Large panel (all variants)	8 x 20mm (diameter) (4 per side)
	xDetect Small panel (all variants)	4 x 20mm (diameter) (2 per side)
Rear	xDetect Large panel (all variants)	284mm (W) x 35mm (H)
	xDetect Small panel (all variants)	
	xDetect Mini panel	138mm (W) x 25mm (H)
Base	xDetect Large panel (all variants)	2 x 20mm (diameter)
	xDetect Small panel (all variants)	

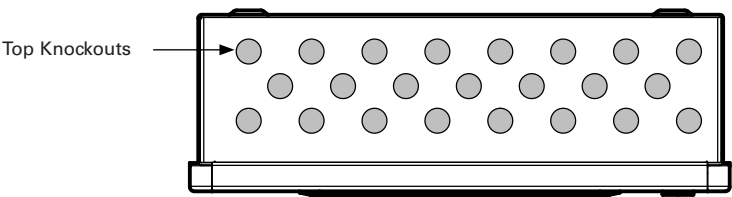


Figure 1. Example: Knockouts available at the top of an xDetect Large panel

Notes:

- Do not remove more knockouts than required.
- Use appropriate cable glands.

INSTALLATION

4. Use all the mounting points available to mount the panel securely. You can use 4 x M4 screws for wall mounting.
Note: The panel has features to support wall mounting. The “keyhole” design enables quick and simple mounting.
5. Wire the unit. For details refer to “Wiring configurations” on page 41.

5.3.1 Wall mounting

WARNING

When wall mounting the panel, follow the mounting instructions that correspond to the specific wall types listed below

When mounting the xDetect panel to a wall, ensure that you consider the weight of the panel and its batteries.

To mount the panel securely, ensure that all mounting points are used.

5.3.1.1 Mounting panels on plasterboard walls

Use appropriate fixings to ensure that the panel is fixed securely.

For plasterboard walls, using an 18mm GRIPIT plasterboard fixing (or similar plasterboard fixing) is recommended.

5.3.1.2 Mounting panels on masonry walls

Use appropriate fixings to ensure that the panel is fixed securely.

For masonry walls, using a DWT1400250 DeWalt Tapper-Pro Hex concrete screw (or similar concrete screw) is recommended.

5.3.2 xDetect Large panel variants

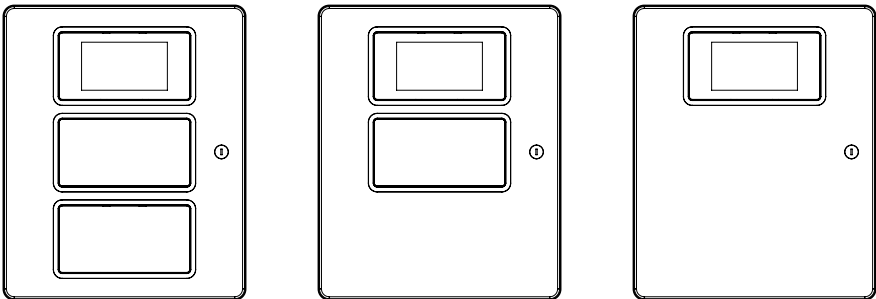
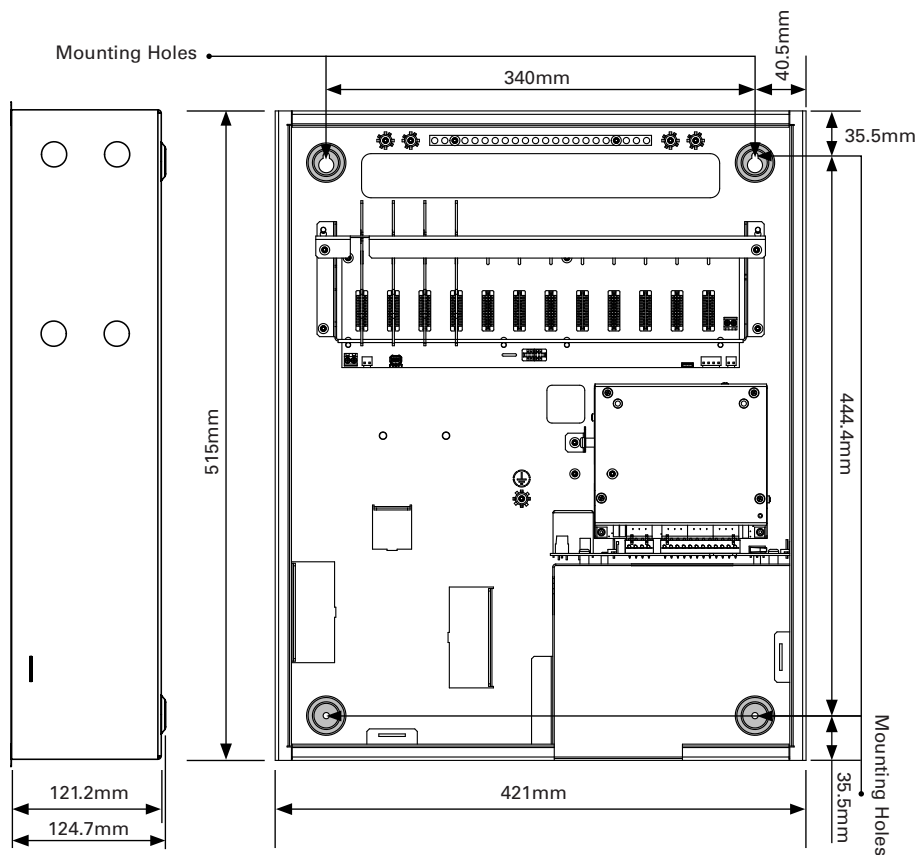


Figure 2. (Left to right) xDetect Large panel with 256 Zonal indicators, xDetect Large panel with 128 Zonal Indicators, xDetect Large panel



WARNING

Isolate power during installation.

Figure 3. Front view of the xDetect Large Panel's enclosure with the door detached

INSTALLATION

5.3.3 xDetect Small panel variants

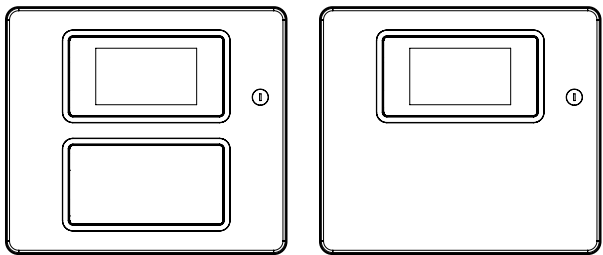
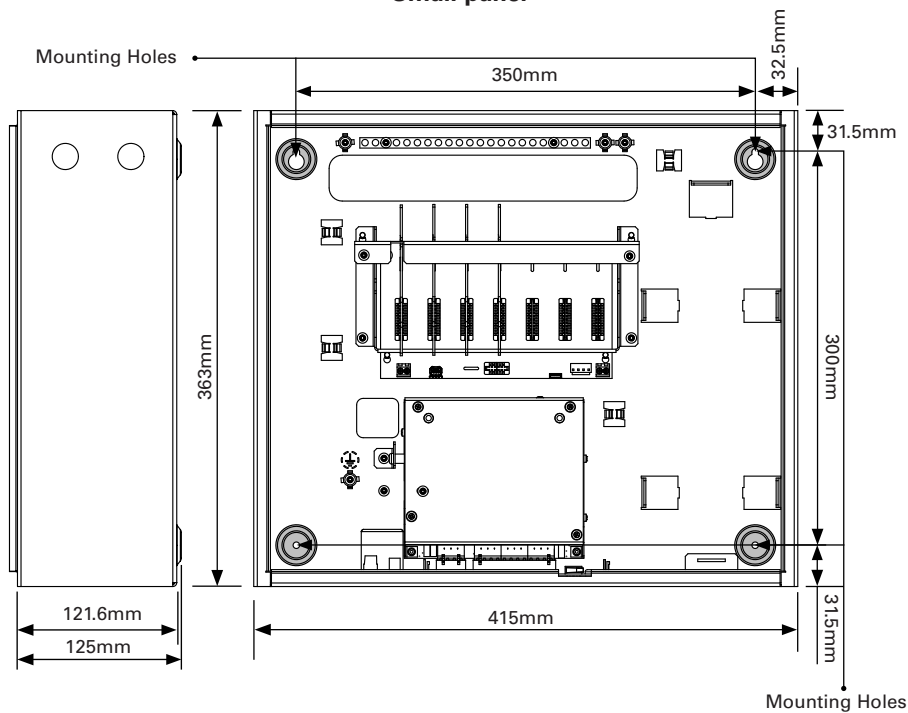


Figure 4. (Left to right) xDetect Small panel with 128 Zonal Indicators, xDetect Small panel



WARNING

Isolate power during installation.

Figure 5. Front view of the xDetect Small Panel's enclosure with the door detached

5.3.4 xDetect panel door dimensions

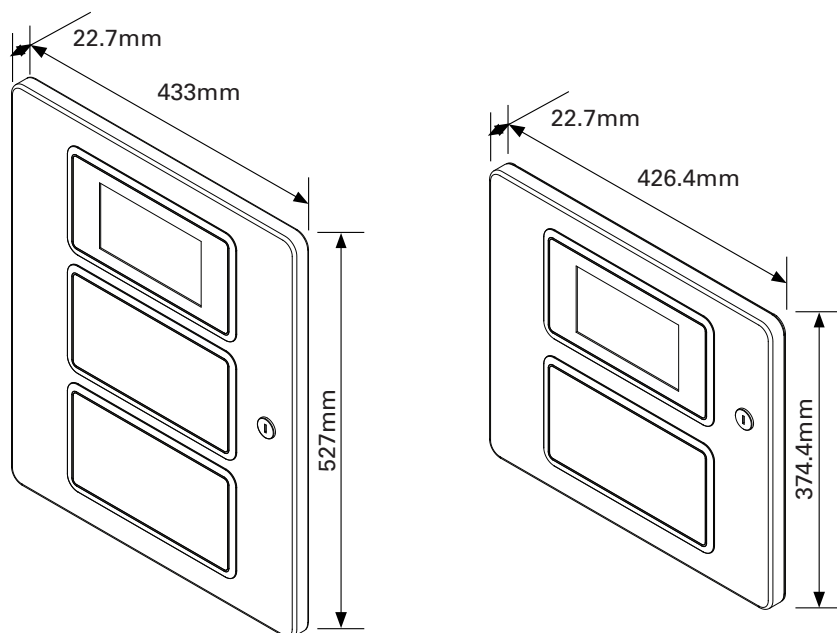
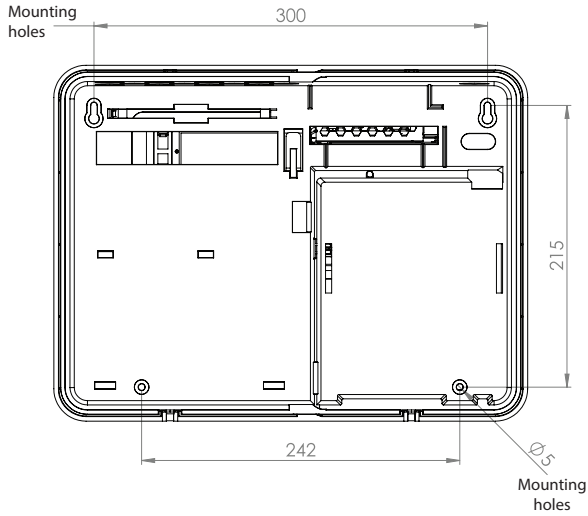


Figure 6. (Left to right) xDetect Large panel door dimensions, xDetect Small panel door dimensions

INSTALLATION

5.3.5 xDetect Mini panels



WARNING

Isolate power during installation.

Figure 7. Front view of the xDetect Mini panel with its cover removed (with dimensions in mm)

5.3.6 xDetect Mini panel dimensions

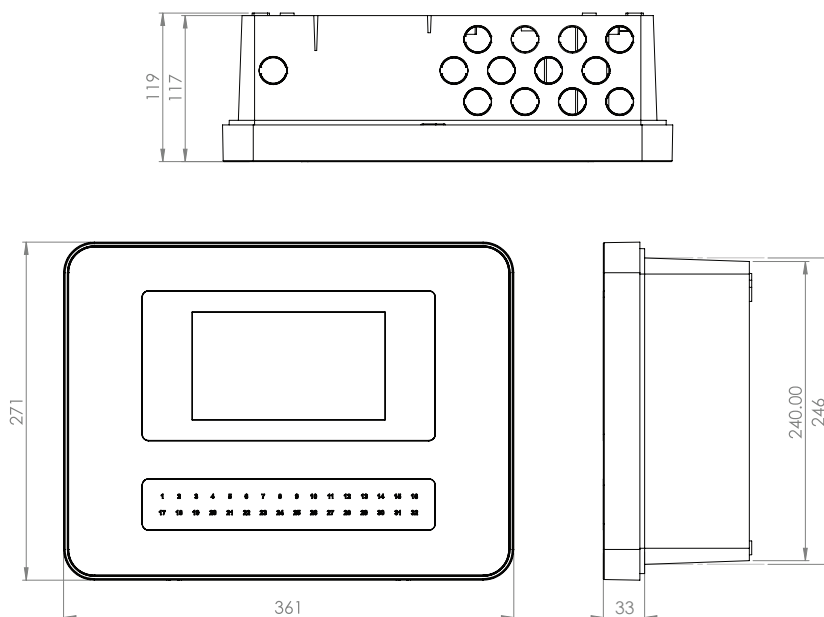


Figure 8. xDetect Mini panel dimensions (in mm)

5.4 Wiring

5.4.1 xDetect Large panel (single PSU)

5.4.1.1 Inserting batteries

xDetect Large panel variants fitted with a single PSU require 2 x 12V @ 12Ah sealed lead acid batteries to provide backup power in the event of a mains failure. Insert the batteries in panel **after** wall mounting.

For information on adding an additional PSU, see “5.6.1.1 Adding an additional PSU” on page 64.

Insert the batteries as follows:

INSTALLATION

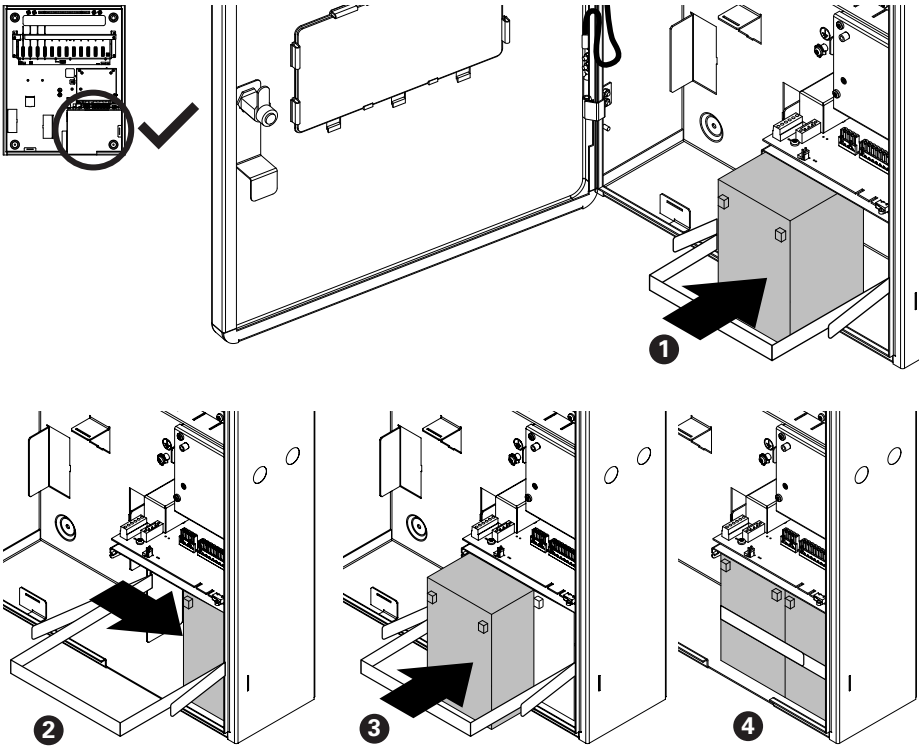


Figure 9. Inserting batteries in an xDetect Large panel fitted with a single PSU

Note: Secure the batteries using the battery straps.

5.4.1.2 Wiring the PSU to the batteries

Wire the batteries using the provided cables.

WARNING

To prevent the panel from powering up based on battery power alone, wire the batteries only after you complete the mains connection.

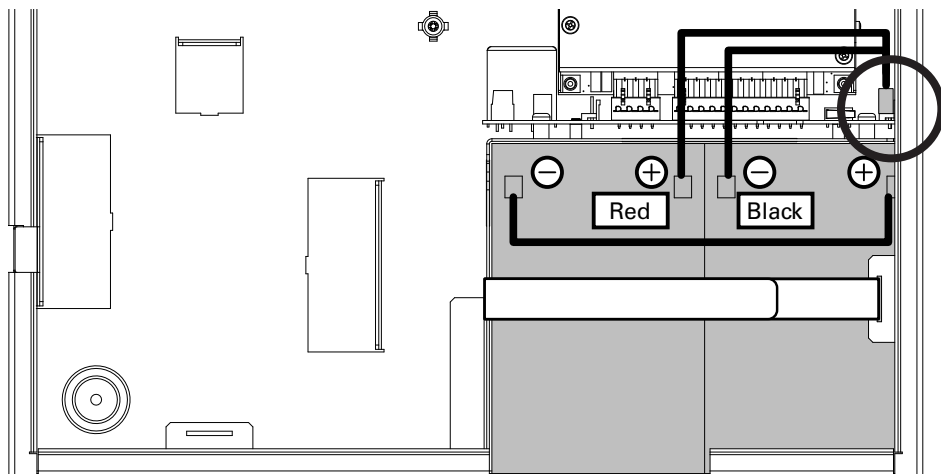


Figure 10. Wiring the PSU to the batteries in an xDetect Large panel fitted with a single PSU

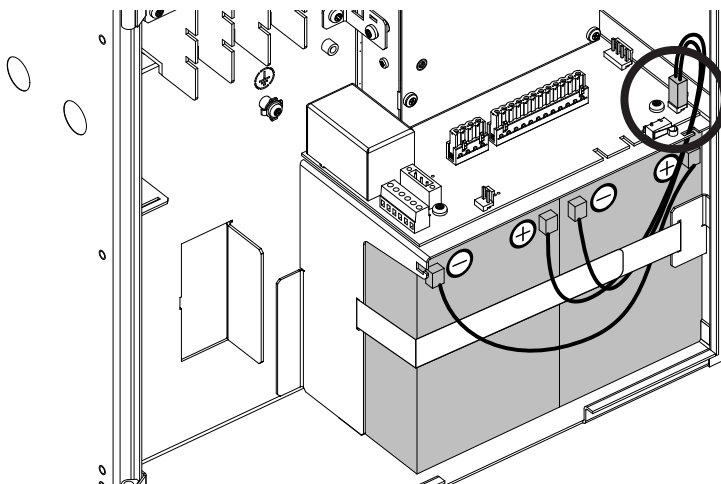


Figure 11. Wiring the PSU to the batteries in an xDetect Large panel fitted with a single PSU

Note: For tidiness, we recommend securing the battery connection wiring with the provided battery straps

INSTALLATION

5.4.2 xDetect Large panel (dual-PSU)

5.4.2.1 Inserting batteries

xDetect Large panel variants fitted with two PSUs require 4 x 12V @ 12Ah sealed lead acid batteries to provide backup power in the event of a mains failure. Insert the batteries in the panel **after** wall mounting.

For information on adding the additional PSU, see “5.6.1.1 Adding an additional PSU” on page 64.

Insert the additional batteries as follows:

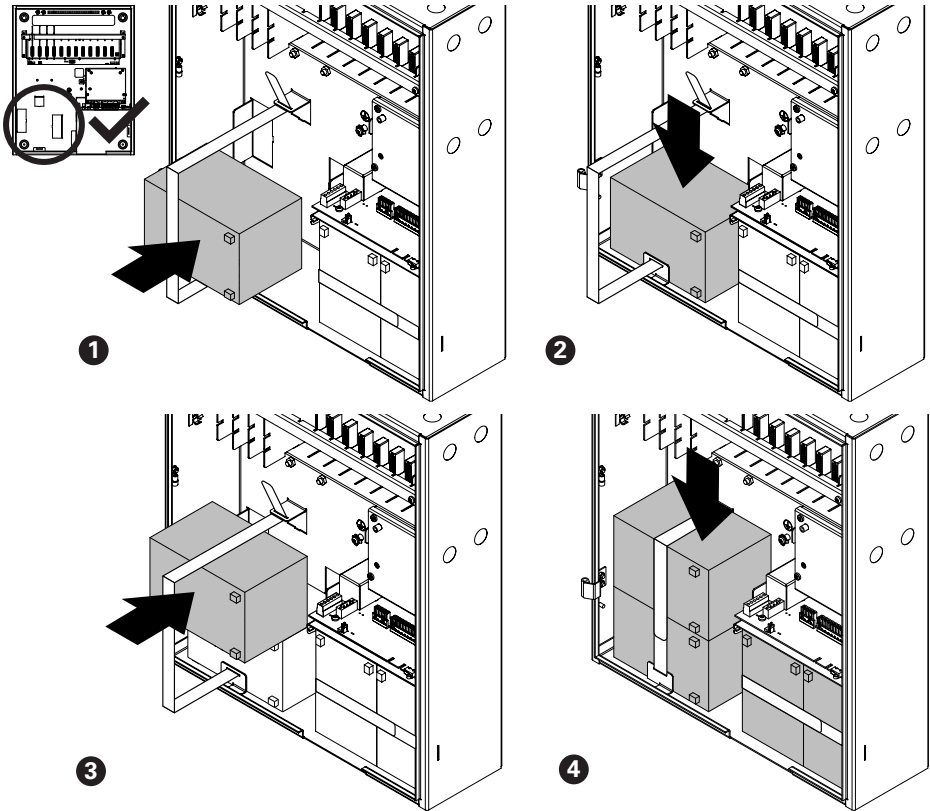


Figure 12. Inserting additional batteries in an xDetect Large panel fitted with two PSUs

Note: Secure the batteries using the battery straps.

5.4.2.2 Wiring the PSUs to the batteries

Wire the batteries using the provided cables.

WARNING

To prevent the panel from powering up based on battery power alone, wire the batteries only after you complete the mains connection.

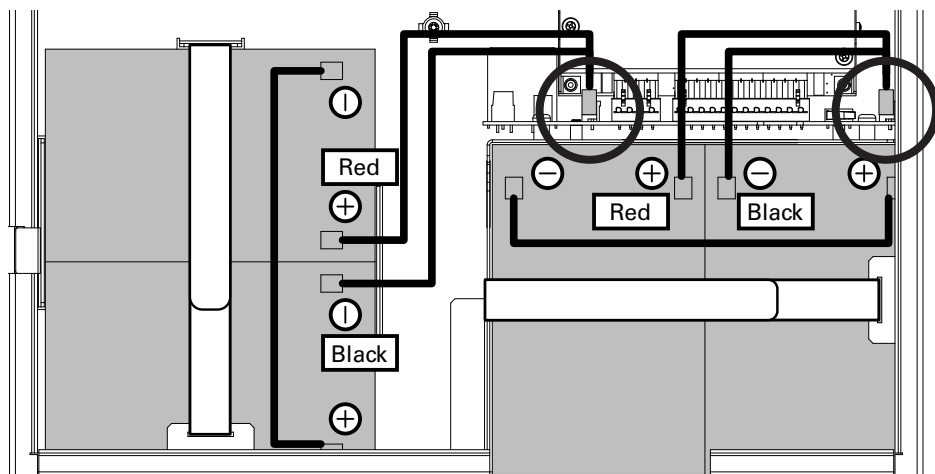


Figure 13. Wiring the PSU to the batteries in an xDetect Large panel fitted with two PSUs

INSTALLATION

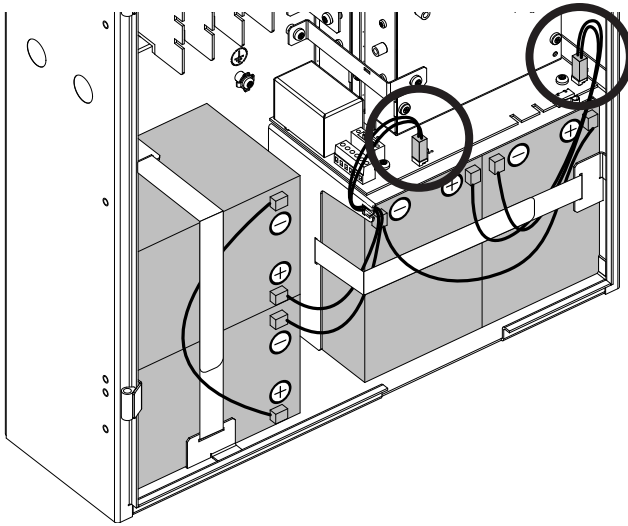


Figure 14. Wiring the PSU to the batteries in an xDetect Large panel fitted with two PSUs

Note: For tidiness, we recommend securing the battery connection wiring with the provided battery straps

5.4.3 xDetect Small panel

5.4.3.1 Inserting batteries

xDetect Small panel variants require 2 x 12V @ 12Ah sealed lead acid batteries to provide backup power in the event of a mains failure. Insert the batteries in the panel **after** wall mounting.

Insert the batteries as follows:

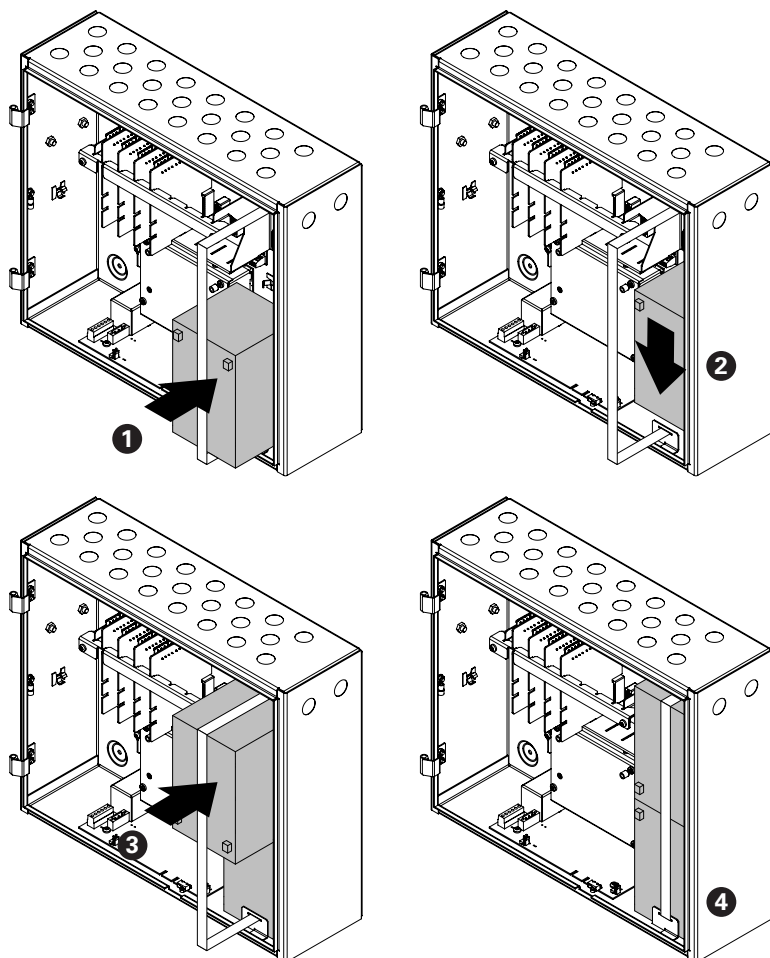


Figure 15. Inserting batteries in an xDetect Small panel

Note: Secure the batteries using the battery straps.

5.4.3.2 Wiring the PSU to the batteries

Wire the batteries using the provided cables.

INSTALLATION

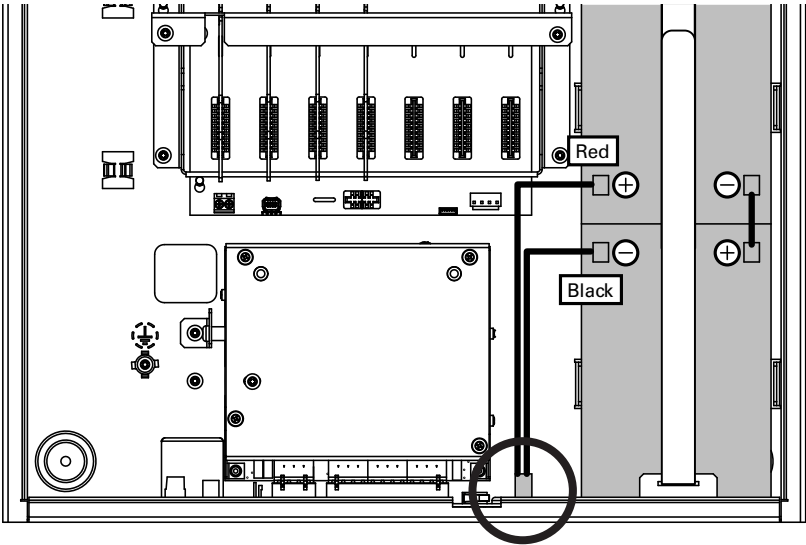


Figure 16. Wiring the PSU to the batteries in an xDetect Small panel

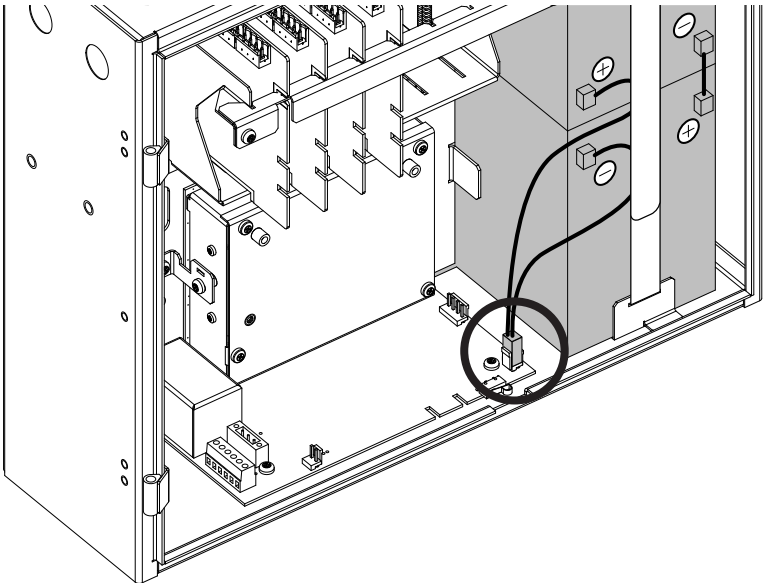


Figure 17. Wiring the PSU to the batteries in an xDetect Small panel

Note: For tidiness, we recommend securing the battery connection wiring with the provided battery straps Wiring xDetect Mini panels

5.4.4 xDetect Mini panel

5.4.4.1 Inserting batteries

The xDetect Mini panel requires 2 x 12V @ 9Ah sealed lead acid batteries to provide backup power in the event of a mains failure. Insert the batteries in the panel **after** wall mounting.

Insert the batteries as follows:

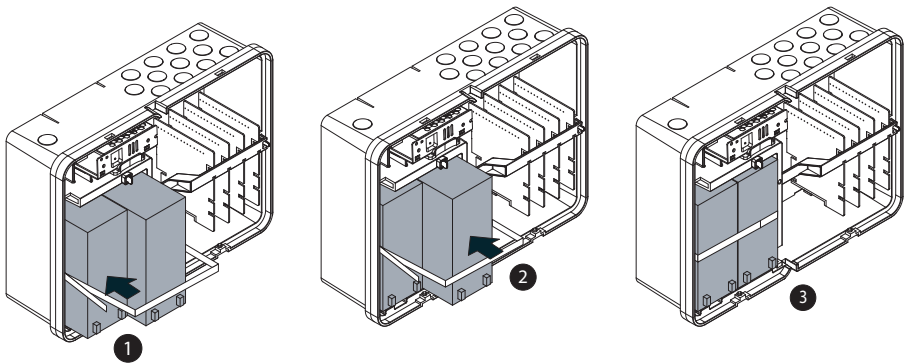


Figure 18. Inserting batteries in an xDetect Mini panel

Note: Secure the batteries using the battery straps.

5.4.4.2 Wiring the PSU to the batteries

Wire the batteries using the provided cables.

WARNING

To prevent the panel from powering up based on battery power alone, wire the batteries only after you complete the mains connection.

INSTALLATION

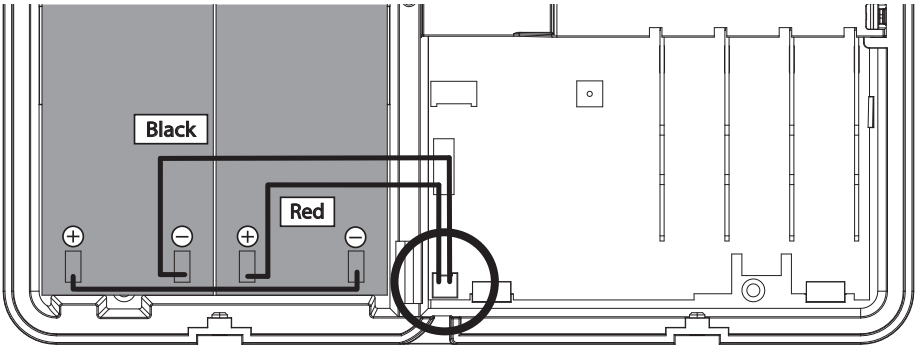


Figure 19. Wiring the PSU to the batteries in an xDetect Mini panel

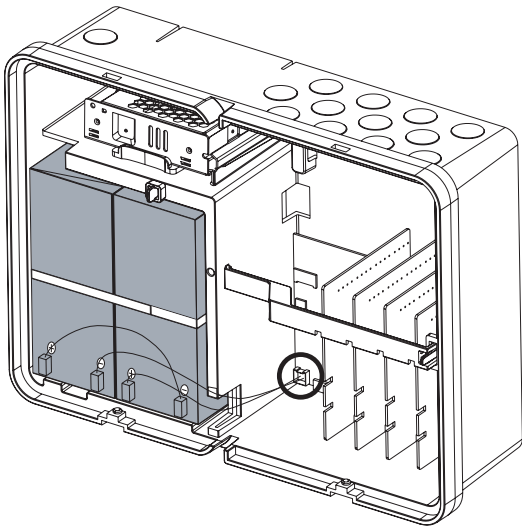


Figure 20. Wiring the PSU to the batteries in an xDetect Mini panel

Note: For tidiness, we recommend securing the battery connection wiring with the provided battery straps Wiring xDetect Mini panels

5.4.5 Module card wiring connections

The xDetect and xDetect Mini panels use a card-based system to accommodate upgrades and future system expansion. This section illustrates the wiring connections for the different cards.

5.4.5.1 Loop card

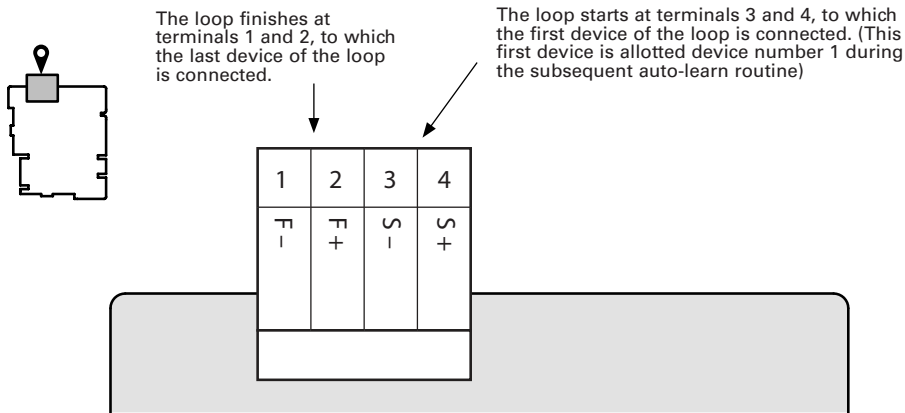


Figure 21. Loop card (1L Protocol 800) wiring connections

5.4.5.2 SMC card

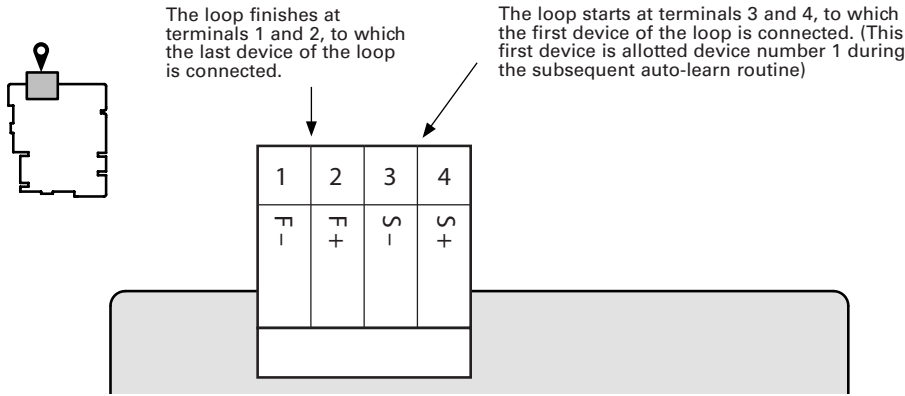


Figure 22. SMC card wiring connections

This card only supports specific device types, such as fan controllers (FCs), their supporting power supply units, and micro single-channel inputs (MCIM) and outputs (MCOM-FCs).

INSTALLATION

Notes:

- Always wire the circuit as a loop
- Always wire fan controller devices at the start of the loop and other devices, such as the micro inputs and outputs later in the loop.
- Using the SMC card for implementing a smoke management devices loop is optional.

5.4.5.3 Sounder circuit card

Note: The Sounder card is not compatible with the xDetect Mini panel.

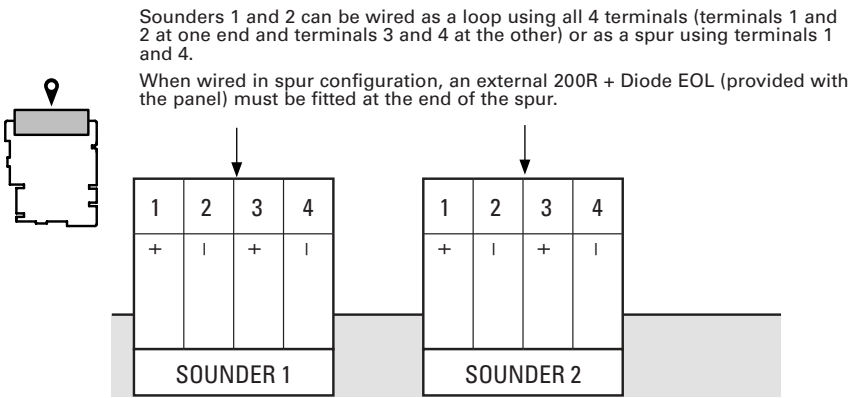


Figure 23. Sounder Circuit Card wiring connections

5.4.5.4 Programmable IO card

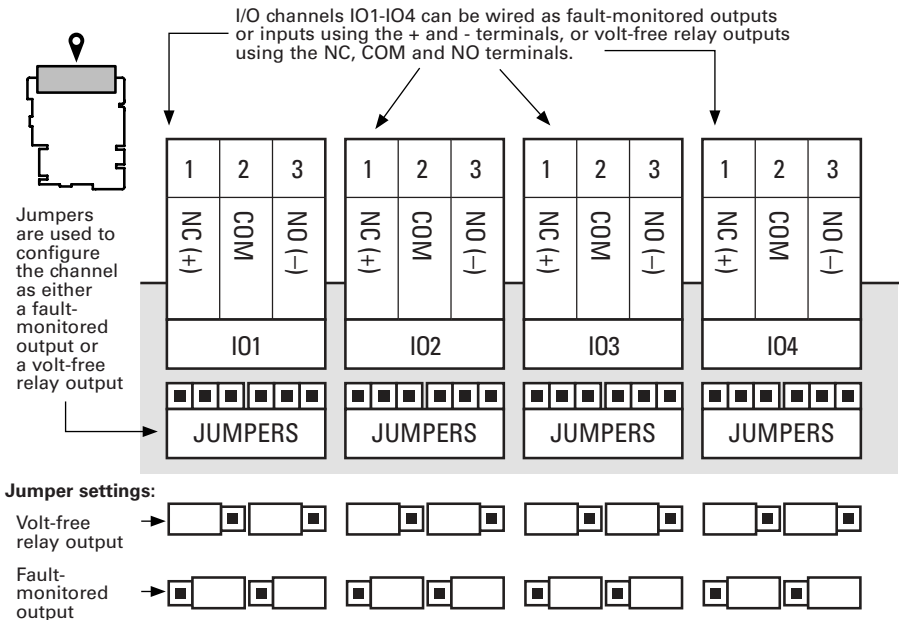


Figure 24. Programmable IO card wiring connections

5.4.5.5 Connectivity card

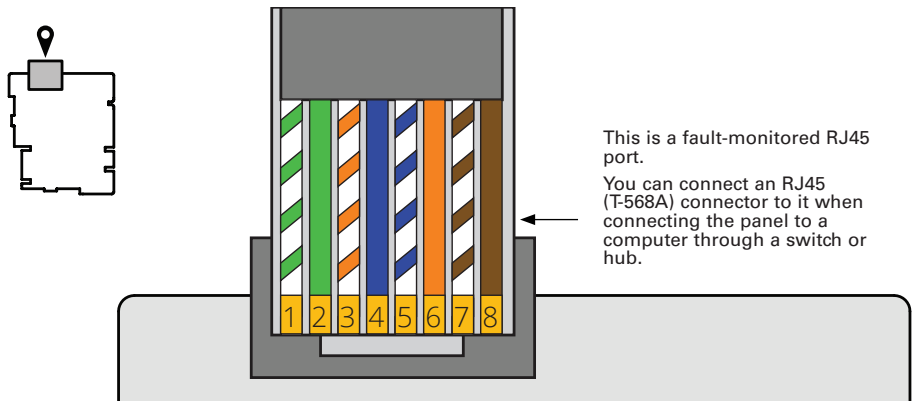


Figure 25. Connecting an RJ45 (T-568A) cable to the Connectivity card

INSTALLATION

RJ45 (T-568A) connector pinout

Pin	Colour	Description
1	White-green	Transmit +
2	Green	Transmit -
3	White-orange	Receive +
4	Blue	Bi-Directional Transmit +
5	White-blue	Bi-Directional Transmit -
6	Orange	Receive -
7	White-brown	Bi-Directional Transmit +
8	Brown	Bi-Directional Transmit -

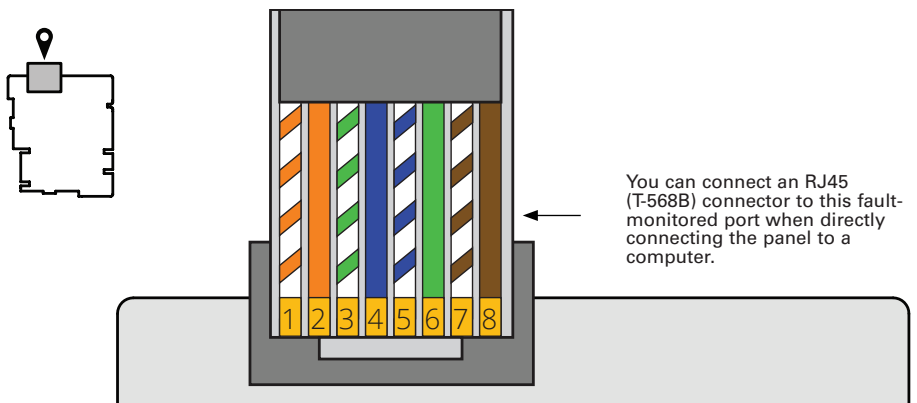


Figure 26. Connecting an RJ45 crossover (T-568B) cable to the Connectivity card

RJ45 (T-568B) connector pinout

Pin	Colour	Description
1	White-orange	Transmit +
2	Orange	Transmit -
3	White-green	Receive +
4	Blue	Bi-Directional Transmit +
5	White-blue	Bi-Directional Transmit -
6	Green	Receive -

7	White-brown	Bi-Directional Transmit +
8	Brown	Bi-Directional Transmit -

Fault monitoring at the port

The following faults are reported:

- Ethernet fault: Fault reported when the Ethernet cable is physically disconnected from the port.
- Connection fault: Fault reported when the panel or EFGVS software package is unable to connect, authenticate, or subscribe to the correct topics of the MQTT broker.
- Fault reported when the panel or EFGVS software package is aware that the other side is no longer communicating.

5.4.5.6 Network card

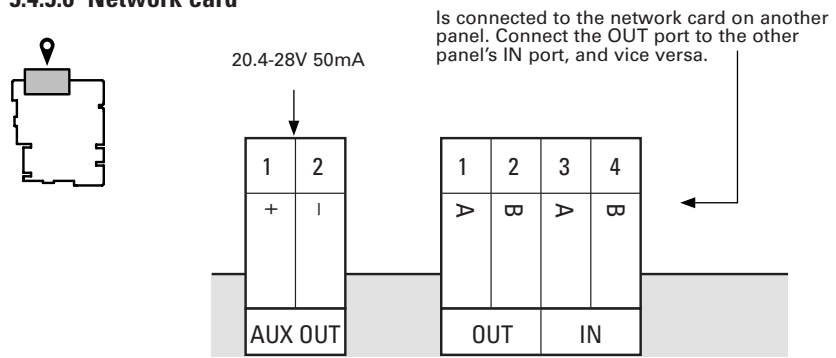


Figure 27. xDetect Network Card wiring connections

INSTALLATION

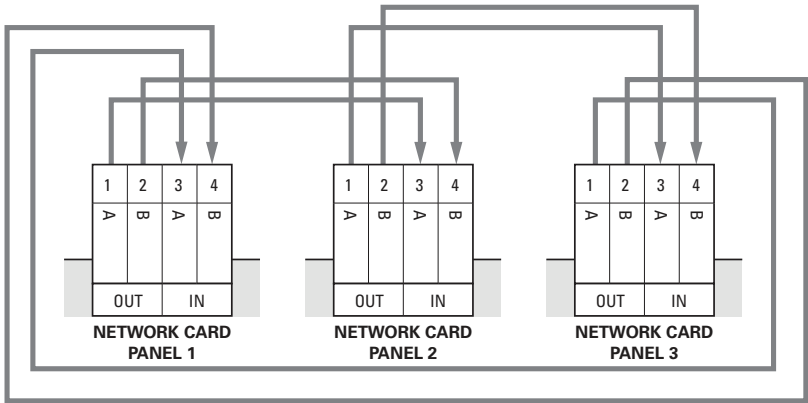


Figure 28. Example of wiring the Network Card in a loop network topology

5.4.5.7 Gateway card

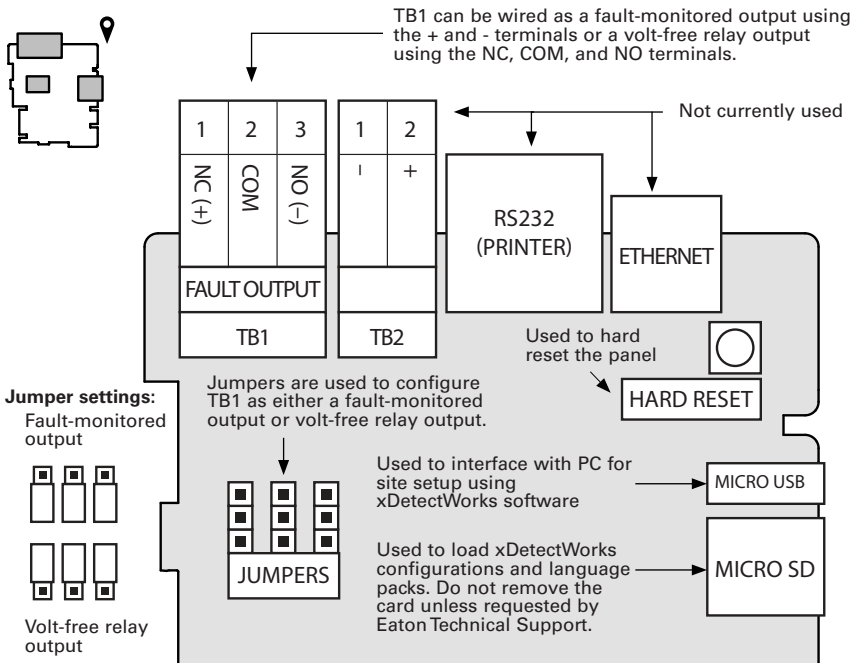


Figure 29. Gateway Card wiring connections

5.4.6 Backplane wiring and other connections

5.4.6.1 xDetect Large panel variants

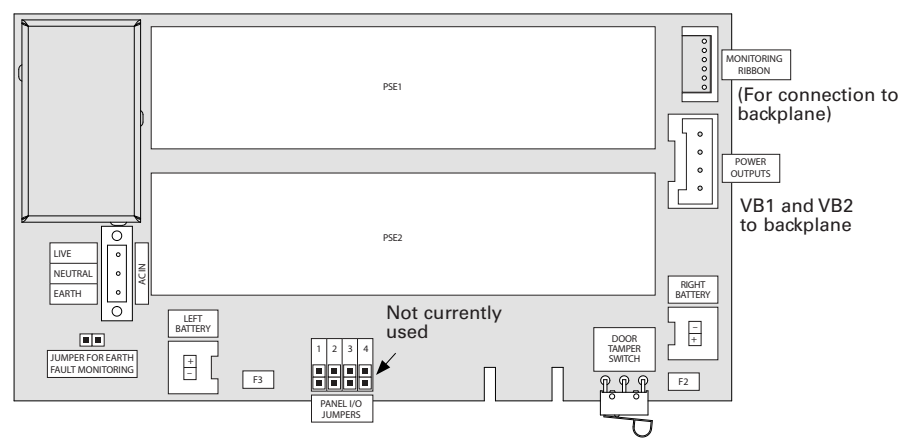


Figure 30. xDetect Large panel dual PSE backplane wiring connections

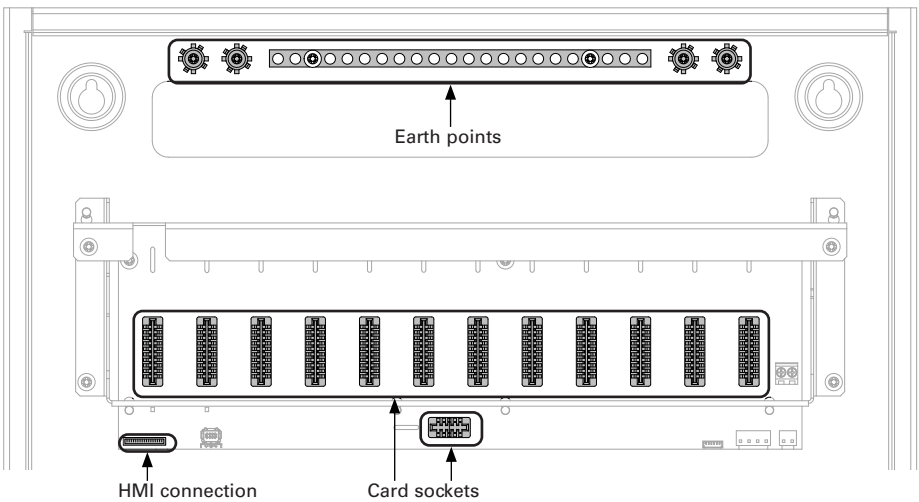


Figure 31. Earthing and HMI connection points and card slots on the xDetect Large panel (enclosure) backplane

INSTALLATION

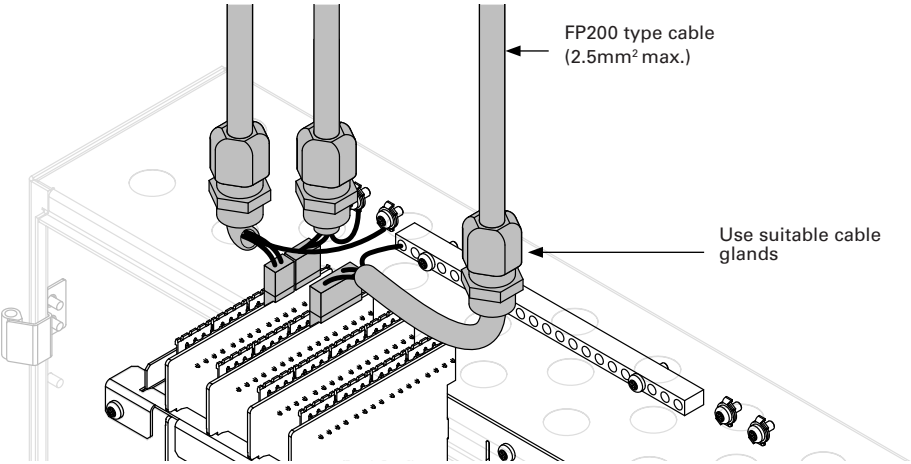


Figure 32. Wiring the Gateway and Loop cards in the xDetect Large panel

5.4.6.2 xDetect Small panel variants

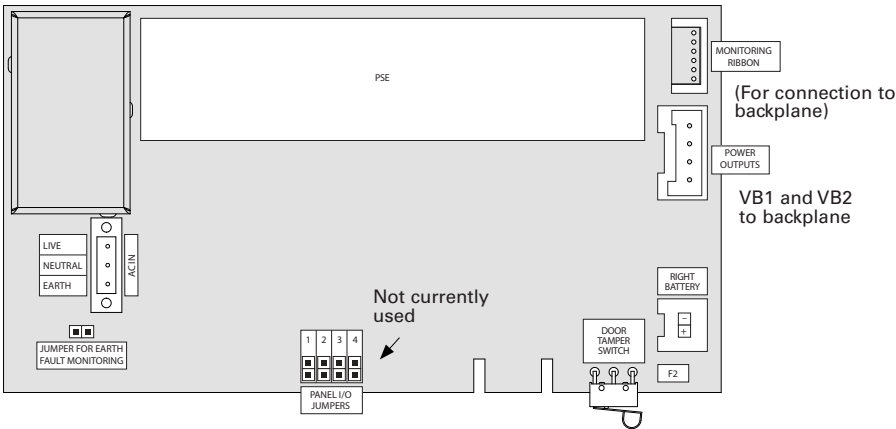


Figure 33. xDetect Small panel single PSE backplane wiring connections

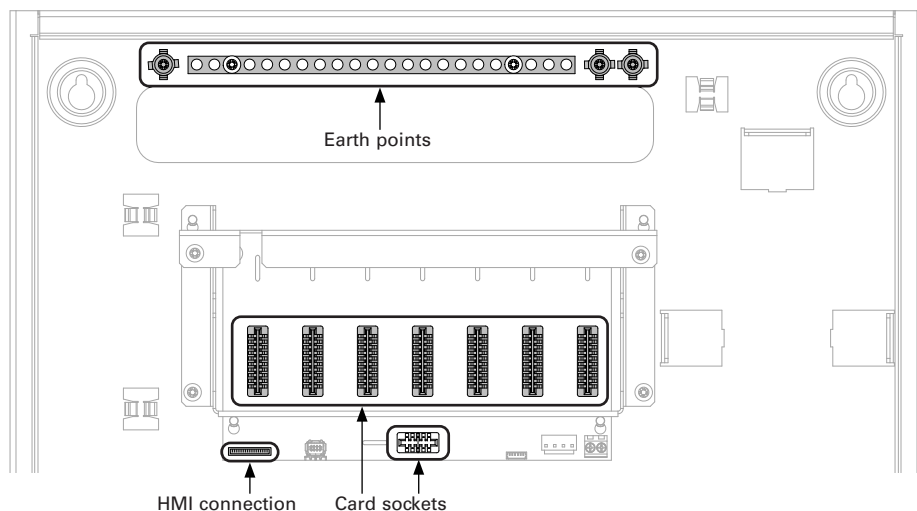


Figure 34. Earthing, HMI and Card connection points on the xDetect Small panel (enclosure) backplane

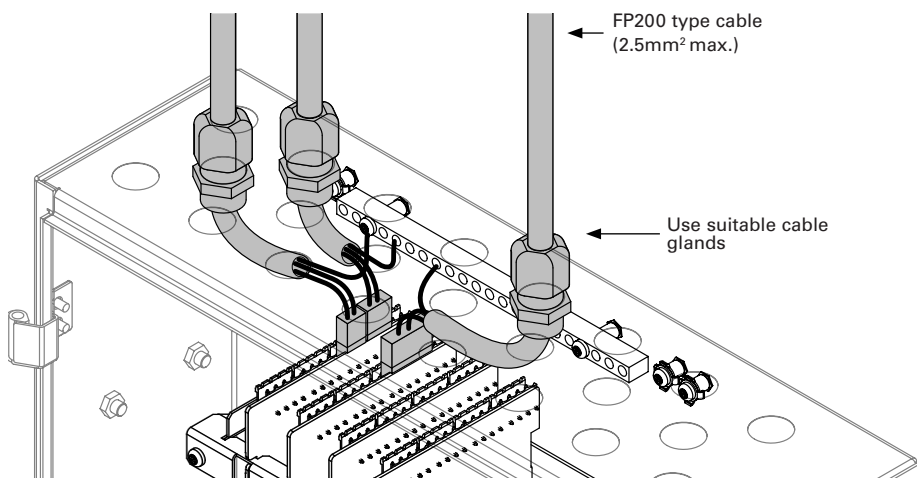


Figure 35. Wiring the Gateway and Loop cards in the xDetect Small panel

INSTALLATION

5.4.6.3 xDetect Mini panel

(Terminals marked “E” are earth points for connecting cable shields)

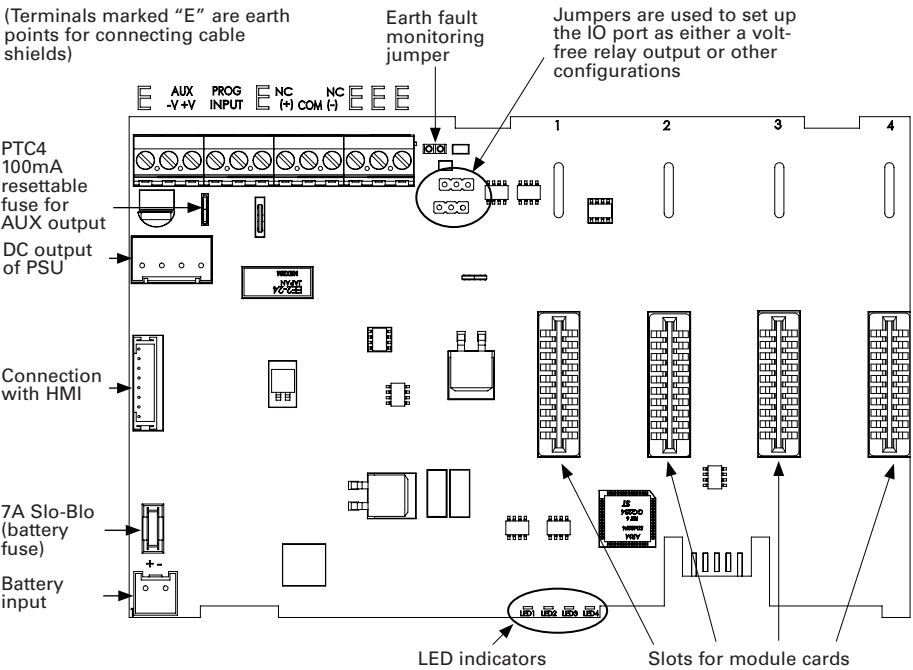


Figure 36. xDetect Mini panel backplane wiring connections

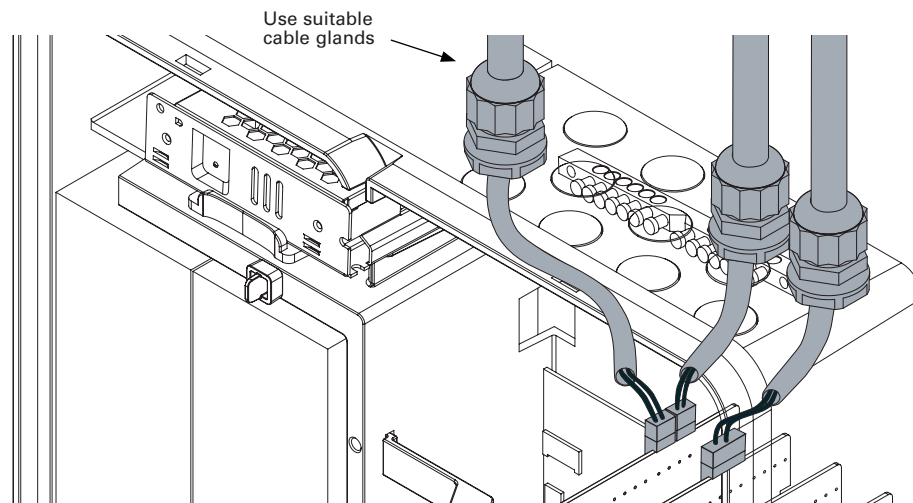


Figure 37. Wiring the Gateway and Loop cards in the xDetect Mini panel

5.5 Attaching the panel door/cover, HMI, and ZI unit

5.5.1 xDetect Large panel variants

1. Connect the door: Line up the hinges of the door and the box and gently lower the door from above. Then, tighten the door hinge bolts.

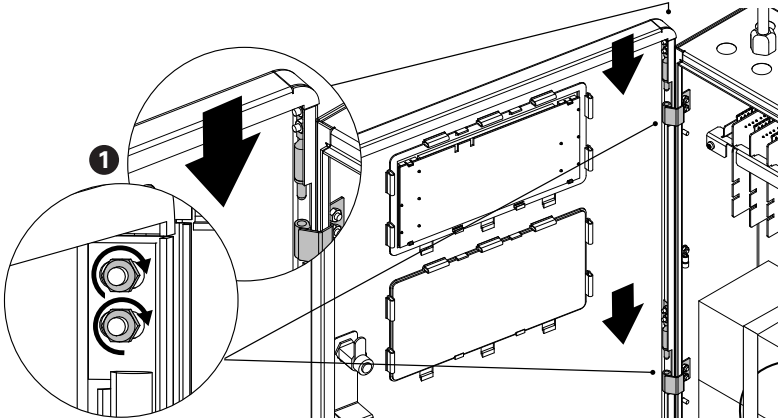


Figure 38. Attaching the outer door to the xDetect Large panel

2. Connect the HMI data cable to the data port on the PCB.
3. Connect the ground cable between the lower hinge of the door and the back box earth stud, and close the unit.

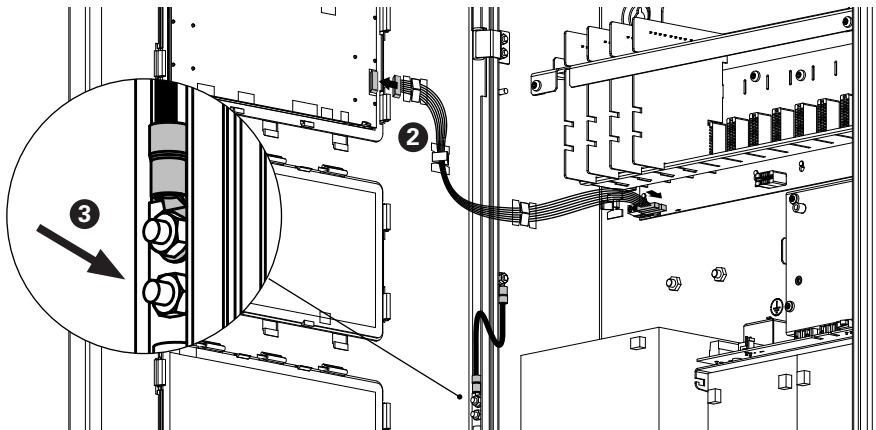


Figure 39. Connecting the data and ground cables to the xDetect Large panel

INSTALLATION

CAUTION

Ensure that you disconnect the HMI data cable and ground cable before removing the door.

4. Security: Always keep the door locked to prevent unauthorized tampering. Provide authorized users with the key as required.

5.5.2 xDetect Small panel variants

1. Connect the door: Line up the hinges of the door and the box and gently lower the door from above. Then, tighten the door hinge bolts.

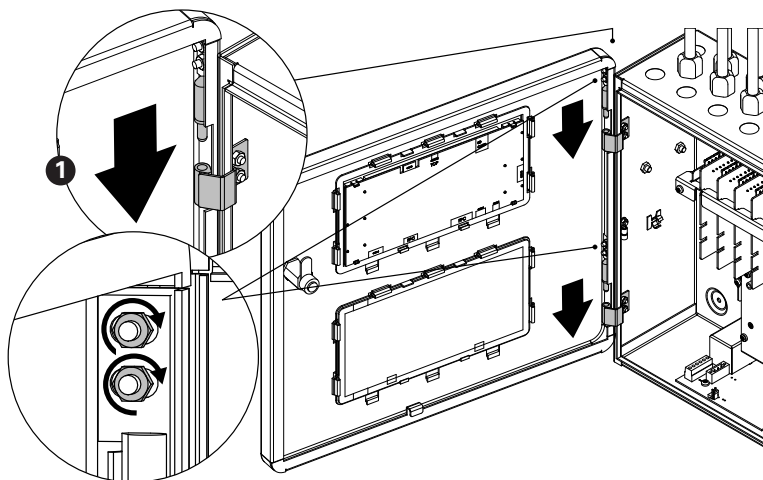


Figure 40. Attaching the outer door to the xDetect Small panel

2. Connect the HMI data cable to the data port on the PCB
3. Connect ground cable between the door and box, and close the unit.

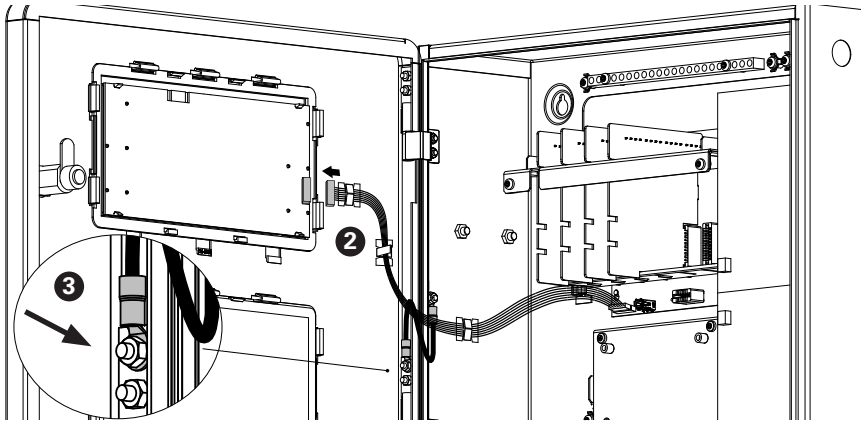


Figure 41. Connecting the data and ground cables to the xDetect Small panel

⚠ CAUTION

Ensure that you disconnect the HMI data cable and ground cable before removing the door.

4. **Security:** Always keep the door locked to prevent unauthorized tampering. Provide any authorized users with the key as required.

5.5.3 xDetect Mini panel

Note: Unlike the xDetect Large and Small variants that have doors that you can attach to the box and open or close through their hinging mechanisms, you can entirely remove the xDetect Mini panel's cover.

1. To remove the cover from the panel, remove the securing screws (2 x M4 hex drive) at the bottom of the cover.

INSTALLATION

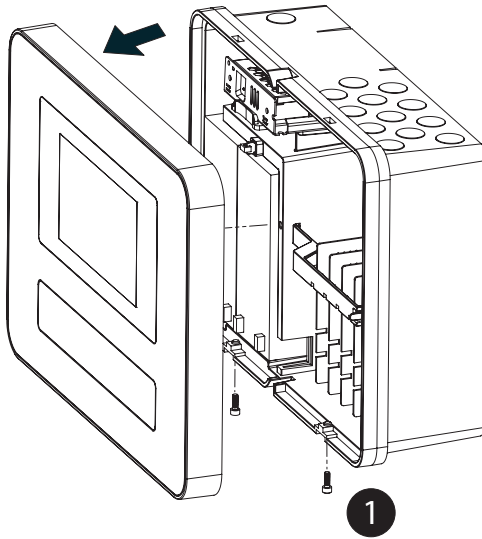


Figure 42. Removing the panel cover

2. With the cover detached, connect the HMI data cable to the data port on the PCB.

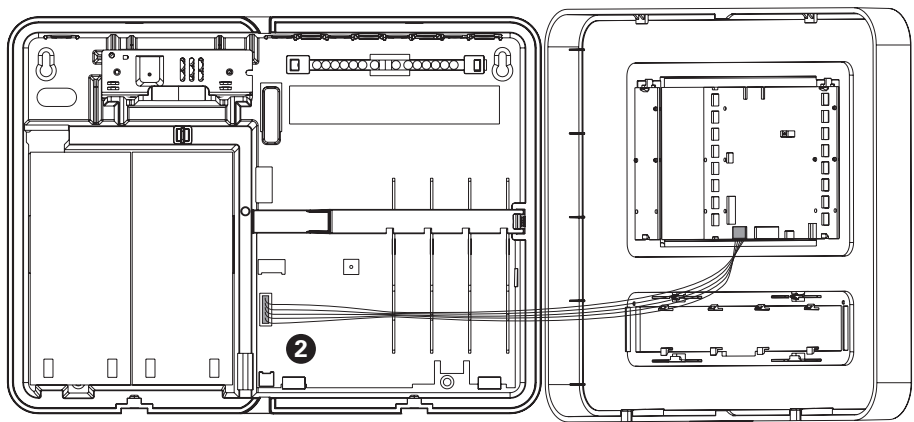


Figure 43. Attaching the data cable

3. To connect a 32 ZI add-on unit to the panel, do the following:

1. Remove the covering piece of the ZI indicator slot on the panel's cover.
2. Peel away the film covering the adhesive tape.
3. Insert the 32 ZI add-on (glass) into the slot and clip its PCBA in place behind the glass.
4. Connect the ZI add-on to the HMI's PCBA using an 8-way flex connector.
4. Reattach the panel cover.

Note: When working with the panel, when you need to access the panel's backplane or module cards, you can hang the door on the grooves on the box, positioning it towards the left. If the panel is surface mounted, its cover can even be rested on the top.

5.6 Connecting the AC mains to the PSU

5.6.1 xDetect Large panel variants

WARNING

Do not turn on the AC power until all the wiring is complete.

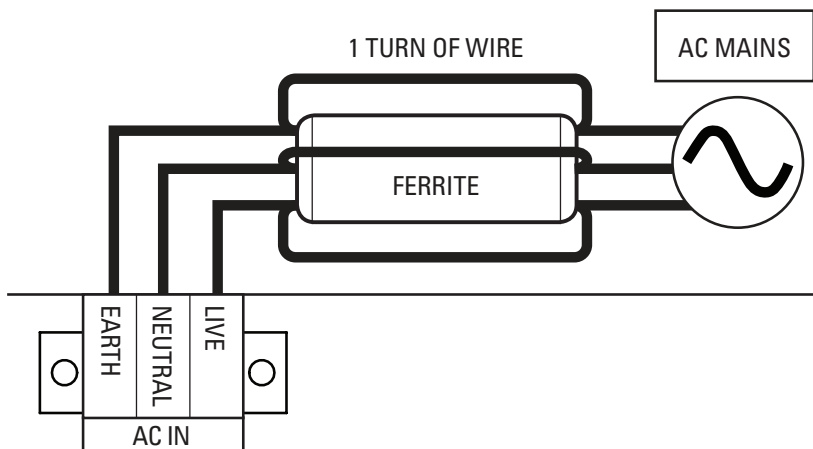


Figure 44. xDetect Large panel power supply to mains connections

Note: Route the wire through the ferrite with one turn.

INSTALLATION

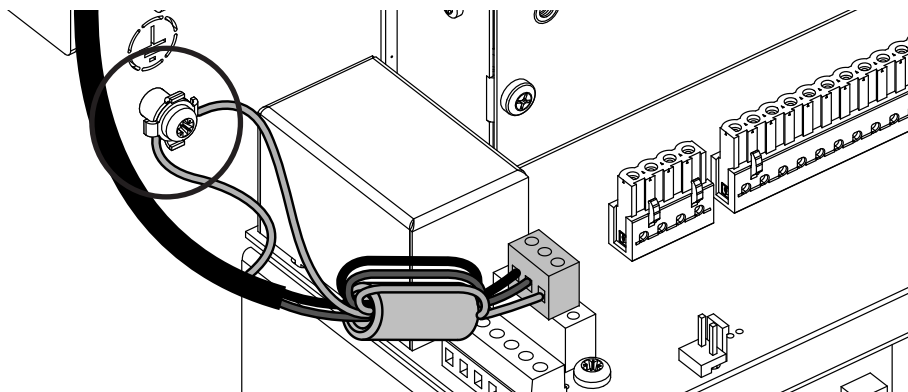


Figure 45. Example PSU to mains wiring for xDetect Large panel variants

Note: Ground the earth wire at a nearby earthing point and then route it through the ferrite with one turn of wire.

5.6.1.1 Adding an additional PSU

1. Align the power supply above the connectors on the backplane.
2. Carefully lower the power supply until the connectors are firmly secured.

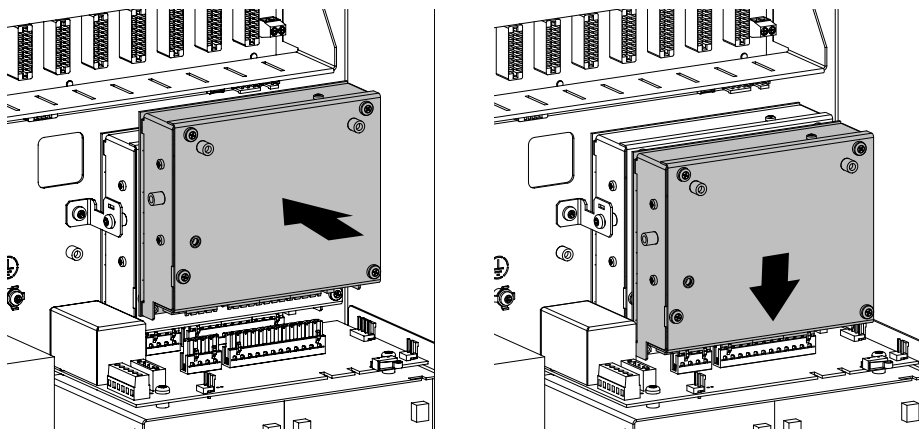


Figure 46. Adding an additional PSU to the xDetect Large panel

- Using the supplied bolts, firmly attach the bracket first to the front of the power supply, then to the stud on the backbox.

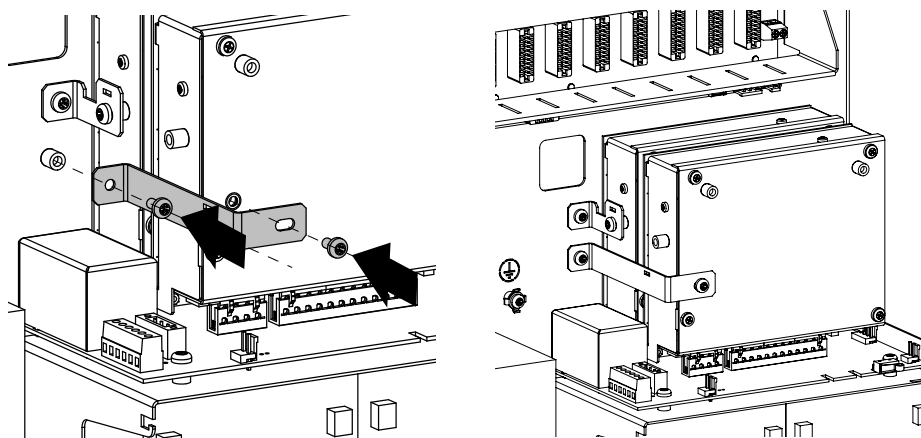


Figure 47. Securing the additional PSU

Note: Additional PSUs are shipped with external brackets.

5.6.2 xDetect Small panel variants

WARNING

Do not turn on the AC power until all the wiring is complete.

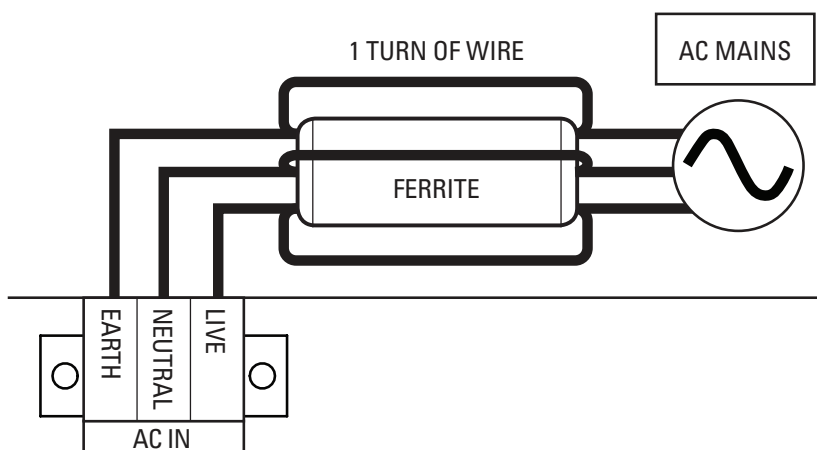


Figure 48. xDetect Small panel power supply to mains connections

INSTALLATION

Note: Route the wire through the ferrite with one turn.

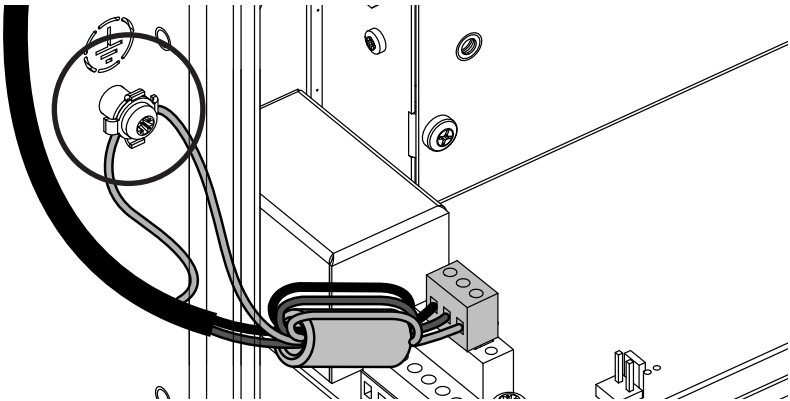


Figure 49. Example PSU to mains wiring for xDetect Small panel variants

Note: Ground the earth wire at a nearby earthing point and then route it through the ferrite with one turn of wire.

5.6.3 xDetect Mini panel

WARNING

Do not turn on the AC power until all the wiring is complete.

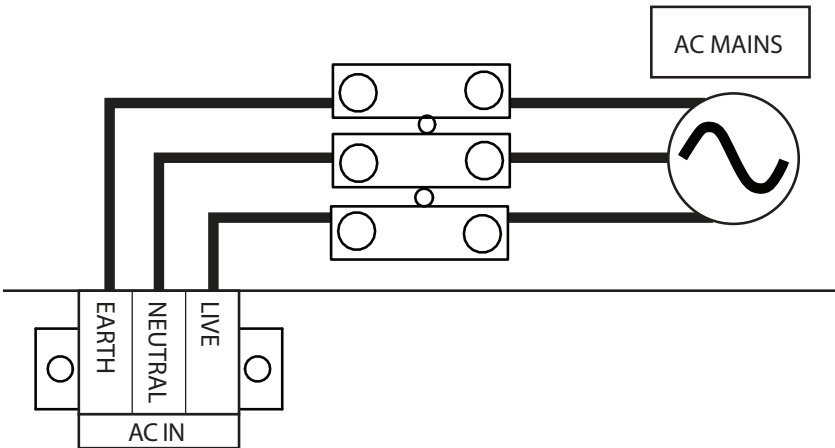


Figure 50. xDetect Mini panel power supply to mains connections.

Note: You must wire a terminal block to the AC mains input of the PSU and then wire the AC mains to the terminal block. Unlike the xDetect Large and Small panels, in the xDetect Mini, the earth wire in this connection does not require additional grounding and the wires do not need to be wound around ferrite.

5.6.4 External connections (mains supply)

The mains supply should be installed in accordance with the current edition of the IEE wiring regulations. Connection to the mains supply must be via an isolating device reserved solely for the fire alarm system. The cover should be coloured red and labelled "**FIRE ALARM - DO NOT SWITCH OFF**". The isolating protective device should be secure from unauthorised operation.

An additional warning label should be provided, depending on whether:-

1. The isolating protective device is fed from the live side of the main isolating device, in which case, the label on the isolating protective device should contain the following warning in addition:



An additional label, which contains the following, should be placed on the main isolating device:



Or

2. The isolating protective device is fed from the dead side of the main isolating device, in which case, a label that contains the following warning should be fixed to the main isolating device:



INSTALLATION

5.6.4.1 Distributed power supplies

The content in the previous section also applies to any distributed power supply (i.e. mains connections for control panels, relay units etc.).

5.6.4.2 Cable segregation

All cables for the fire alarm system should be segregated from any other cables/wiring/services.

Note: Insulate the tail ends of the mains cable to prevent dangerous conditions that could arise if the mains supply is accidentally switched on.

5.6.5 Spurring off a loop

Spurs can be taken off the loop in the following ways:

1. CZMU352 Addressable Interface - Allows up to 20 conventional smoke detectors and unlimited Eaton conventional call points
2. CSI350 Spur Isolator - Allows a zone of analogue sensors and callpoints to be directly spurred off the loop

5.7 Networking

You can network up to 250 xDetect and xDetect Mini panels together and operate them as a single networked fire alarm system.

You can achieve this by fitting each panel with a network card (supplied at additional cost).

When the panels operate as a networked system, each panel displays all fire and fault event information across the system. You can also carry out alarm silencing and resetting from any panel of a networked system (if the panels are suitably configured).

You can connect the panels in a network in a loop or radial topology.

Networked panels can function as active repeaters.

We recommend using FP200 1.5mm² csa fire rated cable.

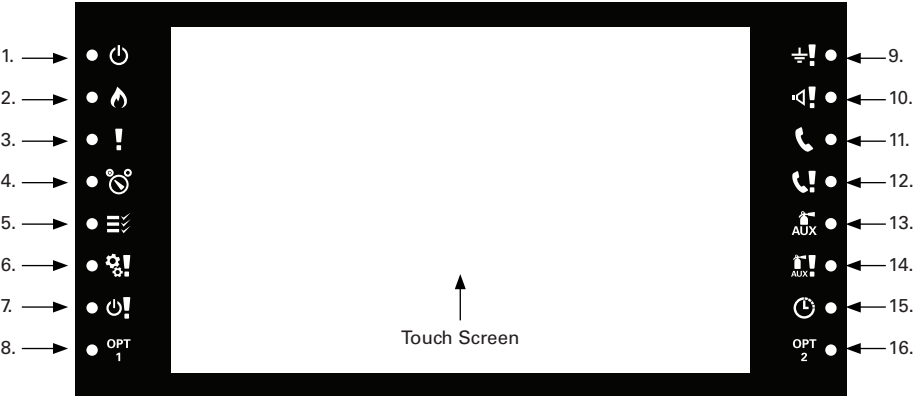
Always maintain screen continuity throughout the entire network circuit, including at each junction point. Grounding the shield at every device assists in suppressing 50/60 Hz standing waves.

Do not consider the screen or drain wire of the network cable as a safety earth and therefore, do not connect them to the terminals marked with the earth symbol, except at the panel. Also, do not insulate them with green and yellow sleeving.

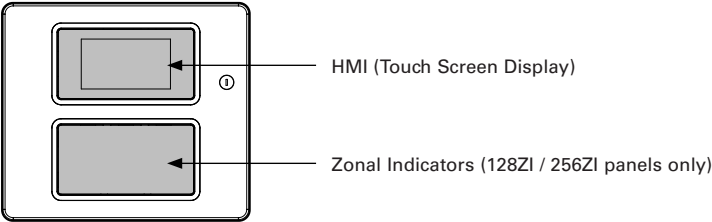
If the network cable passes between buildings, do not maintain screen continuity from building to building. Connect the cable screen to the earth of one panel in each building. Avoid continuous earth connections across a large network.

Note: If a networked panel is hard reset, it is recommended to perform a hard reset on all panels in the network to align current event data.

6. PANEL CONTROLS & SYSTEM STATUS INDICATORS

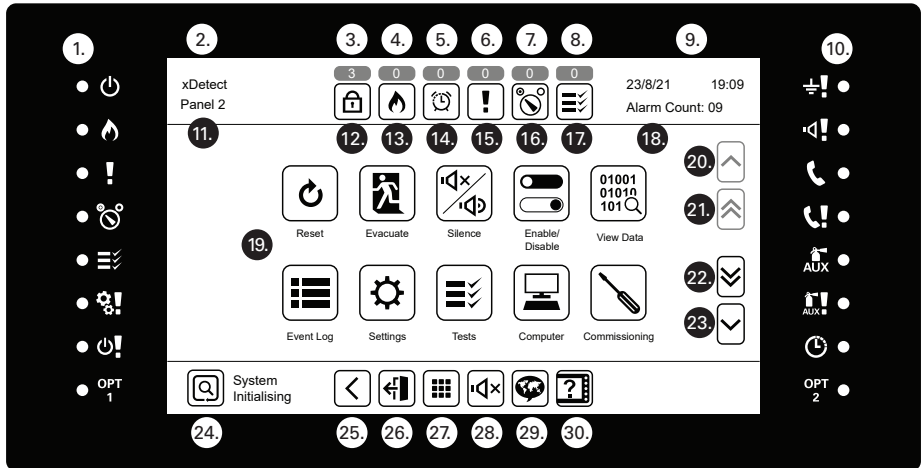


	Function	Colour	Description
1	Power	Green	Emitted when power is applied to system.
2	General Fire	Red	Emitted when 1 or more fires is active.
3	General Fault	Amber	Emitted when 1 or more general faults is active.
4	General Disablement	Amber	Emitted when 1 or more disablement is active.
5	General Test	Amber	Emitted when 1 or more test is active.
6	System Fault	Amber	Emitted when 1 or more system faults is active.
7	Power Fault	Amber	Emitted when 1 or more local power faults is active.
8	Optional 1	Amber	Not used.
9	Earth Fault	Amber	Emitted when a local earth fault is active.
10	Sounder Fault / Disablement	Amber	Emitted solid when all local sounders are disabled. Emitted flashing when 1 or more local FRE faults is active.
11	FRE Active	Red	Emitted when a local FRE is active during a fire state.
12	FRE Fault / Disablement	Amber	Emitted solid when all local FRE are disabled. Emitted flashing when 1 or more local FRE faults is active.
13	FPE Active	Red	Emitted when a local FPE is active during a fire state.
14	FPE Fault / Disablement	Amber	Emitted solid when all local FPE are disabled. Emitted flashing when 1 or more local FPE faults is active.
15	Delays Active	Amber	Emitted when 1 or more delays are active on the local system.
16	Optional 2	Amber	Not used.



7. OVERVIEW OF THE HMI

The panel HMI is a touch-sensitive LCD display and laid out in the following way:

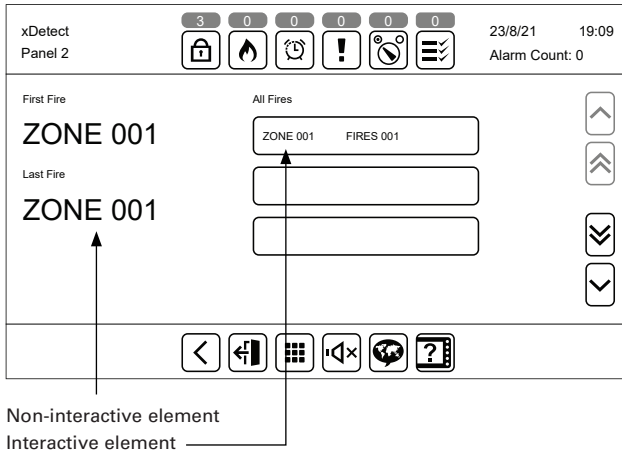


1. System Status Indicators (not user interactive)
2. Panel Name
3. Access Level Indicator
4. Number of Active Fires (tap for a list of all active fires)
5. Number of Active Pre-alarms (tap for a list of all active pre-alarms)
6. Number of Active Faults (tap for a list of all active faults)
7. Number of Active Disablesments (tap for a list of all active disablesments)
8. Number of Active Tests (tap for a list of all active tests)
9. Date and Time
10. System Status Indicators (not interactive)
11. Panel Name
12. Login Button
13. View Fires Button
14. View Pre-alarms Button
15. View Faults Button
16. View Disablesments Button
17. View Tests Button
18. Alarm Count
19. Content Area
20. Scroll Up
21. Page Up
22. Page Down
23. Scroll Down
24. Loop Initialisation Indicator
25. Back Action Button
26. Logout Action Button
27. Menu Action Button
28. Silence buzzer/Mute buzzer' Action Button
29. Change Language Action Button
30. Display LED Icon Legend

BASIC USER INTERFACE FUNCTIONALITY

8. BASIC USER INTERFACE FUNCTIONALITY

- The xDetect HMI is a seven-inch single point touch display screen.
- An outline around any screen element indicates that it can be interacted with.



- An element being filled with solid colour indicates that it is currently active.
- The top and bottom row of buttons are always present and, unless faded out due to context, can be interacted with at any time.
- Unless surrounded by an outlined container, text is non-interactive and is only to display information.
- An element displayed but faded to 50% opacity indicates that its function is not currently available. For example, a scroll/page up button will be faded out if you are at the top of a scrollable section and will become available when you begin scrolling down.
- For ease of use, all main functions are designed to be available within as few button taps as possible. You can go back a step at any point by using the **'Back Action Button'** to return to the previous screen.
- If you have made changes to a value, but do not wish to keep them, press the **'Back Action Button'** instead of any available **'Save/Accept Action Button'**.
- If a status indicator LED is illuminated, you can quickly check it's function and description at any time by pressing the **'Display LED Icon Legend Button'**. The legend will auto dismiss after 10 seconds.

9. FIRST TIME START UP

9.1 Initial Configuration

Upon initial power up of the system on-site, you are required to install image and language data. An SD card with appropriate image and language data must be inserted into the HMI SD card holder.

Note: The SD card is supplied with the panel.

1. To begin installation, tap '**TOUCH TO INSTALL**'.

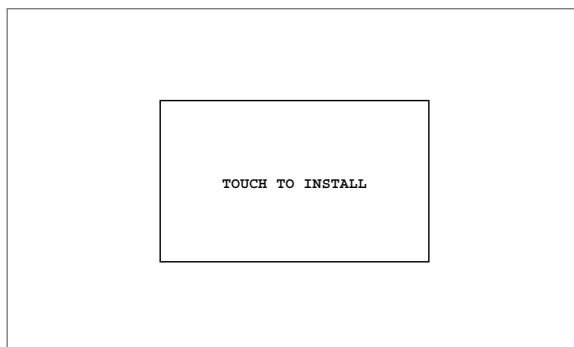


Figure 51. Initial screen before the panel firmware is installed

Image data will be installed first.

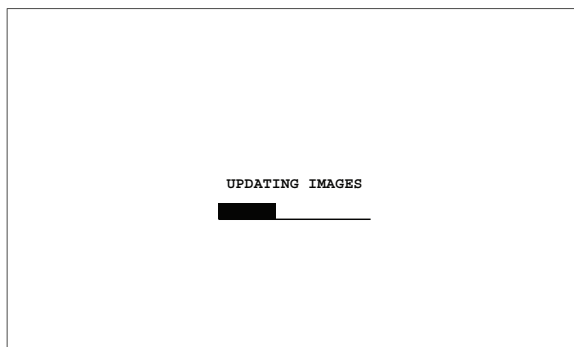


Figure 52. Initialisation screen when updating images

FIRST TIME START UP

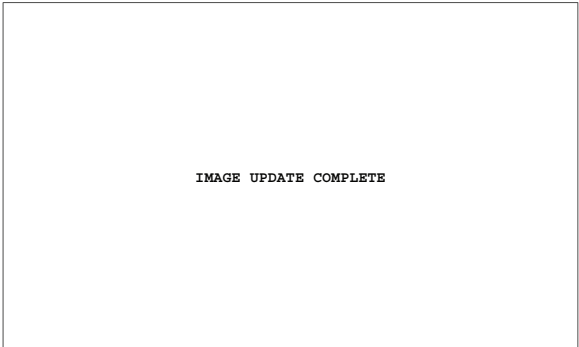


Figure 53. Initialisation screen confirming that images are updated

This is followed by language data.

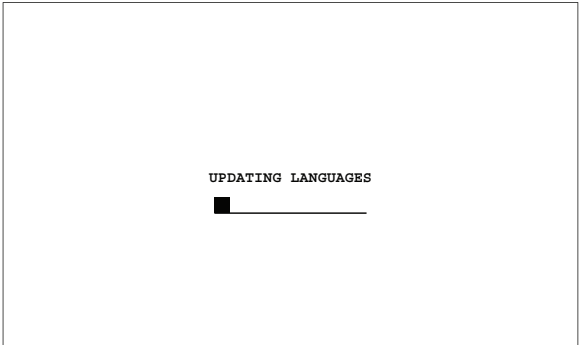


Figure 54. Initialisation screen when updating languages



Figure 55. Initialisation screen confirming that languages are updated

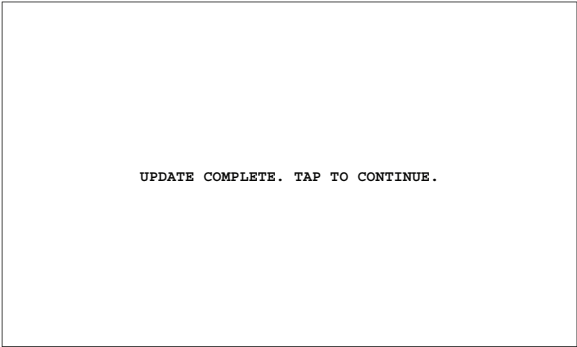


Figure 56. Initialisation screen confirming that all updates are complete

2. Once the installation is complete, **tap anywhere on screen** to continue. The system will then go through the standard initialisation routine, resulting in the System Details screen.

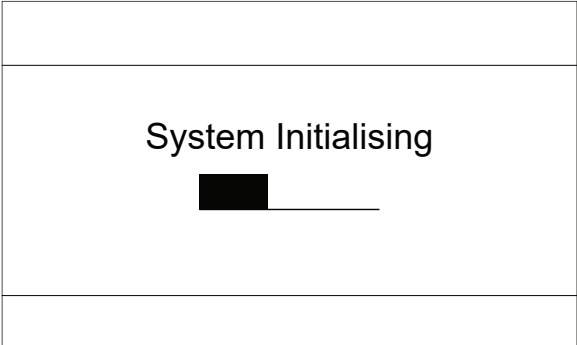


Figure 57. System Initialising screen

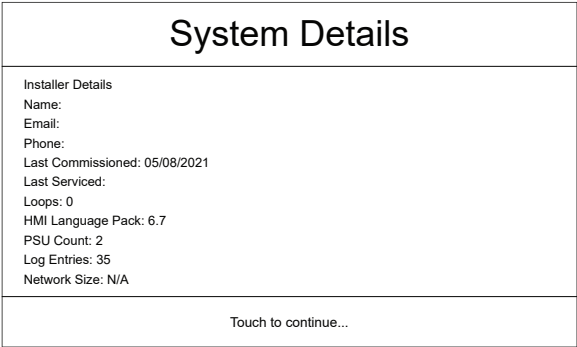


Figure 58. System Details screen

FIRST TIME START UP

9.2 Language Selection

After the software components have been configured, you will be presented with a language selection screen. The available languages will depend on the pack installed on the MicroSD card (for information on adding languages, see “22. SUPPORTED LANGUAGES” on page 210:

Select your desired default language from the list. You can change the language at any time later during regular panel use by pressing the ‘**Change Language Action Button**’ at the bottom.

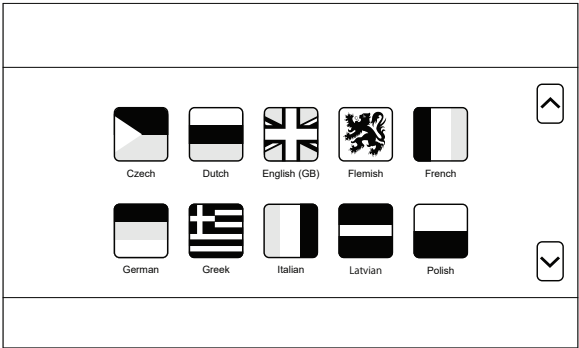


Figure 59. Example screen for initial language selection

Once your language has been selected, you will be taken to the Home screen.

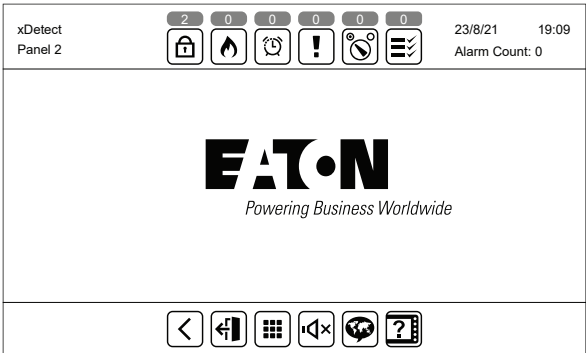


Figure 60. Home screen in quiescent state

9.3 Screen states

9.3.1 Quiescent state

Whenever there are NO fires or faults displayed, the screen background is blue colour, i.e. in Quiescent state.

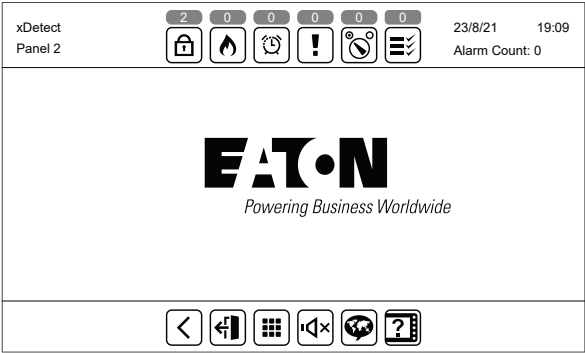


Figure 61. Home screen in quiescent state

9.3.2 Fire state

If there are fires, the screen background is coloured red.

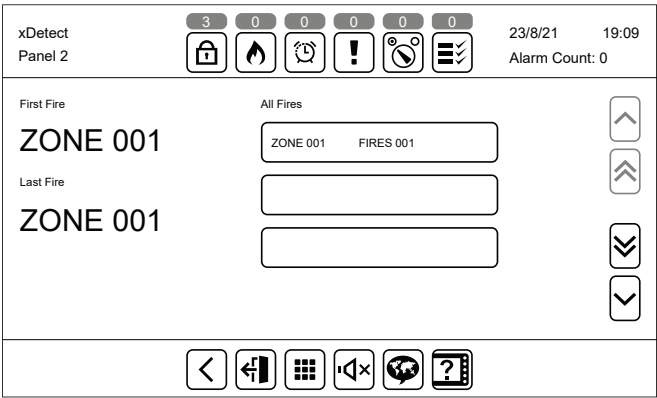


Figure 62. Example fire screen

When all fires are reset, the panel returns to quiescent state.

FIRST TIME START UP

For detailed information, see “16. OVERVIEW OF THE FIRE SCREEN” on page 192

9.3.3 Fault state

If there are faults, the screen background is coloured yellow.

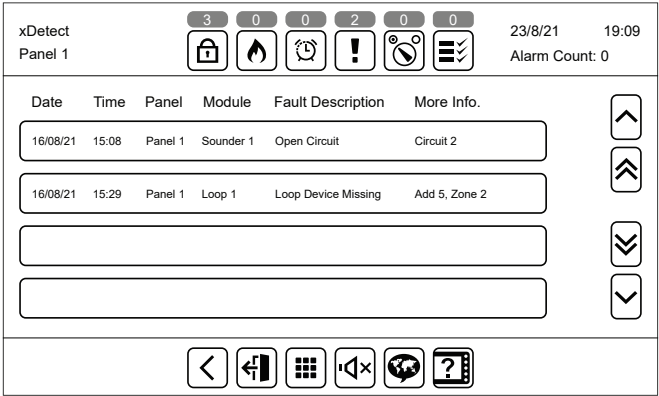


Figure 63. Example fault screen

Note: During panel installation and initiation, some initial faults might occur depending on the module cards fitted and whether or not they were fitted with the correct EOLs.

When all faults are cleared, the panel returns to quiescent state.

For detailed information, see “17. OVERVIEW OF THE FAULTS SCREEN” on page 194.

9.4 Logging in and selecting a user

1. Press the ‘Login Button’
2. Select ‘**Engineer**’. Note that Engineer is a level 3 user when the panel is locked (door shut), and a level 4 user when the panel is unlocked (door open). Level 4 gives Engineer access to extra functionality.

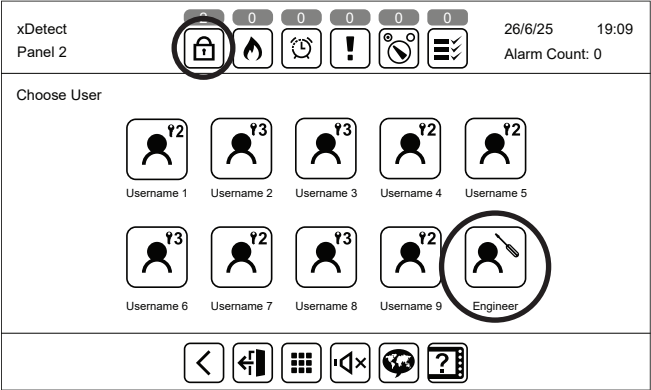


Figure 64. Logging in as an Engineer at level 3

3. Enter the PIN for **'Engineer'**. By Default the PIN is '000000'. (Inputting an incorrect code 5 times in a row will initiate a 10 minute user lock-out). Press the **'Confirm'** button.

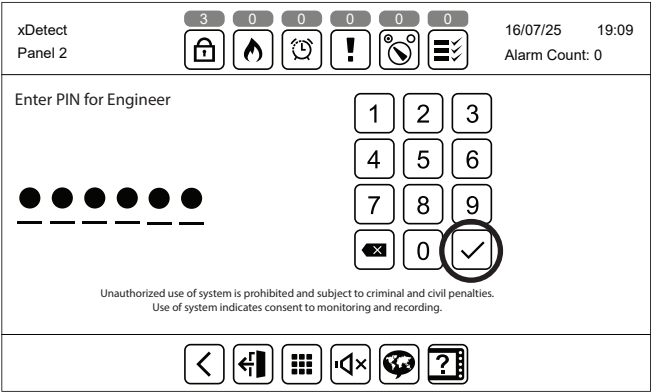


Figure 65. Entering the user pin to log in

4. Once logged in as **'Engineer'**, you can manage other users, associated user names and permissions. After **5 minutes** of inactivity, the user will be automatically logged out and returned to the home screen.
5. Once successfully logged in, return to the menu screen by pressing the **'Menu Action Button'**

FIRST TIME START UP

9.5 Set Time & Daylight Saving

- 1. Press the **'Menu Action Button'**
- 2. Select **'Settings'**.
- 3. Select **'Set Time'**.

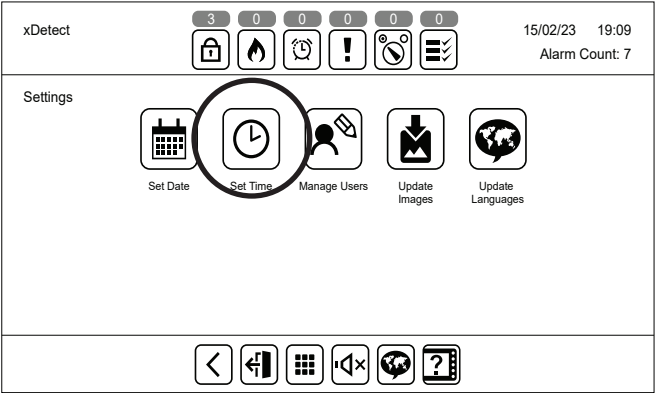


Figure 66. Menu option for setting the panel time

Time can be adjusted by pressing or holding the **arrow buttons**. Time can be confirmed and set by pressing the **tick box**. Daylight savings time can be enabled by ticking the checkbox **'DST Adjust?'** on left side.

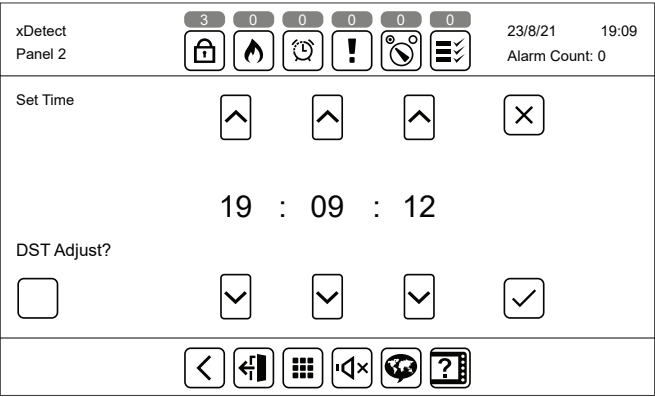


Figure 67. Setting the panel time

9.6 Set Date

- 1. Press the 'Menu Action Button'
- 2. Select 'Settings'.
- 3. Select 'Set Date'.

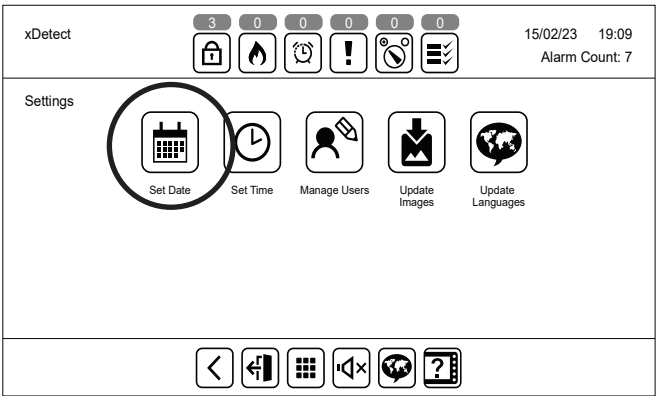


Figure 68. Menu option for setting the panel date

Date can be adjusted by pressing or holding the **arrow buttons**. Date can be confirmed and set by pressing the **tick box**.

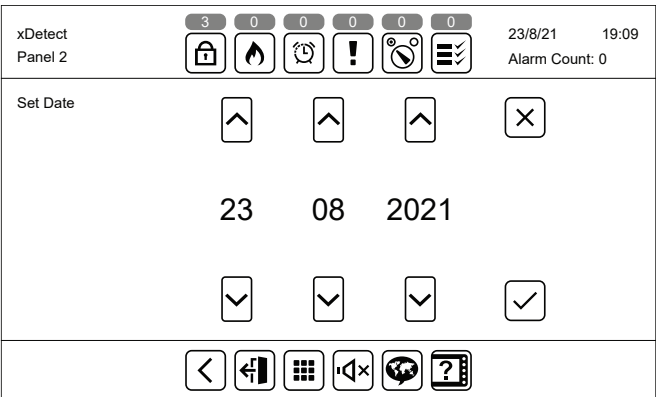


Figure 69. Setting the panel date

10. COMMISSIONING

10.1 Commissioning the system using the HMI

The system should be commissioned by a competent person, who has access to the requirements of the designer (i.e. the system specification). The person should possess, at least, a basic knowledge and understanding of Section 2 and Section 3 of BS 5839-1:2025 standard.

10.1.1 Auto-Learn

- 1. From the menu screen and while logged in as Engineer, select 'Commissioning'.

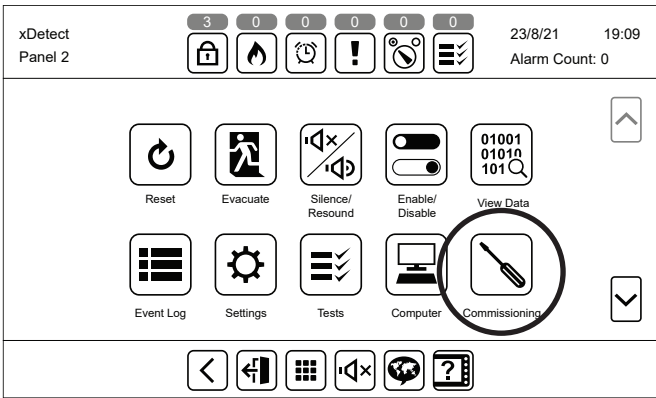


Figure 70. Commissioning the panel

- 2. Select 'Auto-Learn'

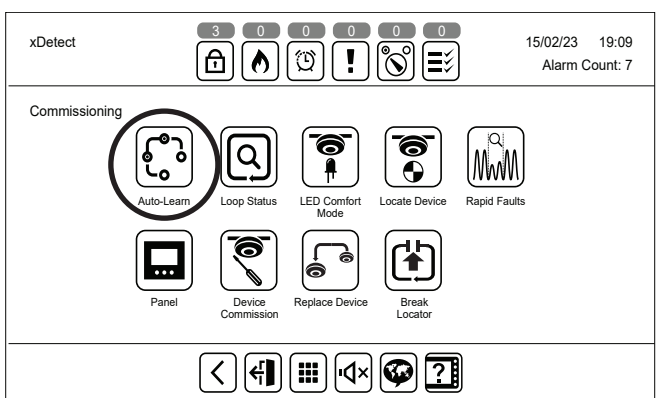
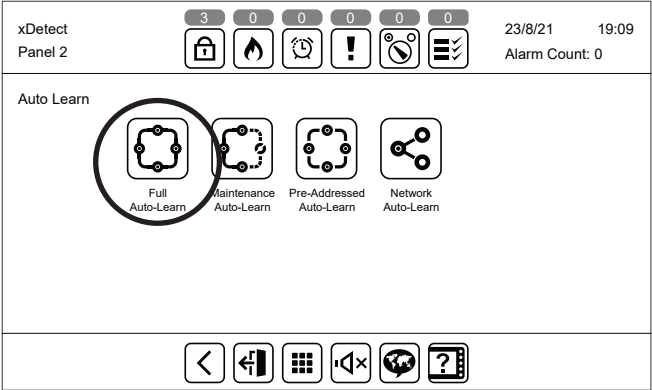


Figure 71. Auto-learning device addresses on loops

The Auto-Learn menu has multiple options that enable the panel to assign and/or learn the addresses of the devices connected to it in different ways.

Auto-Learn option	Description
Full Auto-Learn	Assigns addresses to all devices connected to the selected loops and learns them. All previously-assigned addresses are overwritten.
Maintenance Auto-Learn	Assigns addresses only to new (unaddressed) devices connected to the selected loops and learns them. This operation does not overwrite previously-assigned addresses and can be used, for example, when adding new devices to the system.
Pre-Addressed Auto Learn	Learns the addresses of devices connected to the selected loops that are already addressed. For example, it can be used to learn devices that were manually addressed in the field using a handheld programmer.
Network Auto-Learn	Enables the panel to assign and/or learn the addresses of networked panels in different ways. • Detect Network: Identifies the network topology (ring or radial) and position of the panel in the network. For loop (ring) networks, the total number of panels in the network is returned. For radial networks, the number of panels connected on each side of the current panel is returned. • Full Auto Learn: Assigns addresses to all panels connected to the current one to network them. Each panel's address is displayed in the upper-left corner, and the current panel is designated as panel 1. • Maintenance Auto Learn: Similar to Maintenance Auto-learning for devices, this option lets you learn the addresses of newly connected panels without overwriting existing panel addresses. • Radial Start/End Panels: Lets you set up the start and end panel for a radial networks. • Reset Panel Address: Resets the panel address to remove it from the network.

3. When initially commissioning the panel, you can select ‘Full Auto-Learn’



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Figure 72. Performing a full auto-learn

The list of loops connected to the panel is displayed.

- 4. Use the **check boxes** to select the loops you want to auto-learn (or check **Enable/Disable All**). Tap **'Confirm Full Auto Learn'** to continue.

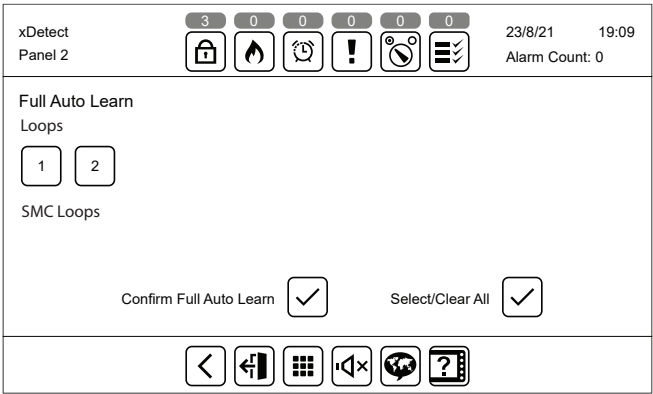


Figure 73. Selecting loops for a full auto-learn

- 5. Confirm that you wish to learn the selected loops.

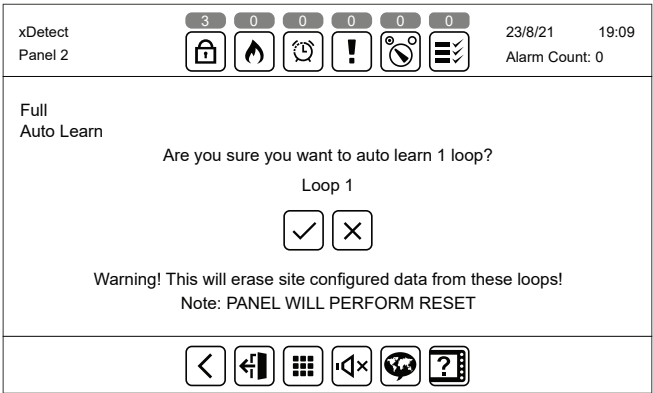


Figure 74. Performing a full auto-learn

- 6. The panel learns the selected loops in sequence. When this operation is complete, the panel resets

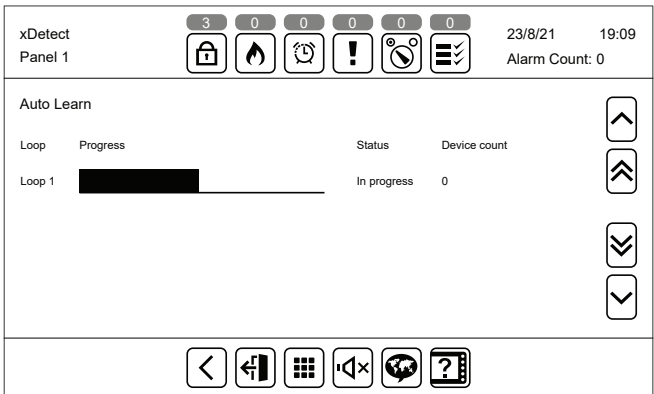


Figure 75. Performing a full auto-learn

 NOTICE

Use Full Auto-Learn only during initial setup and not when adding, removing, inserting or clearing devices on a loop (as doing so will erase all stored information).

10.1.2 Loop Status

During system initialisation, to view the status and initialisation progress of the loops in the system, you can tap the **System Initialising action button** displayed at the bottom-left of the Home Screen.

However, you can also view the same information (status of the loops) at any other time in the Loop Status screen, which is available as an option in the Commissioning menu. This feature requires user access level 3 (Engineer).

- 1. Select '**Commissioning**' from the main menu.

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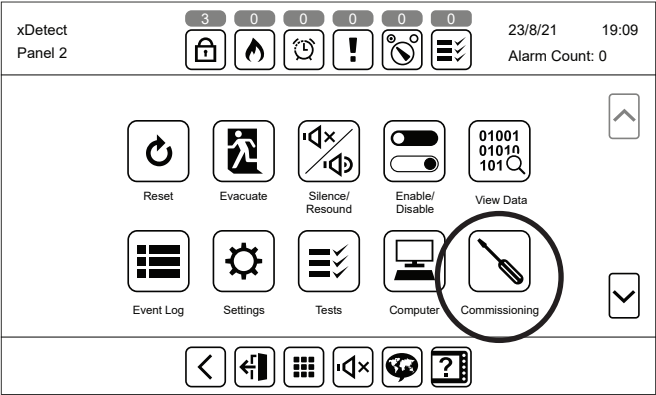


Figure 76. Viewing Commissioning options

2. Select ‘**Loop Status**’ from the commissioning menu.

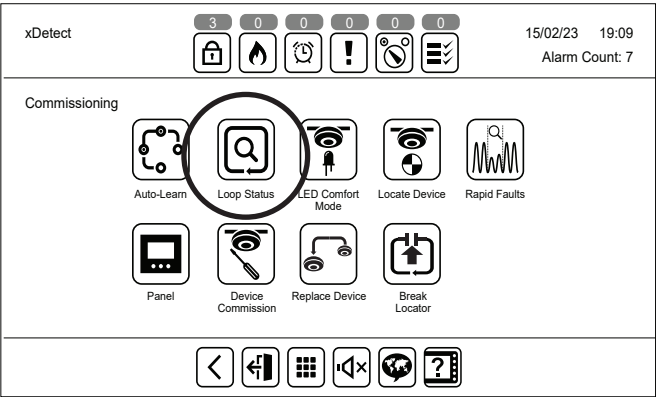


Figure 77. Viewing loop statuses

The Loop Status screen is displayed.

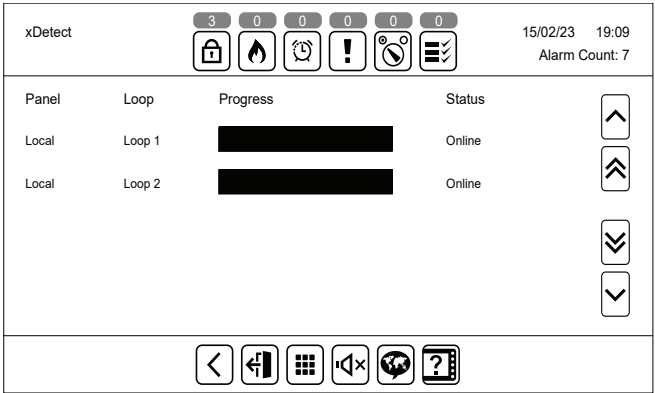


Figure 78. Viewing the loop status

10.1.3 LED Comfort Mode

This feature provides a visual indication that each input device is running by blinking the its respective LED periodically. The mode requires user access level 3 (Engineer).

- 1. Select 'Commissioning' from the main menu.

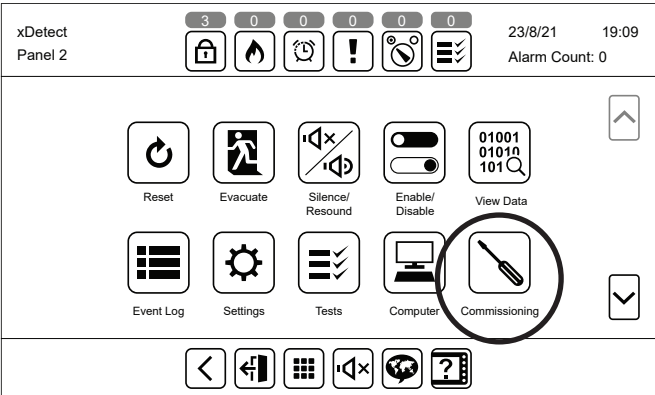


Figure 79. Viewing Commissioning options

- 2. Select 'LED Comfort Mode' from the commissioning menu.

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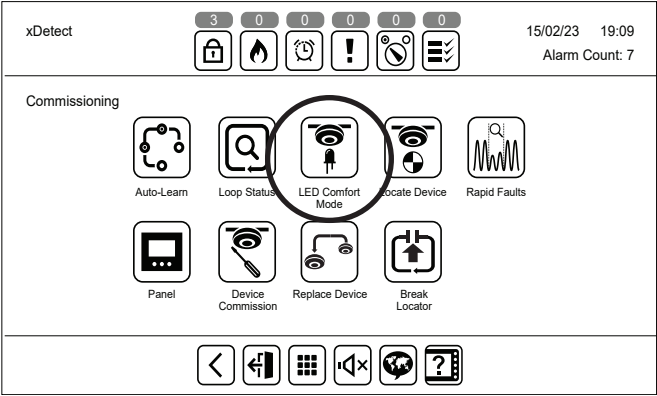


Figure 80. Enabling and disabling LED Comfort Mode

A screen prompt to enable the mode is displayed.

3. Select the **Enable** button and confirm.

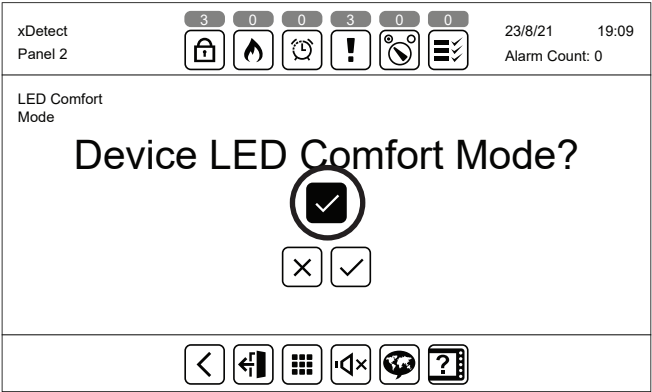


Figure 81. Enabling LED Comfort Mode

LED Comfort Mode may be terminated at any time by returning to this screen, **de-selecting the highlighted enable button** followed by the **confirmation button**.

On termination of comfort mode, device LED blink activity shall cease.

10.1.4 Locate Device

This feature aids in locating the selected device on the loop by activating the device's

LED or output transducer. This mode requires user access level 3 (Engineer).

- 1. Select **'Commissioning'** from the main menu.

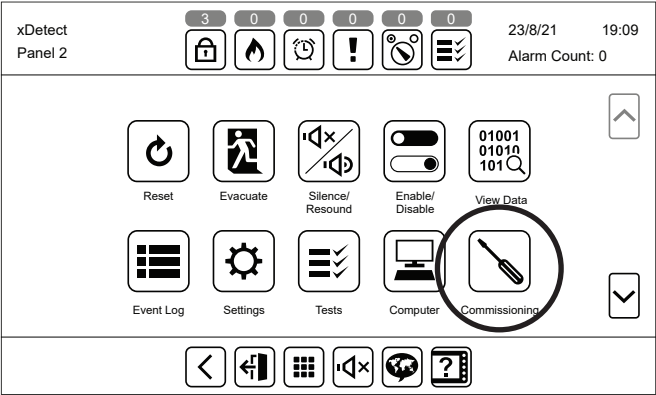


Figure 82. Viewing Commissioning options

- 2. Select **'Locate Device'** from the commissioning menu.

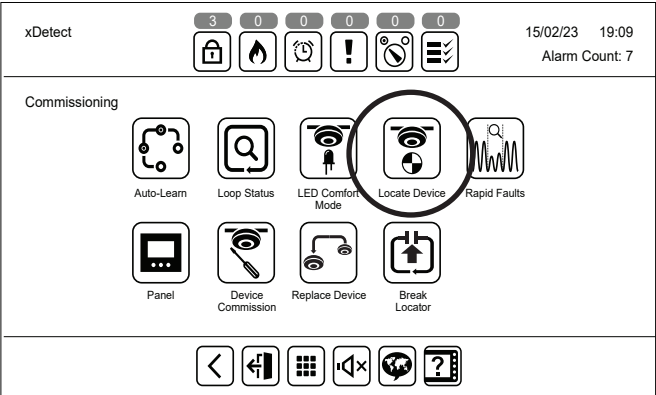


Figure 83. Locating devices

- 3. A screen prompting for loop selection is displayed. Select the required loop.

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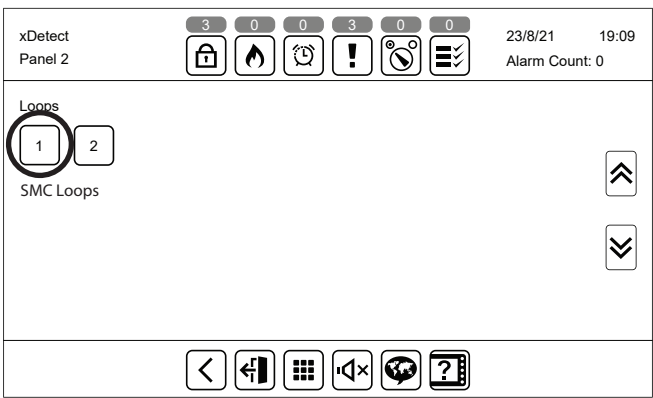


Figure 84. Selecting the loop that contains the device

4. A subsequent screen prompting for device selection is displayed. Selecting a device shall activate the device LED.

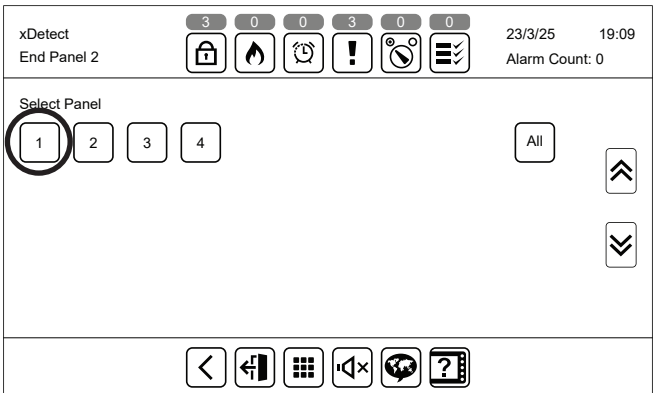


Figure 85. Selecting the device to be located

The LED/output transducer shall remain activated until cancelled.

A located device may be cancelled at any time. Returning to the locate device screen, and **de-selecting the highlighted device button**. The device locate activity shall cease.

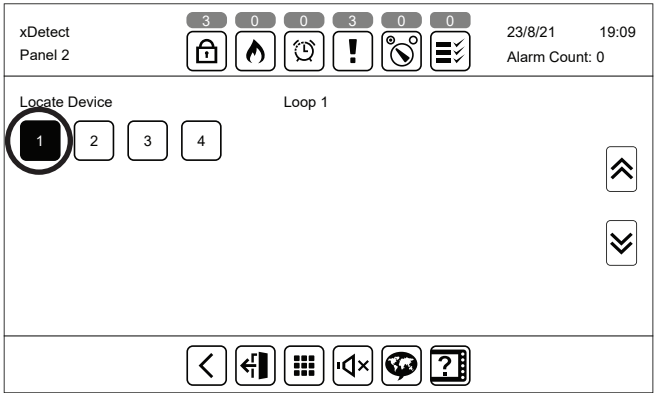


Figure 86. De-selecting the device after it is located on the loop

10.1.5 Rapid Faults

Helps in determining panel and/or loop stability and fault tolerance. The mode requires user access level 3 (Engineer).

- 1. Select 'Commissioning' from the main menu.

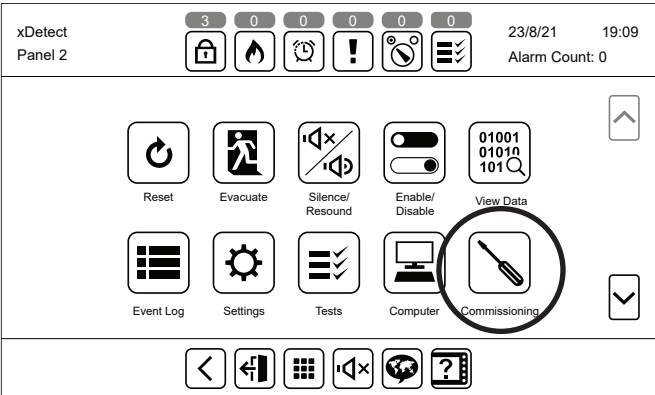


Figure 87. Viewing Commissioning options

- 2. Select 'Rapid Faults' from the commissioning menu.

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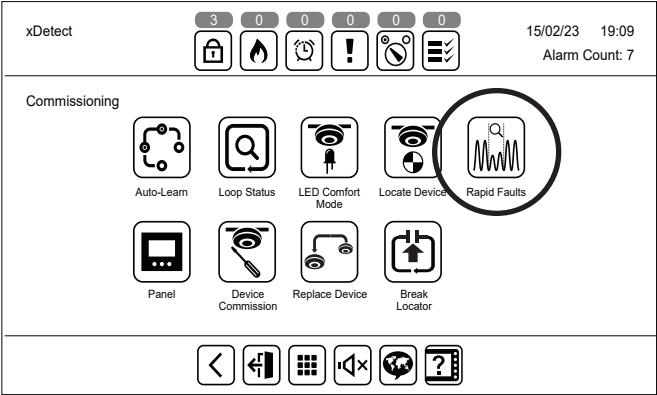


Figure 88. Rapid fault detection

3. A screen prompt to enable rapid faults mode is displayed. Select the **confirm** button to confirm.

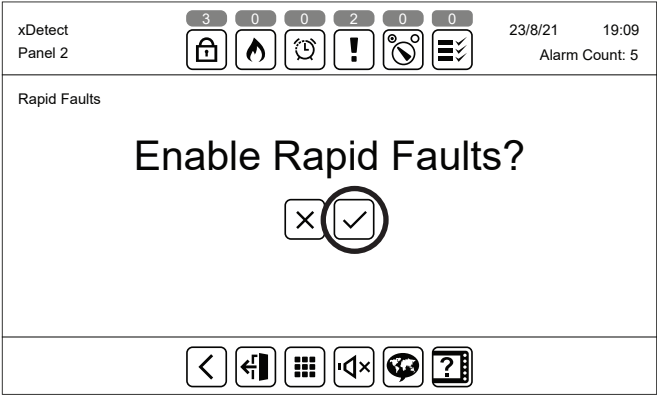


Figure 89. Enabling Rapid Faults

The Rapid Fault mode starts.

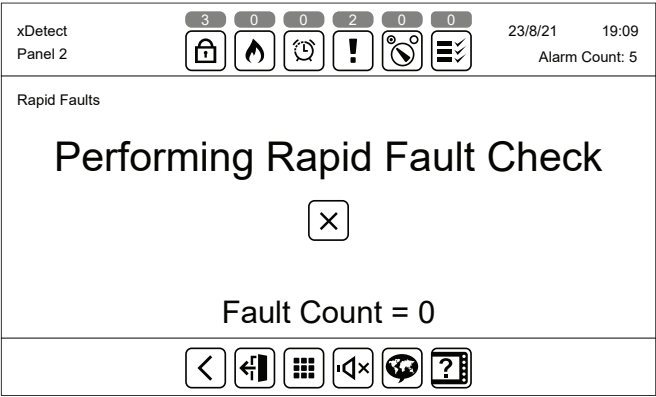


Figure 90. Rapid fault detection results

Faults are reported utilising a faster algorithm in order to identify problem installations. The displayed fault count increments for each fault detected.

Rapid fault mode may be terminated at any time. To end the rapid faults mode and resume normal fault monitoring, select the **cancel button** on this screen. Then, in the Exit Rapid Faults? screen, tap the confirm button.

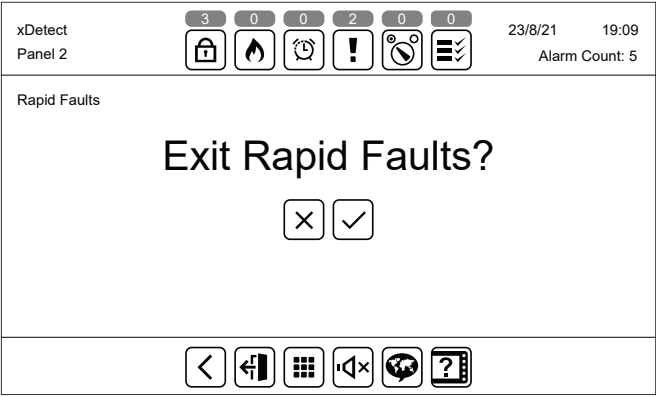


Figure 91. Exiting Rapid Faults mode

10.1.6 Device Commission

This feature is used to initiate the Large Interface Commissioning mode for the panel so that you can upload programming into an addressable mimic relay board (CIOP4 or CIOP8) connected to any loop. After this mode is enabled, it remains live for 5

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minutes before the panel resets. The mode requires user access level 3 (Engineer).

- 1. Select **'Commissioning'** from the main menu.

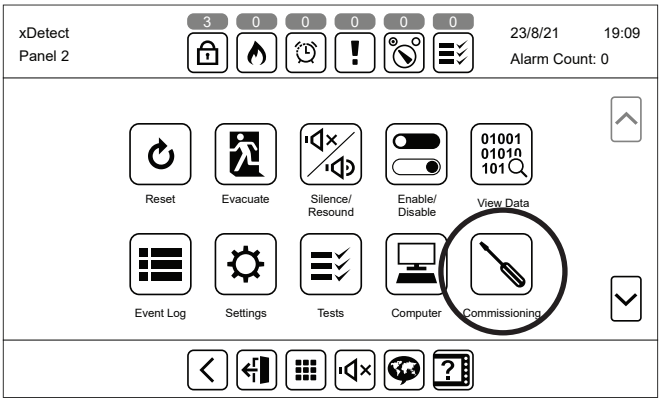


Figure 92. Viewing Commissioning options

Note: The panel does not display any fire signals when in this mode.

- 2. Select **'Device Commission'** from the commissioning menu.

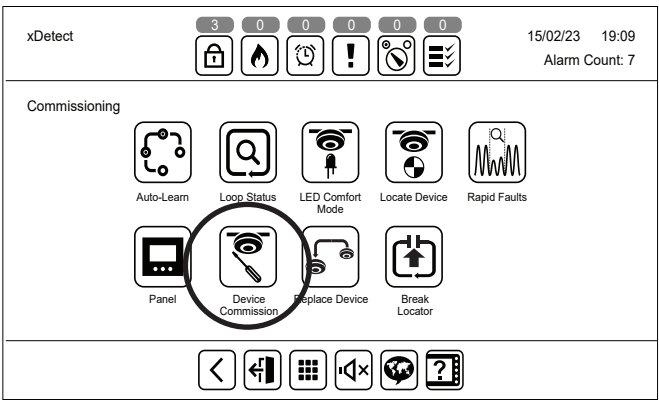


Figure 93. Initiating Large Interface Commissioning mode

- 3. Tap the **confirm button** to confirm.

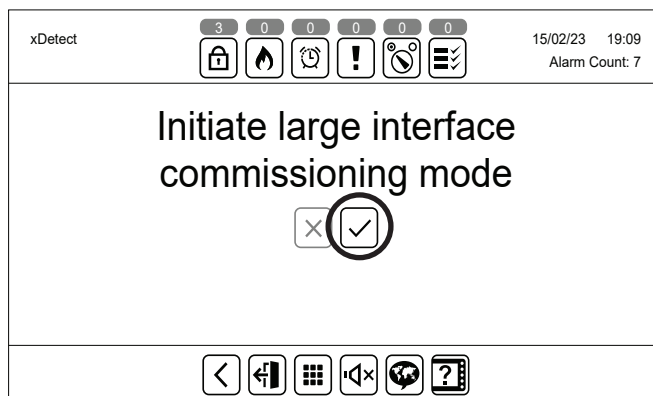


Figure 94. Initiating Large Interface Commissioning mode

We recommend starting the device programming 30 seconds after the mode is enabled.

Note:

- This feature only works if the relay board has a MOD applied; the fuse on its 24V jumper should have been replaced with a resistor.
- When working with CIOP8 devices, you can use this feature only on one device at a time (if programming multiple devices on a loop).

When the programming is complete, tap the **cancel (X) button** to suspend the mode.

10.1.7 Replace Device

This feature lets you replace a device, such as a faulty one, on any loop on the panel with another identical device. This feature requires user access level 3 (Engineer).

1. Select '**Commissioning**' from the main menu.

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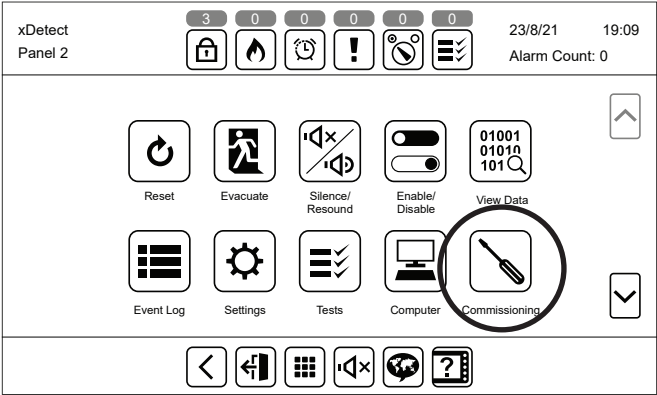


Figure 95. Viewing Commissioning options

2. Select **'Replace Device'** from the commissioning menu.

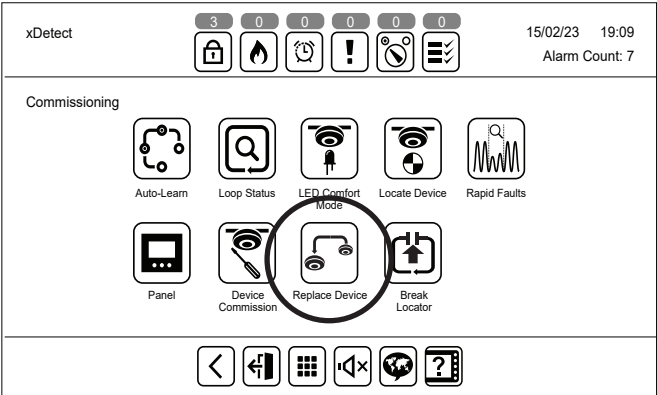


Figure 96. Replacing a device on a loop

3. The loops available on the panel are displayed. Select the loop that contains the device you want to replace.

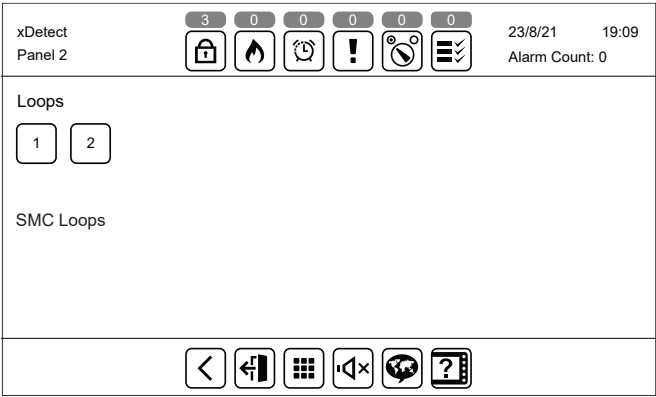


Figure 97. Selecting the loop that contains the device to be replaced

4. The list of addresses that contain devices in the selected loop are displayed. Select the address of the device you want to replace

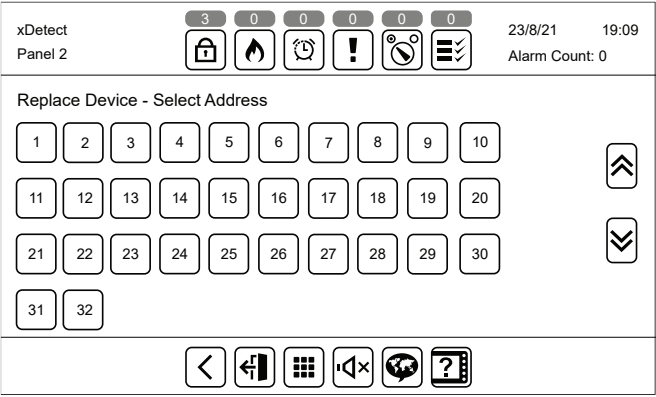


Figure 98. Selecting the device to replace

5. In the Confirm delete device screen, tap the **confirm button**.

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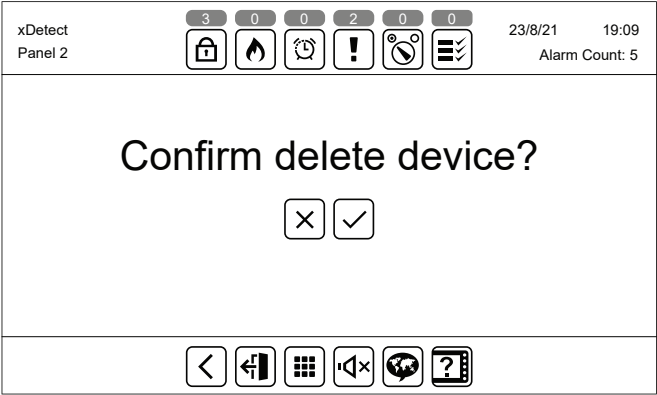


Figure 99. Deleting the existing device

The device is cleared from the address.

- 6. Disconnect the cleared device and replace it with the new device.
- 7. In the Confirm add new device? screen, tap the **confirm** button.

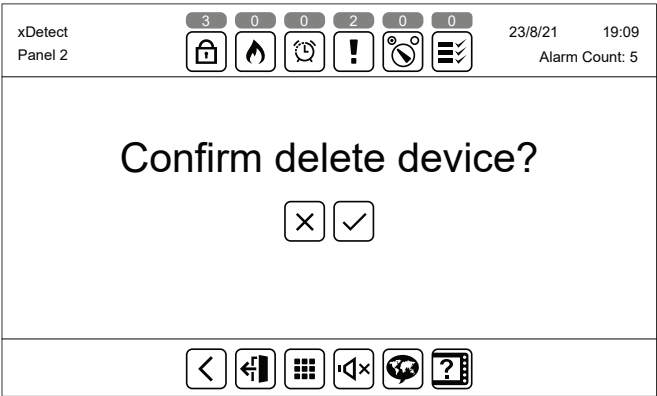


Figure 100. Replacing the device in the loop

The new device is added to the address in place of the removed one.

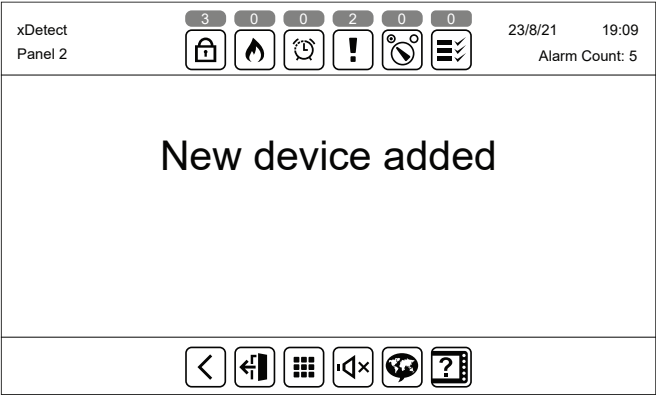


Figure 101. Confirmation of device replacement

10.1.8 Break Locator

This feature lets you detect open circuits (breaks) in your system and also identifies their address in the loop for convenient further investigation. This feature requires user level 3 (Engineer) access.

- 1. Select 'Commissioning' from the main menu.

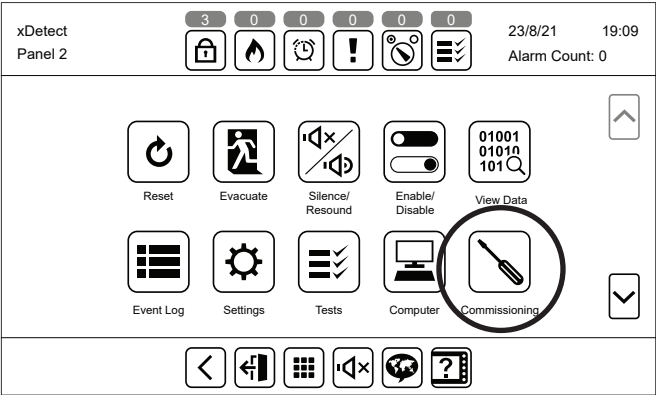


Figure 102. Viewing Commissioning options

- 2. Select 'Break Locator' from the commissioning menu.

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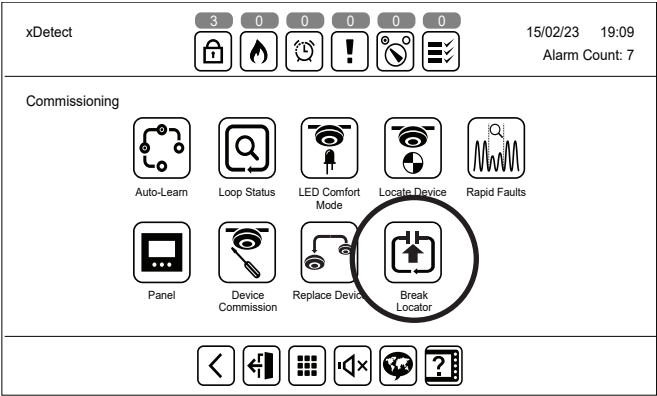


Figure 103. Detecting and locating breaks

3. Tap the **confirm** button to begin the break location search.



Figure 104. Starting the break location search

The break detection and address identification processes begin running.

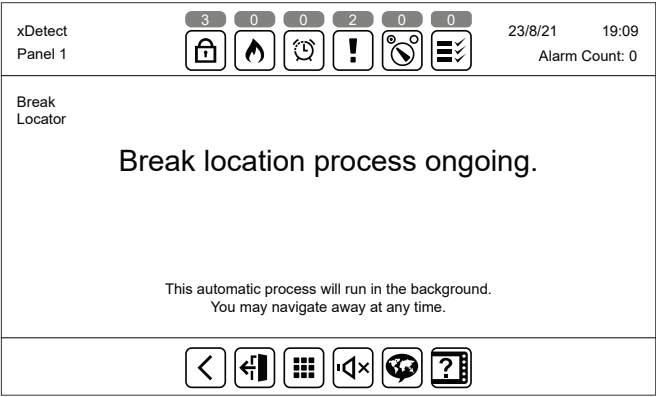


Figure 105. Ongoing break detection

If an open circuit fault is detected, the Fault Overview and respective Fault Details screens indicate the exact address on the loop where the fault has occurred, enabling quicker resolution.

For more information about fault analysis, see “17. OVERVIEW OF THE FAULTS SCREEN” on page 194.

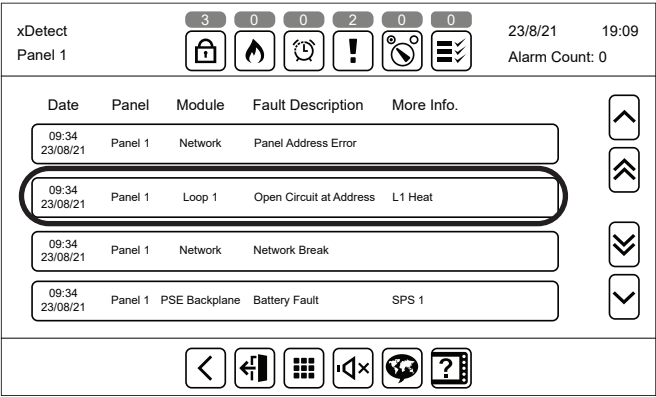


Figure 106. Break location indicated in the Fault Overview screen

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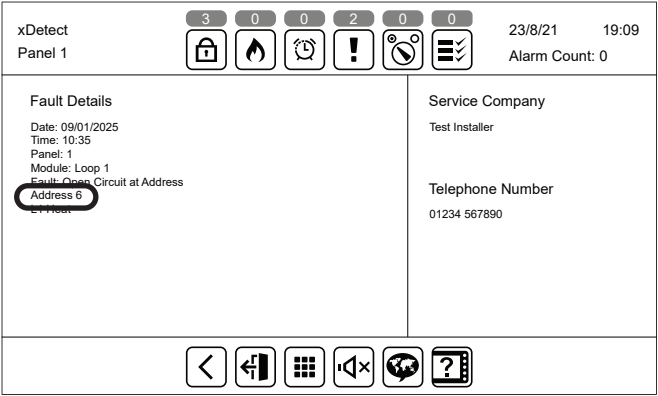


Figure 107. Break location indicated in the Fault Overview screen

10.1.9 Network filters

By default, command messages, such as Reset, Evacuate, Silence, Fire, Fault, Pre-alarm, and more from each panel are shared across the network and received by all other connected panels. However, you can set up filters to configure which messages your panel should receive.

This feature is available at Commissioning > Panel > Network Filters and requires user level 3 (Engineer) access.

1. Select '**Commissioning**' from the main menu.

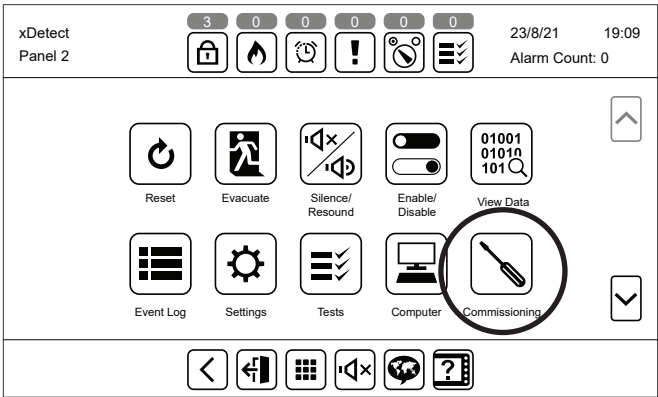


Figure 108. Viewing Commissioning options

2. Select **'Panel'** from the Commissioning menu.

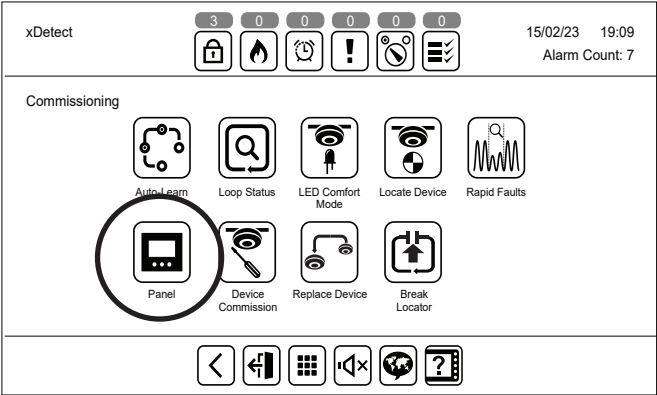


Figure 109. Viewing Panel commissioning options

3. Select **'Network Filters'**.

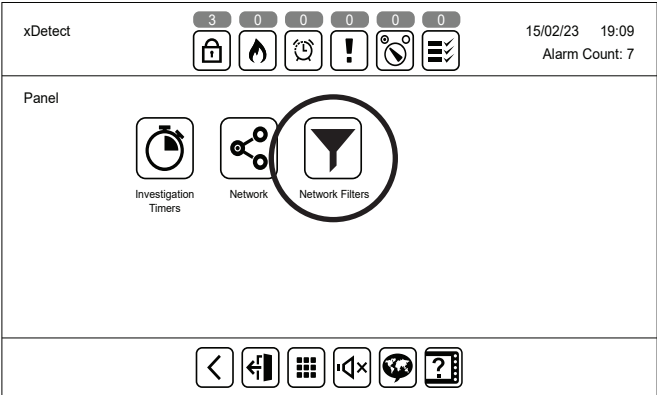


Figure 110. Viewing and configuring network filters

Initially, as no filters are available, the list is empty.

4. To add a filter, tap the **+** (**add**) **button** on the right of the screen.

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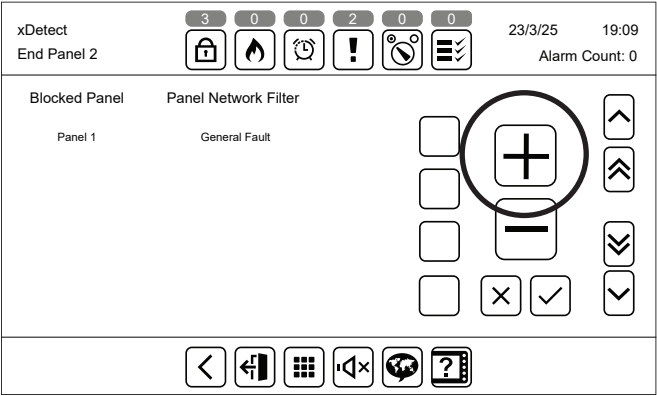


Figure 111. Adding a network filter

5. Select the panel from which you want to block incoming messages. To block messages from all panels, select **All**.

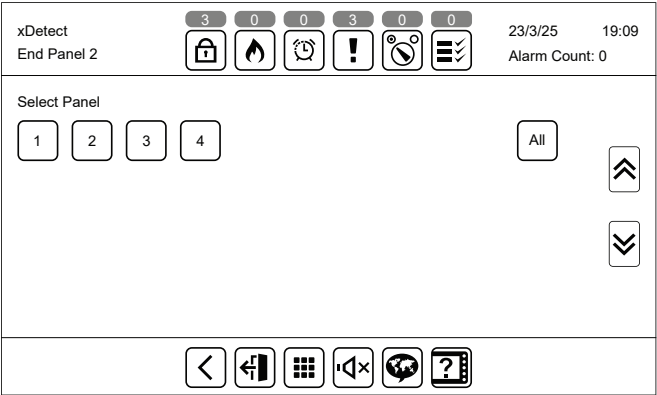


Figure 112. Configuring network filters

6. Select the type of command message you want to block. You can scroll to view more types.

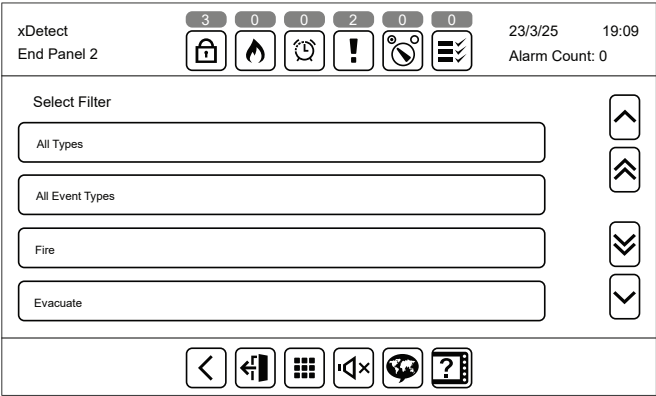


Figure 113. Configuring network filters

The filter is added to the list. In a similar manner, you can add multiple filters to block messages from different panels of different kinds, based on your requirements.

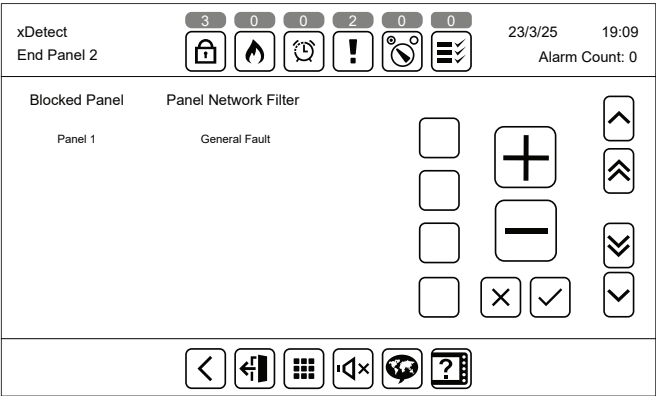


Figure 114. Example network filter

- 7. To remove a filter from the list, select the check box next to it and tap the **(remove)** button on the right of the screen.

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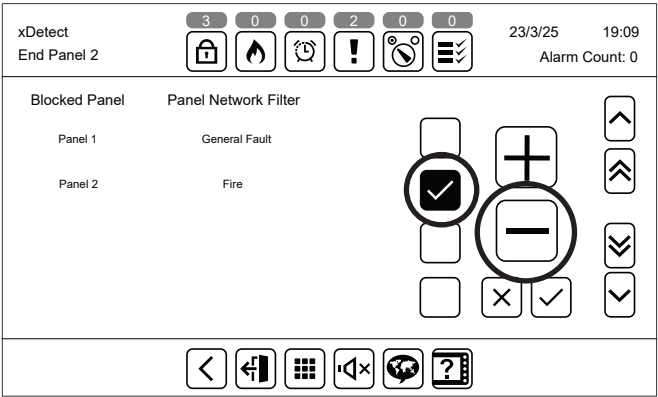


Figure 115. Removing a network filter

8. After adding all the required filters, tap the **confirm** button in the bottom-right corner of the screen.

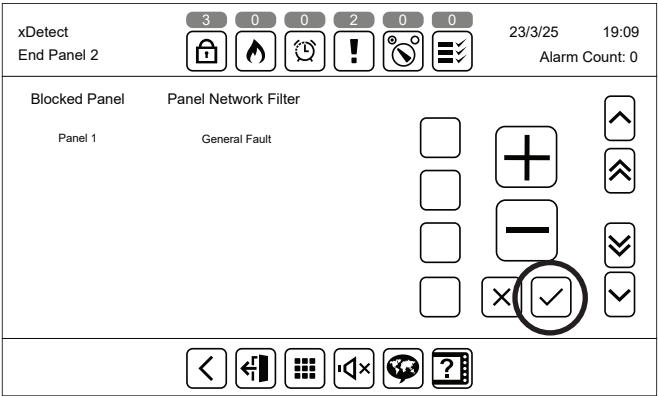


Figure 116. Saving network filters

Note: This is a critical step that you must perform to save your changes. If you do not do this, your changes are discarded. You can also manually discard unsaved changes by tapping the **cancel** button.

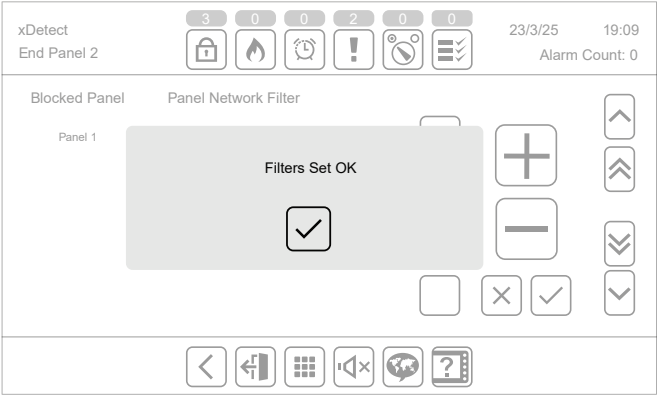


Figure 117. Confirmation that network filters are saved

10.1.10 Advanced panel settings

As an Engineer user (at level 4), you can configure some advanced panel settings. These settings are available at Commissioning > Panel > Settings

- 1. Select 'Commissioning' from the main menu.

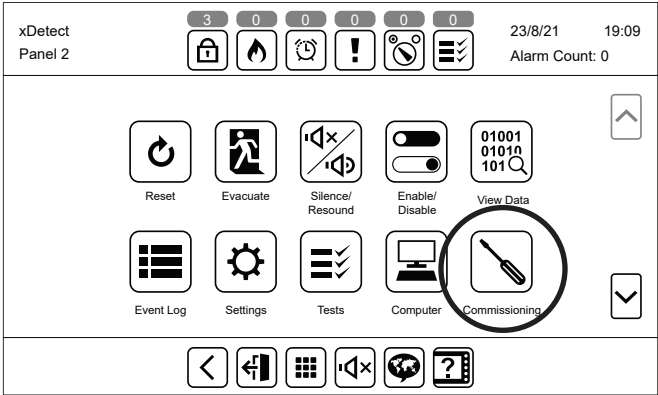


Figure 118. Viewing Commissioning options

- 2. Select 'Panel' from the commissioning menu.

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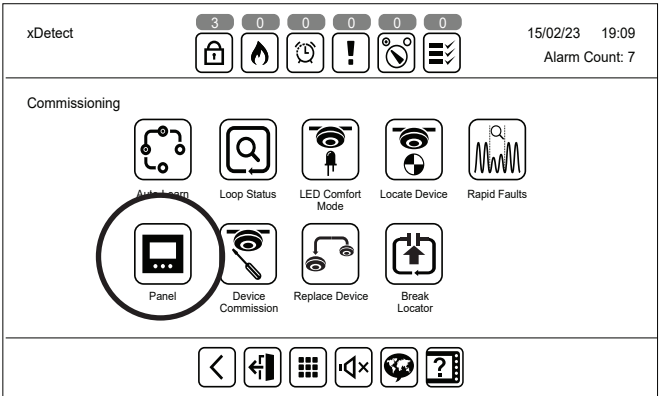


Figure 119. Viewing Panel commissioning options

3. Select 'Settings'.

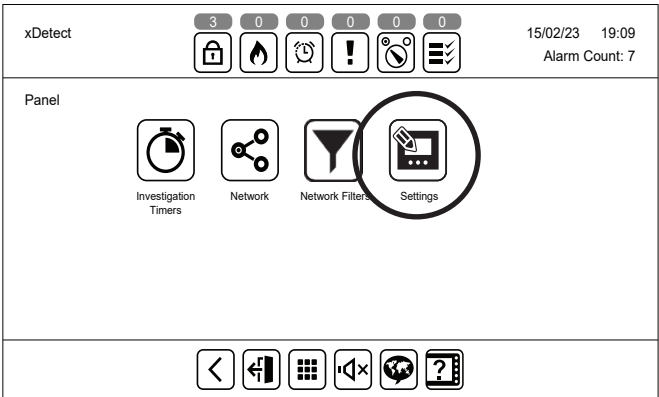


Figure 120. Viewing and configuring panel settings

Note: This option is available only at level 4.
The Settings screen is displayed.

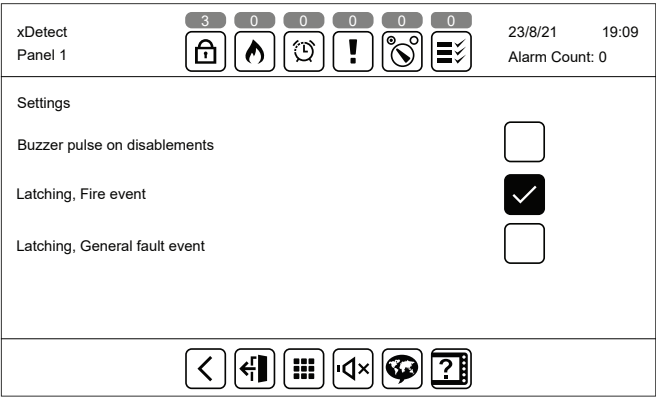


Figure 121. Configuring panel settings

4. You can select the respective checkbox to enable any of the following settings:
- **Buzzer pulse on disablements:** Sounds a buzzer if the system has disablements.
 - **Latching, Fire event:** Keeps the panel is Fire state until it is reset, even if the conditions that triggered the fire have subsided.
 - **Latching, General fault event:** Keeps the Fault active in the panel until it is reset, even if the conditions that triggered the fault are fixed.

10.2 User Management - Definitions of Access levels

10.2.1 Level based system

There are 10 users on the system. The functionality built into the system has been grouped into the following sets of levels. These levels can be assigned to Users 1-9. The final user is Engineer user and has access to all functionality. The levels are governed by BS EN 54-2 and are detailed below.

Access Level 1

A level 1 user is only able to view high level data and does not have access to any system functionality which modifies site data as they do not have a user account. This is effectively anyone who is using the panel while not logged in.

A level 1 user can view the following data on the system via the top bar buttons:

1. View fire data
2. View pre-alarm data
3. View fault data

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4. View disablement data
5. View test data

Access Level 2

A level 2 user has access to all the functionality of level 1, as well as:

1. Reset System
2. Silence/Sound Alarms
3. Enable/Disable (limited)
4. View Data
5. Evacuate
6. Tests -> Panel Indication Test, Weekly Test
7. Event Logs
8. Computer
9. System Settings
10. Manage Users

Access Level 3

A level 3 user has access to all the functionality of 2, as well as:

1. Tests -> Walk Test, Test Zone, PSU Monitor, Loop Analogue Values, Loop Oscilloscope
2. Commissioning
3. Enable/Disable (all)

Engineer users are also at level 3. However, they also have the additional permissions to access level 4 and can access additional functionality at that level.

Access Level 4 (Engineer)

Level 4 functionality can be accessed by the following procedure:

1. Log in to the Engineer user.
2. Open the front door. (This triggers the tamper switch on PSE Backplane but a fault will not be raised).

A level 4 user has access to all the functionality of 3, as well as:

1. Commissioning -> Reset Alarm Counter
2. Commissioning -> CAN Bus Addressing (assign logical CAN addresses to cards on CAN bus)
3. Commissioning -> Panel -> Settings
4. Settings -> Factory Reset

5. Computer -> Firmware Download

10.2.2 Managing Users

The Manage Users function allows the user to manage the following settings for users:

- Change Username
- Change PIN
- Change Access Level
- Enabled/Disabled
- View Last Login time and date

Manage Users is part of System Settings.

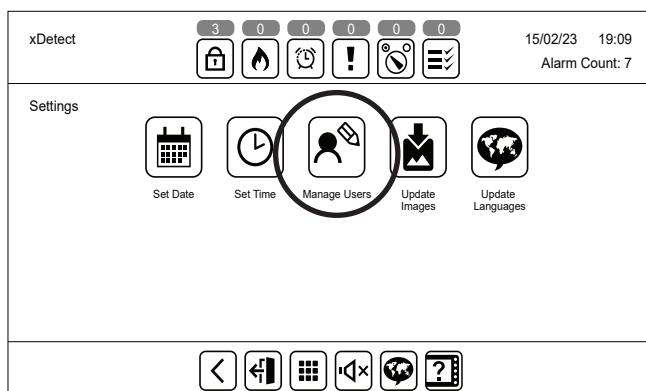


Figure 122. Managing users

Initially, at the point of system installation, the only user Enabled will be Engineer. The Engineer user can then set up and enable users according to the customer requirements.

The user must first select which user they wish to manage:

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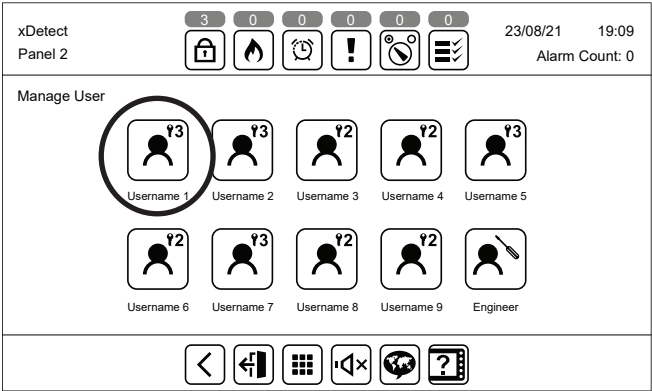


Figure 123. Selecting the user to manage

There are checks which are present on this page, as follows:

- Only the Engineer can manage the ‘Engineer’ user.
- In order to manage a user, you must enter the pin for that user.

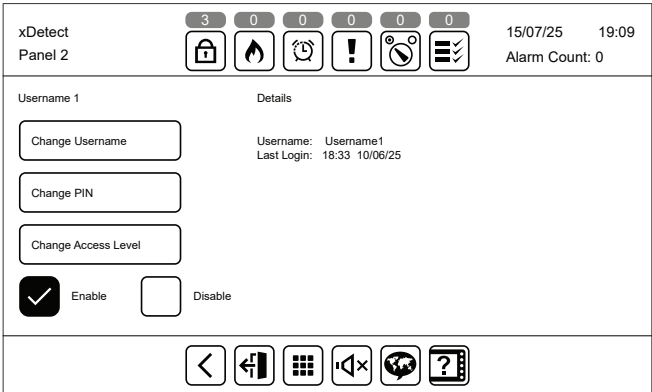


Figure 124. Manaing users

Changing username

On selecting **Change Username** in the Manage Users first screen, the user can then change the username.

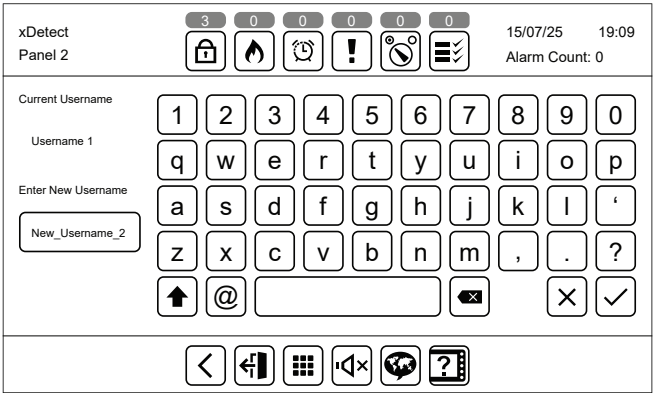


Figure 125. Changing a user’s username

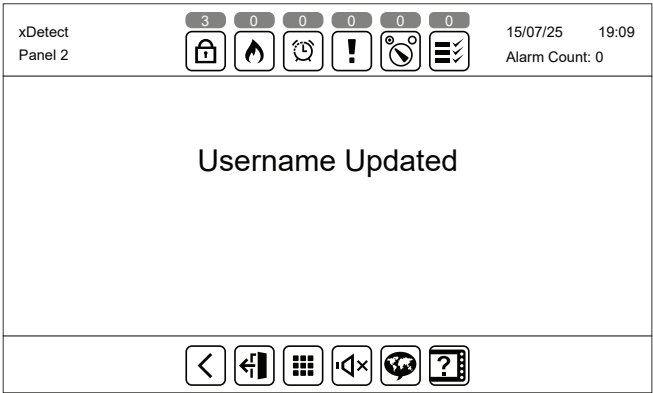


Figure 126. Confirmation of updated username

The username is then updated and you return to the first Manage Users screen.

Changing PIN

On selecting **Change PIN** in the Manage Users first screen, the user can then change the PIN.

The user will first have to enter the current pin of the user for security.

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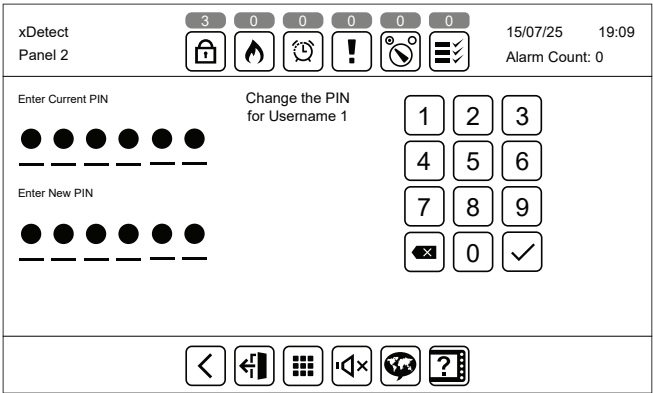


Figure 127. Changing a user’s password

The last 5 PIN’s for all users is stored to prohibit historical PIN re-use, meaning the PIN cannot be changed to any of the previous five PINs.

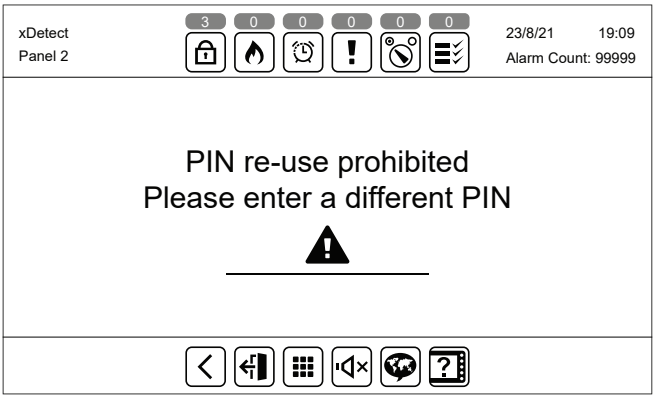


Figure 128. Warning displayed if a PIN is reused

If the PIN is acceptable, the PIN is updated.

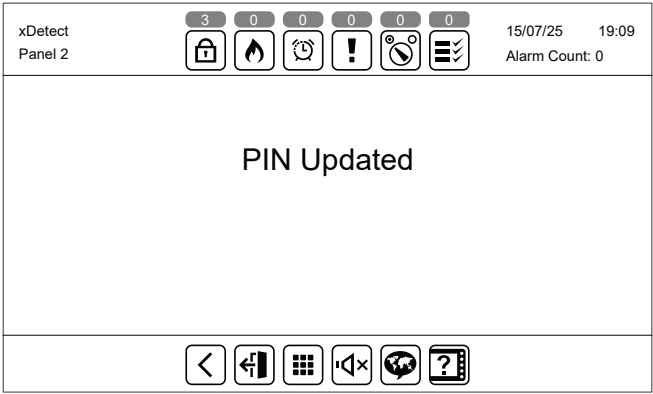


Figure 129. Confirmation of updated PIN

The PIN is then updated and User is returned to the first Manage Users screen.

Change Access Level

This function can be used to change the access level of a user to level 2 or level 3. Only level 3 or Engineer users can change the access level of other users. Level 2 users cannot change their own access level.

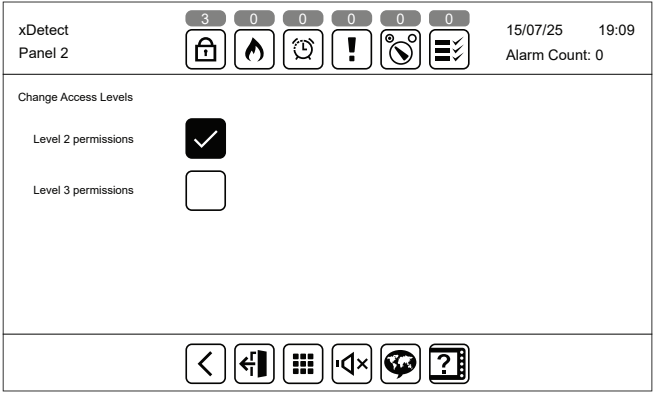


Figure 130. Changing a user's access level

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Enable/Disable User

A user can be enabled or disabled by selecting the appropriate tick box on the Manage Users main screen.

If a login is attempted for a disabled user, a warning screen is shown.

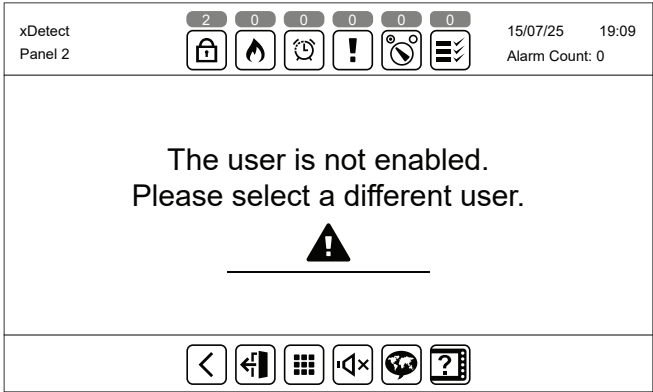


Figure 131. Message displayed during a disabled user’s login attempt

Logged Events

Each failed login attempt will be logged as a fault in the event log. This includes time, date, and user data.

10.3 Commissioning the system using xDetectWorks Software

10.3.1 xDetectWorks Installation

To install and run xDetectWorks, you must have Microsoft .Net Framework 4.6 or above installed. The installer will check and attempt to install this automatically.

To install the software, please follow these short steps: -

1. Locate the software installation file and launch it, the exact name will vary depending on which edition and version you have.
2. The software will now install, please follow any on screen instructions.

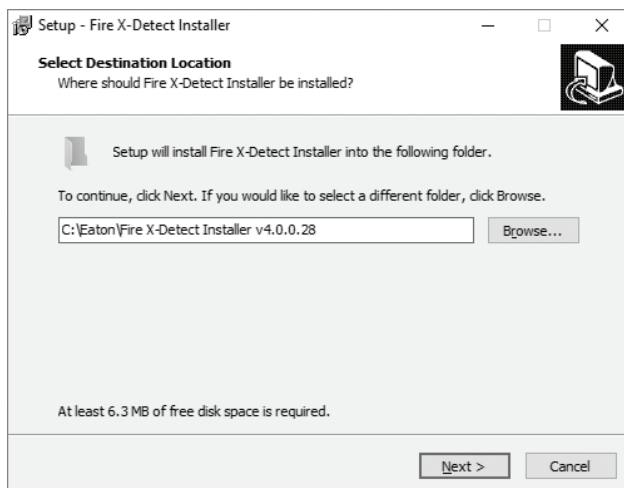


Figure 132. Installing xDetectWorks

The installation of any required components (see above) is automatic and may require an internet connection if the installers cannot be found in the current folder.

Note: While the software is backwards compatible with .Net 4.0. , it is recommended for stability reasons that it is only run on .Net 4.7.2 and higher.

10.3.2 Getting Started

Uses for xDetectWorks

This application provides the primary mechanism for programming and configuring the xDetect system. The application is intended for the following uses: -

- Communicating with an xDetect panel system via USB.
- Communicating with loop devices, including the Fan Controller and Repeaters.
- Modifying and viewing the system programming.
- Capturing, archiving and restoring the current system programming.
- Updating firmware within the xDetect system.
- Viewing and archiving xDetect logs.
- Producing electrical loading estimates.

Starting the Application

The software can either be launched from the desktop, via the xDetectWorks short-cut or by opening the Start Menu > Programs > xDetectWorks folder and selecting xDetectWorks.

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Software License Key

A license is required to use the xDetectWorks software. Please contact Eaton support and obtain a new license key.

The purpose of licensing the software is to ensure that it is used by authorised trained users and that it is updated at regular intervals.

10.3.3 General Operation

Navigating

The xDetectWorks interface is designed to allow you to navigate the site configuration and the various tools with ease. There are four distinct areas: -

- **Tree View** - Located on the left side of the interface, this organizes sites, panels, loops, zones/groups, matrices and other areas into a logical structure. If you want to view a certain portion of a site, simply click on the item in the Tree view. You can also right mouse click on tree items to view the available commands for that item.
- **Working Area** - Occupying the largest portion of the interface, this area is always populated with the relevant options and information of the currently selected tree item. Some elements will provide multi-tabbed configuration settings, where some will provide scrollable content.
- **Properties Area** - When ever you select something within the tree, or a sub item in the Working area, the appropriate properties will be displayed. This allows you to manipulate and change the configuration of that particular item.
- **Button Bar** - Along the top of the interface are a variety of buttons, the content of which depends on what is currently selected in the Tree view. These buttons usually aid you in opening and saving files, adding and deleting items, and performing common tasks such as checking for errors, uploading and downloading.

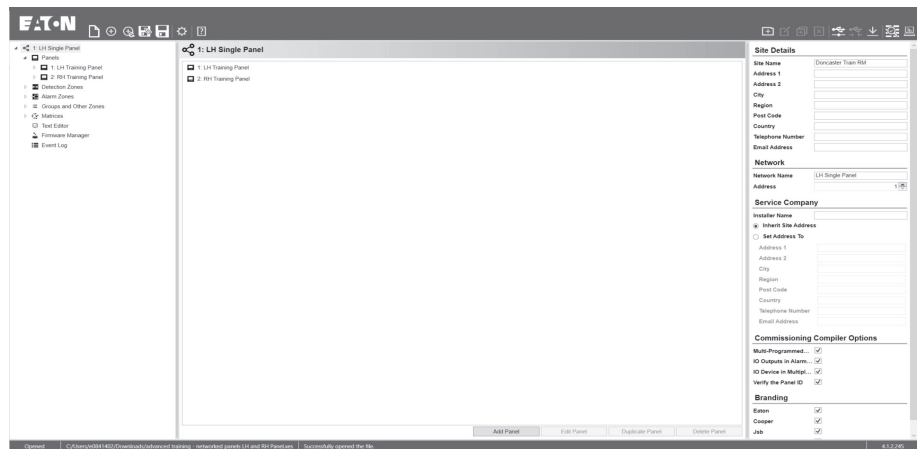


Figure 133. xDetectWorks user interface

10.3.4 Opening and Saving Files

Files opened or created with xDetectWorks are operated in the same manner as an office document, such as a word processor or a spreadsheet. Essentially files are loaded into the software, where you make changes, and then you manually save them either to a new file or overwrite the original. If you don't perform a save after making changes, the original file will remain unchanged and your changes will be discarded.

It is important that you regularly save your work when editing sites, as a computer crash, power failure or software bug could cause you to lose any changes you have made.

You can save changes to your current site at any time by clicking the save icon on the button bar.

10.4 Configuring a Site

10.4.1 Sites and networks

A **site** typically represents a complete site, which is composed of all the various networks and panels. Sites can range from a single panel system that has no network, to a network site that contains hundreds of panels.

A **network** represent the connection of all the linked panels together. Within the Tree view, selecting any Network will allow you to edit its properties and view the listed panels.

You can configure the following in the Properties area:

6. Provide a meaningful name for the Site.
3. Configure basic site information such as the address and telephone number.
4. Provide a meaningful name for the network. This is the name of the network and is used purely with xDetectWorks and the PC monitoring and Graphics software.
5. Configure other properties such as the details of the service company, some commissioning compiler options, and the branding of devices used in the network.

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Site Details

Site Name:

Address 1:

Address 2:

City:

Region:

Post Code:

County:

Telephone Number:

Email Address:

Network

Network Name:

Address:

Service Company

Installer Name:

☒ Insert Site Address

☐ Set Address To

Address 1:

Address 2:

City:

Region:

Post Code:

County:

Telephone Number:

Email Address:

Commissioning Compiler Options

Main Programming... ☒

IO Outputs in Alarm... ☒

IO Device in Multiple... ☒

Verify the Panel ID ☒

Branding

Eaton ☒

Cooper ☒

JVA ☒

Figure 134. Configuring site and network properties

10.5 Retrieving Panel Configuration

The xDetect fire alarm system allows xDetectWorks to download the configuration from any panel on the network. Once the configuration is retrieved, the user can alter the configuration as they see fit. When ready, the user can then return the configuration back into the required panels.

10.5.1 Retrieving a Panel's Configuration

You can retrieve a single panel's configuration by following these steps: -

1. Open the site file or create a new site as described above.
2. Ensure the panel has been auto-learned or previously commissioned. Refer to panel documentation if required. This is essential as any panel added to xDetectWorks needs to contain all the correct modules and devices - these can only come from the panel.
3. Connect the USB port on the computer to the Micro USB port on the panel. (See "Figure 29. Gateway Card wiring connections" on page 54.)
4. On the panel, do the following:
 1. Log in to the panel as a level 3 Engineer user.
 2. In the main menu, tap **Computer**.

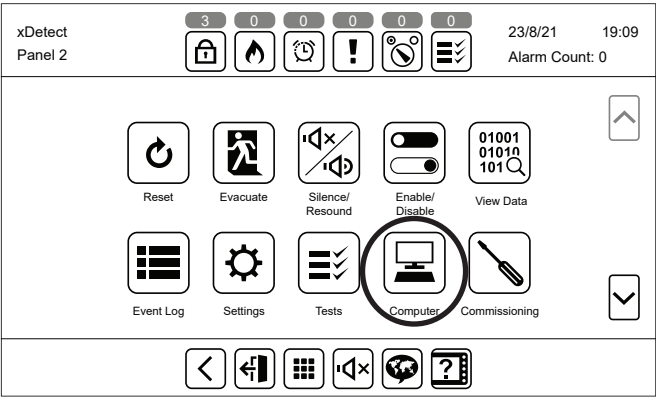


Figure 135. Viewing Computer functions

3. Tap **Download to PC.**

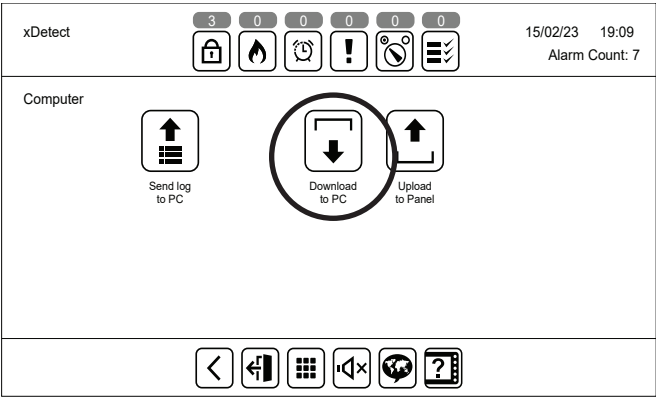


Figure 136. Sending data to software on a PC

4. A PIN is displayed

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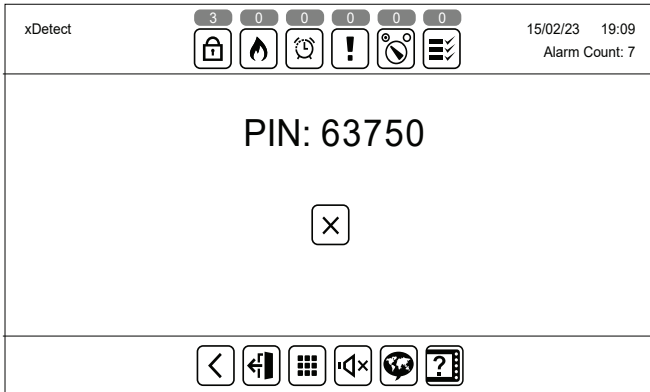


Figure 137. PIN for connection with PC software

5. Within xDetectWorks, select the network element in the Tree view, then click on the **Download to PC** on the button bar.
If the panel was previously downloaded, you can right-click on the panel element in the Tree view directly and then click **Download to PC**.
6. You will be prompted for the pin-code. Enter the PIN displayed on the panel.
7. If you have more than one com port available, you will be prompted to select the connection.
If you only have one com port available, then software automatically assumes that is the correct connection.
You can also select **Auto-detect USB connection** to automatically detect the port.
8. When the transfer begins, it will open a transfer window that tracks the progress of the files being received over USB. Please note it may take some time to receive all the data.



Figure 138. Receiving configuration data from the panel

10.5.2 Retrieving Configuration - Important Notes

There are a few important aspects to the configuration retrieval process that should be noted: -

- Every panel that was been previously configured with xDetectWorks is given a unique identifier. This ensures that when you perform a retrieval, the correct panel in xDetectWorks is updated, regardless of any panel address changes. This means it is possible that if you have a specific panel selected in the Tree view when doing a retrieval, a different panel in the Tree view is overwritten.
- A copy of the matrix and group data is held by all panels, as this is considered a network-wide configuration. When performing a retrieval, you might be prompted to update the site file's copy of this shared data. You must be aware of which copy of the data is the most recent; the site file or the panel. Ideally, the primary copy of the site data is stored in a single site file and therefore the network-wide data isn't usually downloaded from the panel. Downloading data from the panel should only be considered in the event of loss of the site file. Note that selecting **No** to downloading the shared network data will still permit panel-specific data to be downloaded, including the panel properties and full module configuration.

10.6 Updating Panel Configuration

10.6.1 Updating a Single Panel's Configuration

You can update a single panel's configuration by following these steps: -

1. Connect the USB port on the computer to the Micro USB port on the panel. (See "Figure 29. Gateway Card wiring connections" on page 54.)
2. On the panel, do the following:

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- 1. Log in to the panel as a level 3 Engineer user.
- 2. In the main menu, tap **Computer**.

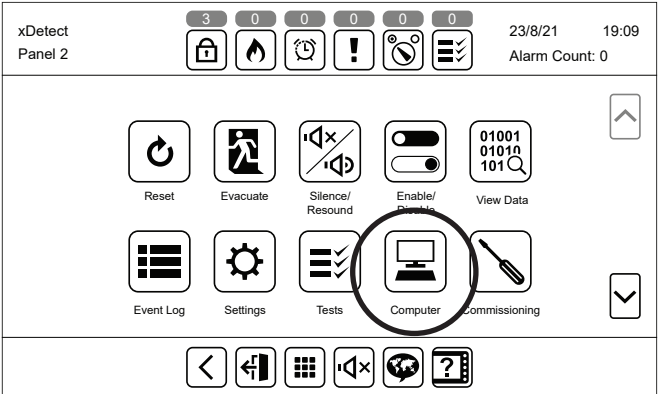


Figure 139. Viewing Computer functions

- 3. Tap **Upload to Panel**.

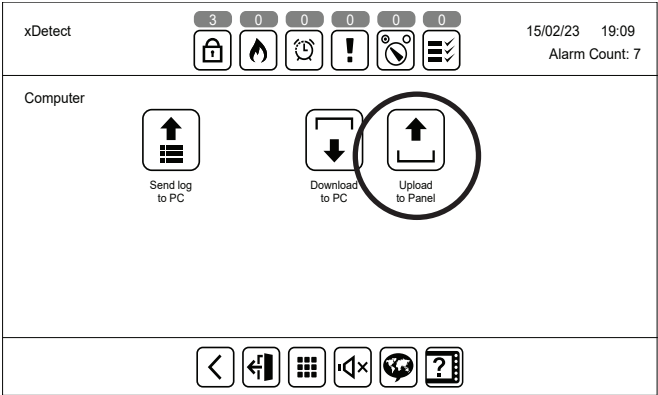


Figure 140. Sending configuration to the panel from the PC

- 4. A PIN is displayed

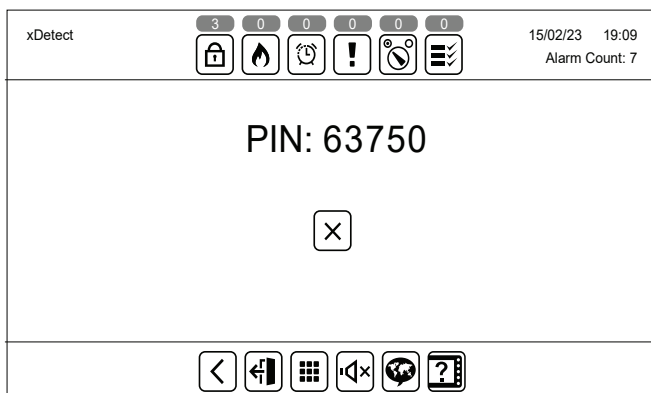


Figure 141. PIN for connection with PC software

3. Within xDetectWorks select the required panel in the tree view, then click on the **Upload to Panel** on the button bar.
You can right-click on the panel element in the Tree view directly and then click **Download to PC**.

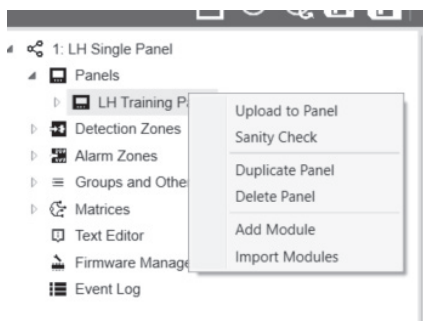


Figure 142. Uploading a panel's configuration

4. You will be prompted for the pin-code. Enter the PIN displayed on the panel.
5. If you have more than one com port available, you will be prompted to select the connection. If you only have one com port available, then the software automatically assumes that is the correct connection. You can also select **Auto-detect USB connection** to automatically detect the port.

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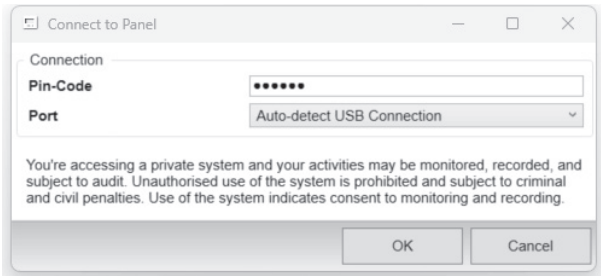


Figure 143. Entering the PIN and selecting the port to upload configuration to a panel

- 6. When the transfer begins, it will open a transfer window that tracks the progress of the files being sent over USB. Please note it may take some time to send all the data.

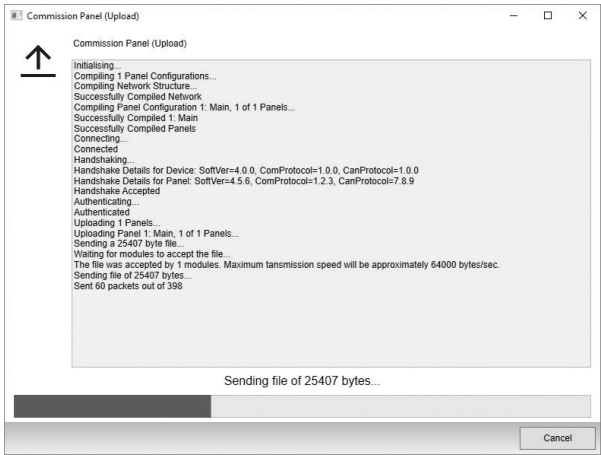


Figure 144. Sending configuration data to the panel

10.7 Configuring Networks, Panels, and Modules

Before you can configure/program the xDetect fire alarm system, you need to ensure that an up to date copy of all the available panels on the network is downloaded into xDetectWorks. As mentioned previously, this should be done after each panel and module has been fully auto-learned.

10.7.1 Panels

Within the Tree view, selecting any panel will allow you to edit its properties. Almost all configuration for each panel is managed by the individual modules. However, each panel has the following properties available: -

- **Name** - This is the panel text that will be stored in each panel. The text will usually be captured in logs and so should be used to identify the panels location or purpose in the system.
- **Address** - This is the address of the panel within the network, which is a unique value per network.
- **Network** - This configuration controls how the panel is informed of the current network size.
- **Latching** - This programs the latching behaviour of the panel of specific event types.
- **Sounder Feedback** - This controls how long a test activation of sounders will operate for.
- **Investigation Timers** - These configure the Investigation Timers and their behaviours, which are also often referred to as T1/T2. By setting the T1 value to 0, this effectively disables the feature.
- **Enable Day/Night Mode** - Enabling this option activates the Day/Night feature of the panel. The Scheduler allows you to automate the switching of Day or Night mode at specific times. If the Scheduler is disabled, you can instead configure some inputs to modify the Day/Night mode, which allows manual control of the Day or Night state.
- **Pulse Buzzer on Disablement** - Enables or disables the pulsing of a buzzer at the panel if a disablement has been configured.
- **Global MCP Override** - By default, MCP Overrides on the panel are controlled independently, usually within each matrix binding. By enabling this option, all MCP Overrides for this panel will be activated. Additionally, any output delay configured in the matrix will be by-passed should an MCP be activated anywhere on the network, regardless of source bindings.
- **LED Board Count** - This configures the number of zonal LED boards installed in the panel.
- **Loop Calculator** - These properties allow you to configure the currently installed battery and also specify the requirements for when the panel runs on battery mode. All these values are factored into the panel and loop calculation results that provide a guide on how you can expect the panel to perform.
- **Panel Calculator** - These are the results of the overall panel and loop calculation. This includes all loading values from all modules, as well as the battery results.

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10.7.2 Modules

Each panel within the xDetect system is composed of multiple modules. These modules provide the IO capability of the system, with some modules providing dedicated addressable loops, and others providing a small selection of channels.

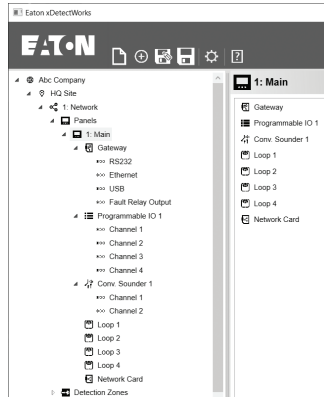


Figure 145. Selecting a module in the Tree View

The following sections explain the configuration options available to each currently supported module type. You can access a panel's modules by expanding the panel in the Tree view, the modules will be listed within. To edit any module, simply click on them within the Tree view.

10.7.2.1 Gateway

This module provides 4 editable components, each of which have their own unique properties.

- **RS232** - This port allows you to configure the connection type, as well as the communication details of the port.
- **Ethernet** - Not supported.
- **USB** - This port only allows you to configure the connection type.
- **Fault Relay Output** - This port allows you to configure if the physical output is voltage monitored or not.
- **Connection Type** - All ports on the gateway allow you to specify the connection type. This ensures the panel is aware of the intended use for that port.

Note: This board has connections to be used in future releases.

10.7.2.2 Programmable IO

This module contains a selection of editable channels, which provide inputs and outputs directly on the panel. Each channel can be programmed to operate as either an input or output, with several modes available for each.

- **Channel** - This is either a single input or single output. The following properties are available: -
 - **Input Mode** - If the channel is configured as an input, then this option is available. This configures what type of event is emitted when the input is activated. Please refer to the Input Modes table in the appendixes.
 - **Output Mode** - If the channel is configured as an output, then this option is available. This configures the intended behavior of the output.
 - **General** - This configures what mode the channel is to operate in, which is mainly if it is an input or output.
 - **Latching** - This controls if the input activation latches or not. Disabling this option will allow the activated Input Mode state to clear, should the input return to a normal state.
 - **Thresholds** - These three values are only applicable when the channel is configured to be a Threshold Input. Please refer to the Programmable IO module documentation on how these values alter behaviour.
- **Default Programming** - This option is enabled by default on newly installed panels or modules. By default, this will generate a default matrix entry to ensure any channels configured as outputs are activated correctly. To modify programming and enter your own matrix programming, you should disable this option.

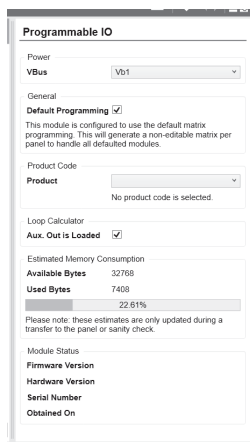


Figure 146. Example of default programming for a programmable IO

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- **Loop Calculator** – The options provided here allow you to customise the loading requirements for this module.

Mode	Description
None	This effectively disables the channel.
Digital Input	This defines a channel as an input with thresholds for on and off at half the supply voltage - i.e. a standard digital input.
Threshold Input	This defines a channel as an analogue input where the threshold voltage for on/off are provided by the user. Please Note: This feature is not yet fully supported.
Volt-Free Output	This defines a channel as an output based on relay contacts. The contacts simply short or open the terminals hence volt-free.
Volt Output	This defines a channel as an output based on a transistor, so this has a voltage at the terminals (~vbus). This can power a device.
Volt Monitored Output	Similar to Volt Output, but this channel is monitored for short and open circuit faults at the terminals.

10.7.2.3 Conventional Sounder

This module provides a powered output circuits to drive two loops of conventional sounders.

- **Default Programming** - This option is enabled by default on newly installed panels or modules. By default, this will generate a default matrix entry to ensure channels are activated correctly. To modify programming and enter your own matrix programming, you should disable this option.
- **Mode** - This controls the intended behaviour of the Conventional Sounder circuit.
- **Loop Mode** - This controls the physical characteristics of the channel, as noted by the table below.

Mode	Description
Loop	Class A wiring scheme from the panel to each sounder and finally back to the panel
Spur	Radial circuit terminated with any of the following EOL monitors: • 3.9kohm Resistor - Please note this mode is not compliant with EN54. • 200ohm Resistor and Diode

- **Loop Calculator** - To enable a correct estimation of the loading current, you should add all the required conventional sounders to the list.

10.7.2.4 Standard Loops

This module provides access to a single addressable loop, that can host up to 200 devices. Standard loop modules support a variety of device types, including optical detectors, sounders, 3 channel IOs, and more.

10.7.2.5 SMC Loops

This module provides access to a self-contained loop dedicated to smoke management that can support up to 104 devices. This module only supports specific device types, such as fan controllers (FCs), their supporting power supply units, and micro single-channel inputs (MCIM) and outputs (MCOM-FCs).

10.8 Loop Properties

Default Programming - This option is enabled by default on newly installed panels or modules. By default, this will generate a default matrix entry to ensure any outputs are activated correctly. To modify programming and enter your own matrix programming, you should disable this option.

Loop Calculator - The options provided here allow you to customise the loading and voltage requirements for this the loop. Important values here include the cable type and the start and end lengths. Using the Generate button, you can enter a total length and quickly configure all devices to be spread along the cable.

Loop Calculator Results - This displays the summary of the loop calculator results, based off the devices placed on the loop and the various cable details. It is important to note that the this also accounts for the lowest voltage drop estimated to occur on the loop.

Loop 1 (Loop 1)

Name

Loop 1

Power

VBus

Vb1

General

Default Programming

☒

This module is configured to use the default matrix programming. This will generate a non-editable matrix per panel to handle all defaulted modules.

Product Code

Product

No product code is selected

Loop Calculator

LEDs Illuminated in Alarm

1 LED Illuminated

Cable Type

1.5mm Copper Cable

Impedance (ohms/km/coax)

12 10

Cable Length (m)

1000

Length to First Device (m)

200

Length Back to Panel (m)

90

Generate Device Lengths

Generate

Loop Calculator Results

Devices

14

Cable Length

1000

Voltage Drop Quiescent

0.105

Voltage Drop Alarm

0.431

Quiescent Current (A)

0.084

Alarm Current (A)

0.186

Quiescent Current - 12%

Alarm Current - 27%

Addresses Used - 7%

OK

Figure 147. Example of loop calculator results

10.9 Using the Loop Grid Editor

Loops are composed of a grid of cells, each representing a single address on the loop. Unoccupied addresses will appear as empty white squares, where occupied

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addresses will show the current device. When selecting an occupied address / device, the properties panel will update and allow you to edit that device. When no device is selected, the properties for the entire loop will be displayed.

By using the zoom option slider bar near the bottom right of the grid, you can adjust the scale of the cells to suit your computer resolution. Larger cells can display more information, where smaller cells will show less information.

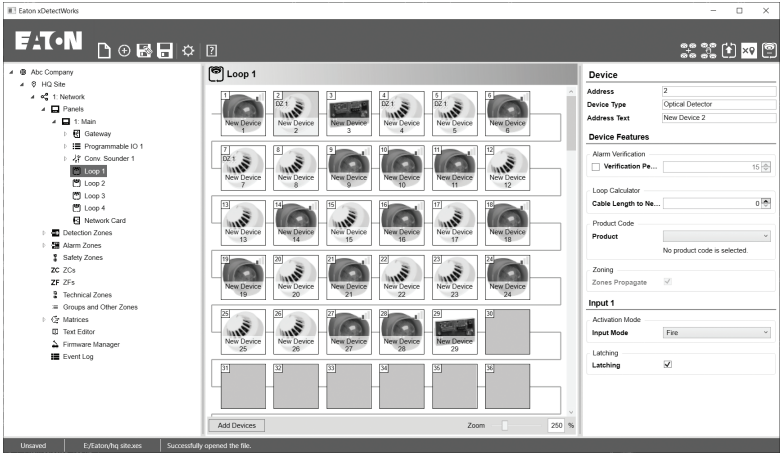


Figure 148. Using the Loop Grid Editor

10.9.1 Device properties

When a device is selected and depending on its type, some of the following properties will show: -

- **Name** - This is the device text that will be stored in the panel. The text will usually be captured in logs and so should be used to identify the device location or purpose in the system.
- **Volume** - If you have selected a sounder type, you can configure the volume level the sounder should operate at.
- **Filter** - If a device has more than one input or output, then this option allows you to select what input or output you want to display and edit.
- **Input Mode** - If you have selected a device with at least one input, you can configure the input mode. This configures what type of event is emitted when the input is activated. If there are multiple inputs on a device, then each input will have its own instance of this option (i.e. each input can emit different events when it is activated). Please refer to the Input Modes table in the appendixes.
- **Alarm Verification** - Some input types allow you to specify the alarm verification period. This configures a delay before the input mode event (usually a fire) is

emitted after the device activates.

- **Latching** - This controls if the input activation latches or not. Disabling this option will allow the activated Input Mode state to clear, should the input return to a normal state. On some device types or products, this option may be unavailable.
- **Loop Calculator** - This is the cable length between this device and the next, which is used to calculate the voltage drop.
- **Zones Propagate** - For devices with more than one input or output, you can control the behaviour of zone assignments. If enabled, all inputs and outputs on this device will be assigned to the device's zones. Disabling this option allows the inputs and outputs to be independently assigned zones.
- **Tone** - This allows you to configure the tone for sounder types
- **Bell Tone** - This option should always be checked if the device should operate with a bell tone (only applicable to certain sounder types).

10.9.2 Adding Devices

Devices can be added with the following steps: -

- Click on the Add Devices button, in the bottom left of the grid or on the button bar.
- Select the correct device type from the dropdown list that will now be visible. Then select the correct product code from the drop-down list.

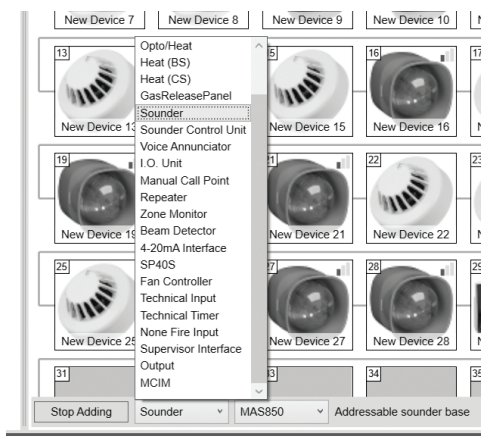


Figure 149. Adding a device to a loop

Note: Refer the appendix for the complete list of devices that you can select.

- Click on the cells that should have this device type.

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- Cells that already have a device can also be clicked, and they will present you with prompt to ensure you want to overwrite.
- When finished, click on **Stop Adding**.

10.9.3 Inserting Devices

It is also possible to insert a gap into the middle of the loop, affectingly increasing the address of all devices that come after it. You can perform an insert with the following steps: -

- Select the address where you want to insert the gap.
- Click on **Insert** from the button bar or right-click menu.

Notes:

- The resulting gap should be filled using any of the methods described above for device placement.
- This feature does not automatically re-address the physical devices, this must be done at the panel using the auto-learn feature.

Note: Care should be taken with cause and effect settings as it is possible to change the addresses of many devices. Panels that are not commissioned after this change may have existing references to the old addresses.

10.9.4 Clearing Devices

It is also possible to remove a device, without modification to any of the other addresses on the loop. This effectively creates an empty gap if performed in the middle of the devices. You can perform a clear with the following steps: -

- Select the address that you want to clear.
- Click on **Clear** from the button bar or right-click menu.

10.9.5 Removing Devices

In a similar method to inserting devices, you can also remove devices, and this also affects all addresses that come after the removed addresses. This is often ideal for removing gaps between devices. You can perform a remove with the following steps: -

- Select the addresses that you want to remove.
- Click on **Remove** from the button bar or right-click menu.

10.10 Configuring Cause and Effect

10.10.1 Understanding

In a simplistic view, a fire system is composed of inputs and outputs. An input can be considered something which feeds into the system (cause), and an output and action that is activated by the system (effect). In the case of a fire system, common inputs would be smoke detectors or manual call points. Common outputs would be sounders or beacons. The primary purpose of cause and effect is to allow you to correctly map out which inputs should activate which outputs.

It should be noted that inputs and outputs can also be utilised for more complex functionality (beyond fire detection and alert). This includes behaviours such as monitoring, control and safety management.

10.10.2 Concept

With xDetectWorks, the cause and effect is broken down into two components. Firstly, raw inputs and outputs are collected into meaningful groups, then these are utilised in the matrices. The groups create meaning and structure to the raw devices, where the matrices then define how these should interact.

10.10.3 Grouping

The first stage is to combine related inputs and outputs into groups or zones. Groups and zones allow you to organise your inputs or devices into meaningful structures. xDetectWorks provides several different group and zone types to suit almost any situation. These structures cover detection, alarm, regional/geographical and functional. All the available group types are covered further down.

10.10.4 Matrices

A site requires at least one matrix, and in the simplest of terms, these map the input triggers to the required outputs. Groups are usually created prior to configuration of the matrix; the matrix is then configured to map one or more detection zones to one or more alarm zones.

10.10.5 Items

With groups and matrices, they can be programmed to contain any item in the entire network. This means a group or matrix can be populated with a list of various items. The list can be composed of any of the following: -

- Loop Device Input
- Loop Device Output
- Loop Device
- Loop
- Panel
- Panel Input
- Panel Output
- Network
- Any Group or Zone Type

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When a non-input or non-output item is added, it has the effect of stating that “all inputs/outputs within” are added. E.g. if you add a loop to a group, all the devices, channels, inputs and outputs within that loop are considered as added too.

10.10.6 Adding Items to Groups/Matrices

All the various zones, groups and matrices share a common design and can be assigned items from around the network. When an item is added, it is considered a member of that group/zone/matrix.

When viewing what items to add, the dropdown list allows you to filter what items on the network you want to view. The default filter is the network itself, which includes all the panels and zones/groups. Selecting an option on this list will filter to a more specific area and reveal the modules and devices. Once you have selected the desired location, you can then add items. To add items, either double click on the appropriate rows or highlight a row and click Add.

Additional to the different group types, the organisation of group members can behave in two different ways:-

- **Non-Ordered** - The majority of Groups/Zones support this methodology, in which the order of the members do not matter. Additionally, its possible to reference other groups as members (effectively inheriting those group’s members). These are relatively simple member lists that include all within.
- **Ordered with Exclusions** - Only Detection, Alarm, FPE, FRE, and SMC zone types support this grouping structure. These zones are more restricted to what can be added as they are intended to permit synchronization with any discovered panel changes during a download. The primary difference is that entries added to the member list are ordered, and the members can either be an inclusion or exclusion entry.

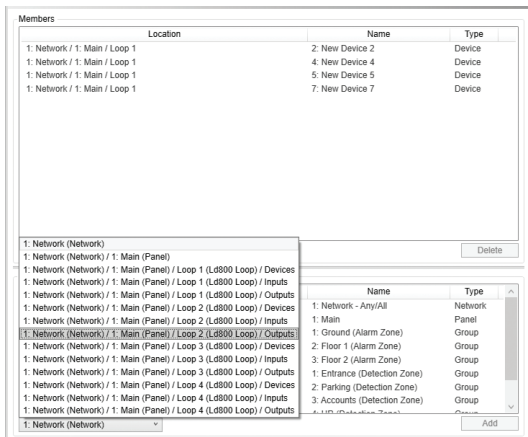


Figure 150. Adding devices to a group or zone

Ordering is critical because when calculating the zoning of devices or channels, the list processed top to bottom. The first positive match is taken as the answer.

For example, the user could add an exclusion entry of “Loop 1/Address 4” first, followed by an entry of “Loop 1” as the second. The result of this is that every address of loop 1 would be part of the zone except address 4. Note that the ordering is vital here because if the exclusion came second in the list, it would have no effect as the loop 1 entry would be taken as the answer.

Adding items to groups or zones using drag-and-drop

You can also use drag-and-drop to assign devices to groups or zones. When viewing devices that were already added to a loop, you can drag any device onto a group or zone in the list on the left hand side pane’s tree view to easily assign it to it.

10.11 Zones

10.11.1 Detection Zones

These hold a list of all the items that are part of a single detection zone. Detection zones are intended for identifying zones of related detectors in the same area within a building. When any of the associated inputs activate, the entire detection zone is considered as activating. Detection zones are usually associated with a numbered indicator light on the panel.

To add a new Detection Zone, simply select Detection Zones from the tree view, then click on Add Detection Zone. The new Detection Zone will be created and selected, the property panel will allow you to configure the Name and Zone Number.

Note: See regional standards.

10.11.2 Alarm Zones

These hold a list of all the items that are part of a single alarm zone. Alarm Zones are intended for identifying zones of related sounders in the same area within a building.

To add a new Alarm Zone, simply select Alarm Zones from the tree view, then click on Add Alarm Zone. The new Alarm Zone will be created and selected, the property panel will allow you to configure the Name and Zone Number.

10.11.3 FRE Zones

These zones are required by any FRE outputs or inputs.

10.11.4 FPE Zones

These zones are required by any FPE outputs or inputs.

10.11.5 SMC Zones

SMC Zones are intended to be used by smoke management devices, which are usually located on SMC loops. The supported devices include Fan Controller, MCOM-FCs, and MCIMs.

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10.11.6 Groups

All other zone/group types are held a single area within the Tree view. These are the less important zone types that are usually optional within the system.

To add a new Group, simply select Groups from the tree view, then click on Add Group. The popup window will prompt you for what type of group to add. Select the required type and click OK. The new Group will be created and selected, the property panel will allow you to configure the name and zone number. Some group types will have additional properties as noted below.

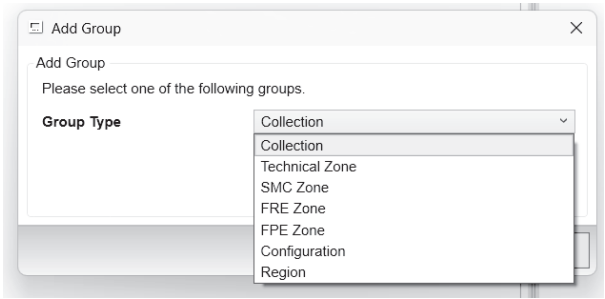


Figure 151. Creating a group

10.11.7 Collections

This is the most basic type of group and is intended to hold general collections of related items, which are grouped for use by other groups or in matrices. There is no specific purpose for collections other than that it is a tool used at the user's discretion.

10.11.8 Technical Zones

These zones are intended for use for technical inputs and outputs. For example, this zone could group all repeater devices or contain key switches that are not fire system-specific.

10.11.9 Configuration

There will be many devices, inputs or outputs that have the same configuration (sounder volume, input type...etc). If the user wishes, they can group related items together into a configuration group. Here, you can override and modify the configuration of all associated items. E.g. a configuration group of "medium sounders" could be created, where all sounders set to medium volume are collected.

For each property, there is a check option called Active. By default, the configuration group doesn't override any behaviour and so for that behaviour to be overridden, you must check the Active option.

Note: Only use configuration groups to modify the common behaviour of like devices and do not consume them within the matrix. Configuration changes made by these groups are static data, which means that configuration groups are intended to be used without any matrix binding. Binding within the matrix will have no dynamic effect on the configuration results. For example, a sounder set to medium volume in a configuration group will be permanently set to that volume regardless of how it is activated.

10.11.10 Region

This represents a geographical/physical region of a site, building, or floor. This group type is intended to simplify programming based on physical location. For example, if a floor in a building is comprised of several zones, those zones could be placed into a new region. The engineer could then use that region to quickly alter, for example, all sounder volumes on that floor, or even use the region in the matrix as a binding destination for activation.

Regions can be of any of the following types:

Region Type	Description
Section	Represents a physical or geographical section of a floor in a building, which could be a room or a collection of rooms
Floor	Represents a physical or geographical floor in a building
Building	Represents a physical or geographical building within a site
Site	Represents a physical or geographical site, which could be home to one or more buildings

10.11.11 Matrices

At the heart of the cause and effect configuration are the matrices, which essentially map the inputs to outputs.



Figure 152. Example of a matrix

Each matrix is configured with a list of sources (any of the applicable input items) and a list of destinations (any of the applicable output items). The user then uses a 2D grid structure to bind one or more sources to one or more destinations.

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If the cause and effect programming for a site is complicated, then the user has the option of creating multiple matrix elements to encapsulate certain parts of the configuration.

However, a simple site should only ever need a single matrix.

Creating a Matrix

To add a new Matrix, select Matrices from the tree view, then click on Add Matrix. The new Matrix will be created and selected, the property panel will allow you to configure the name.

10.11.12 Sources

Matrix sources will appear down the left side of the grid, but initially a new matrix will have no sources, so these must be added. To add a source, you can click Add Source on the button bar. This will open up a new section in the interface that lists all the available items that can be added as sources. Please refer to the “Adding Items” section for more specific details on utilising this section.

When a source is added, a default name is generated. However, this name can be changed by selecting the newly created source. The property view will then display an editable Name option.

10.11.13 Destinations

In terms of configuration, Destinations behave in almost the same way as sources, but Matrix destinations will appear along the top of the grid. Initially a new matrix will have no destinations, so these must be added. To add a destination, you can click Add Destination on the button bar. This will open up a new section in the interface that lists all the available items that can be added as destinations. Please refer to the “Adding Items” section for more specific details on utilising this section.

When a destination is added, a default name is generated. However, this name can be changed by selecting the newly created destination. The property view will then display an editable Name option.

10.11.14 Binding

Once the matrix has its appropriate sources and destinations added, the next step is to bind them as required. A binding can be applied to individual cells, or groups of cells at the same time. To bind a source to destination, select the cell or cells, then click on the Bind button in the button bar. Once bound, the cell will change colour and the property panel will display a selection of options. The following properties are available: -

- **Colour** - This is the colour that cells are set to. This has no bearing other than a visual cue in the matrix.
- **Type C** - This enables Dependency Type C mode. This mode means that 2 independent fire signals from the chosen sources are required to activate the outputs.

- **Force Resound on New Zone** - This causes any silenced sounders to resound should a fire come from a new Zone.
- **T1/T2 Dependent** - If enabled, the outputs in this binding will obey the Investigation Delay configured by the Panel's properties.
- **Delay** - This controls the amount of time to wait before activating the outputs.
- **Output Delay: MCP Override** - If enabled, any MCP triggered within the sources will override the delay.
- **Output Delay: Evacuate Override** - If enabled, the Evacuate command will override the delay.
- **FPE: MCP Override All Delays** - If enabled, any MCP triggered within the sources will override any delay (including Output Delay and T1/T) and activate any FPE outputs immediately.
- **Sounder Mode** - This controls audio pattern that sounders will emit.
- **React To** - This controls what events the binding should react to. By selecting a non-fire event, it means the output will react accordingly to that type of event (e.g. a silence event will cause any sounders in the destinations to deactivate). However, if an output does not support that type of event, the event will effectively be ignored.

If multiple sources are bound to a destination, then that output will react to events from any of those sources. The relationship should be deemed as an OR relationship. E.g. Source A OR Source B can trigger Destination A.

The screenshot shows a 'Binding' configuration window. At the top is a 'Colour' dropdown menu. Below it is the 'Activation Mode' section with a 'Type C' checkbox. The 'Investigation Timers' section has a 'T1/T2 Dependent' checkbox checked. The 'Output Delays' section includes a 'Delay (Secs.)' input field set to 0 and an 'Override at Night' checkbox. The 'Overrides' section has 'Output Delay: MCP...' and 'Output Delay: Evac...' checkboxes, with 'FPE: MCP Override...' checked. The 'Sounder' section has a 'Mode' dropdown set to 'Continuous'. The 'React' section has a 'React To' list with checkboxes for 'Fire' (checked), 'Technical', 'Class Change (Global)', 'Evacuate (Global)', 'Silence (Global)', 'Resound (Global)', and 'Isolate'.

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Figure 153. Programming a binding

Bindings are colour coded because it is possible to bind cells together as a group. This has no functional effect on the cause and effect, and resultant behaviour would be the same as if you bound each cell individually. However, binding as a group means that all cells share the same binding properties. This can be useful if you want all the outputs to behave in the same way.

10.12 Common Setups

10.12.1 Default - Any Input Triggers All Outputs

To create a very basic setup in which all inputs trigger all outputs, you can create a single source and destination matrix.

1. Create a new matrix.
2. Add Network - Any/All to the sources.
3. Add Network - Any/All to the destinations.
4. Bind that source to that destination (there will only be one cell in the matrix).

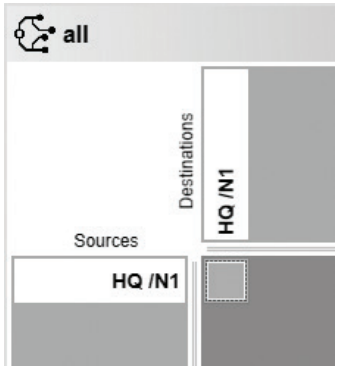


Figure 154. Creating an all input - all output matrix

10.12.2 Some Alarm Zones only being Triggered by some Detection Zones.

If you want some alarm zones to only be triggered by detection zones, then you will need to configure each alarm zone individually. This can still be done with a single matrix.

1. Create a new matrix.
2. Add Network - Any/All to the sources.

- 3. Add any Detection Zones to the sources that will be used for specific Alarm Zone activations.
- 4. Add each individual Alarm Zone to the destinations.
- 5. For all the Alarm Zones that will activate from any source, create a binding between Network - Any/All and each appropriate Alarm Zone.
- 6. For each of the other Alarm Zones, bind only the Detection Zones that should activate it.

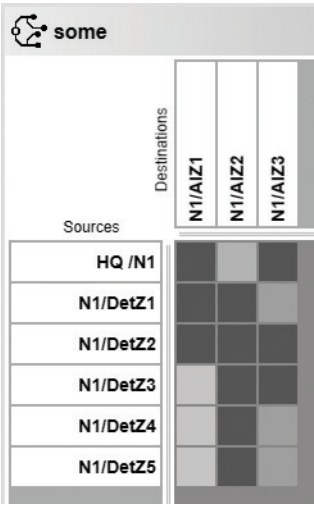


Figure 155. Creating a matrix with some alarm zones triggered by specific detection zones

If you wanted to save time and simplify this matrix, you create groups that collect related zones together. i.e. all the Alarm Zones that activate from any source could be placed in a group. This group could then be added to the destinations, and then bound to the Network - Any/All source. This methodology could also be applied to detection zones where required.

10.13 Reports

Reports can be accessed by selecting on either the network or panel item in the tree list on the left, then clicking on the following icons in the upper-right corner.



Figure 156. Viewing reports

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The following reports are available:

- **Loop Calculator Report:** Includes voltage/current loading results of a panel's modules and devices
- **Panel Report:** All details related to a single panel, which also includes matrix and group zoning information
- **Network Report:** Details of all panels within a network, which also includes matrix and group/zoning information

Both Panel and Network reports include coloured images of the programming matrices and colour-coded tables that detail the bindings in those matrices. This enables users to visualize bindings from the report.

10.14 Importing panel and module configuration

You can import panel and module configuration (including loops) from other site files to merge them or from the same one to copy or restructure the configuration, for example, to adapt to changes in configuration or ordering.

To copy or import configuration into your site file, do the following

1. Do one of the following:
 - To copy or import panel configuration into a network in your site file, right-click the network in the Tree view and select **Import Panels**.

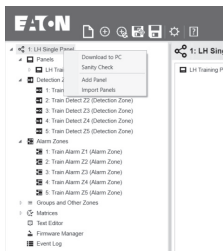


Figure 157. Copying or importing panel configuration into a network

- To copy or import module configuration into a panel in your site file, right-click the panel in the Tree view and select **Import Modules**.

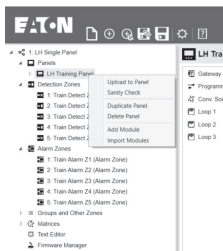


Figure 158. Copying or importing module configuration into a panel

2. In the dialogue, do one of the following:
- To copy configuration from the same site file, select **Currently Loaded Site File**.

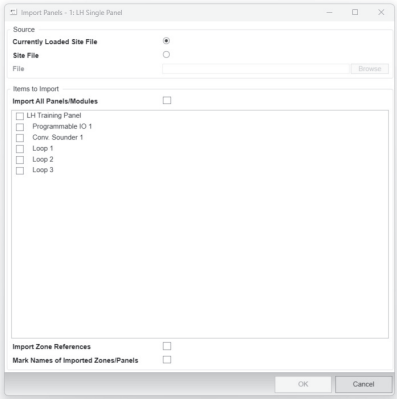


Figure 159. Copying configuration from the same file

- To import configuration from a different site file, select Site File. In File, browse and select the other site file from your computer.

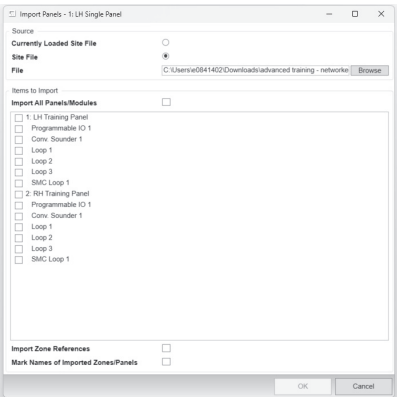


Figure 160. Importing configuration from a different file

3. Select the panels and/or modules you want to copy or import. To import all panels and modules, select Import All Panels/Modules.

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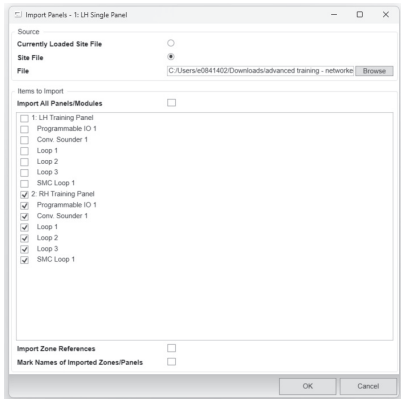


Figure 161. Selecting configuration to import or copy

4. Click OK.
The configuration is copied or imported into the site file.

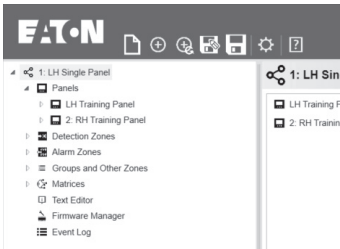


Figure 162. Example of panel configuration imported from another file

10.15 Commissioning Appendix

Input Modes

Mode	Description
Fire	The input will emit a Fire event, putting the system into Fire and likely activating most outputs.
FPE	Provides 'FPE active' feedback via addressable devices (not intended to drive FPE outputs/equipment)
FRE	The input will emit a FRE event, which will activate any FRE outputs.
Day Mode	The input will emit a Day Mode event, which is usually used to switch the system into day mode.
Night Mode	The input will emit a Night Mode event, which is usually used to switch the system into night mode.

11. RESETTING THE PANEL

There are three methods available to reset the xDetect fire panel via the panel:

- 1. Soft reset via the HMI screen.
- 2. Hard reset via the tactile switch located on the Gateway PCB within the panel.
- 3. Factory reset.

11.1 Soft reset

A soft reset can be initiated at access level 2 or access level 3 after entering the necessary user pin. This option is available in the main menu.

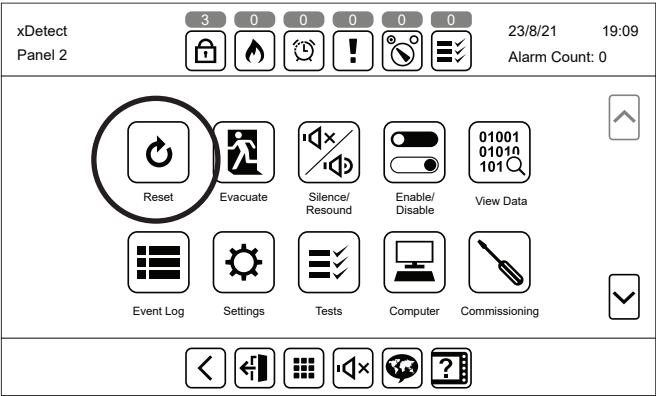


Figure 163. Soft resetting the panel

A soft reset would typically be used when a fault or system fault has been latched and the cause has been corrected or is understood.

Where a panel is networked with other panels it will be necessary to initiate a soft reset after all the panels have been powered up and this is in order to ensure that they are all synchronised and all faults have been cleared.

11.2 Hard reset

A hard reset has a similar effect to powering the panel off and then on. A hard reset should be followed by a soft reset once the panel has returned to the quiescent (standby) state

If any of the boards in the panel are re-programmed then a hard reset should be initiated to ensure that the Gateway is aware of the latest software on each board and therefore display that information in system details when required

RESETTING THE PANEL

11.3 Factory reset

The following procedure details the steps required to reset the local panel to factory default settings.

- 1. Log in as Engineer with Access Level 4.
- 2. Navigate to Settings -> Factory Reset.

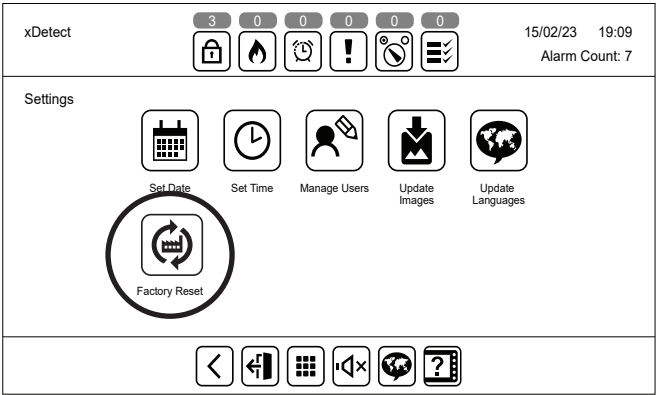


Figure 164. Performing a factory reset

- 3. Tap the tick box to initiate factory reset.

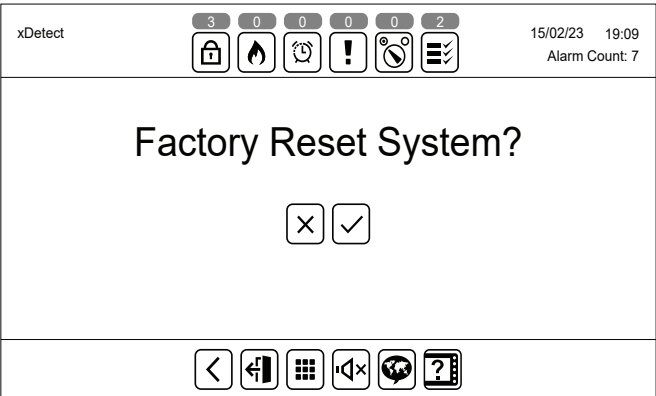


Figure 165. Performing a factory reset

The panel will now reset.



Figure 166. Performing a factory reset

4. Install language and image data onto the HMI via the on-screen prompts. For more information, see “9.1 Initial Configuration” on page 73 and “9.2 Language Selection” on page 76. Once this process is complete the panel will initialise.
5. Log in to the panel as an Engineer user at level 4.

Note: User pins will have defaulted.

6. Select ‘**Commissioning**’ from the main menu.

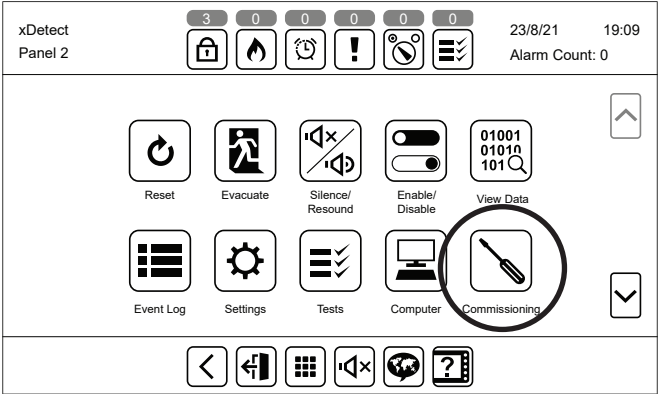


Figure 167. Viewing Commissioning options

RESETTING THE PANEL

5. Select **'CAN Addressing'** from the commissioning menu.

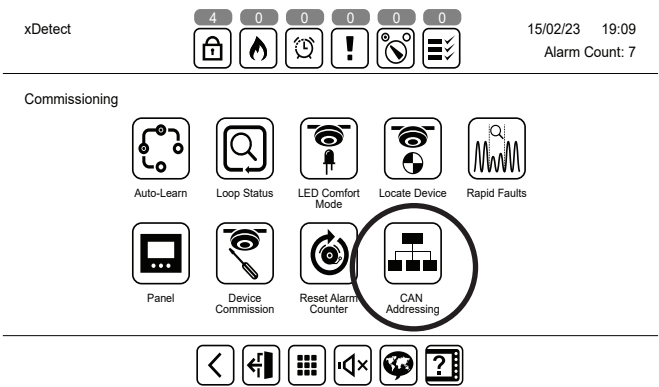


Figure 168. Performing CAN addressing for the panel

6. Tap the **confirm** button.

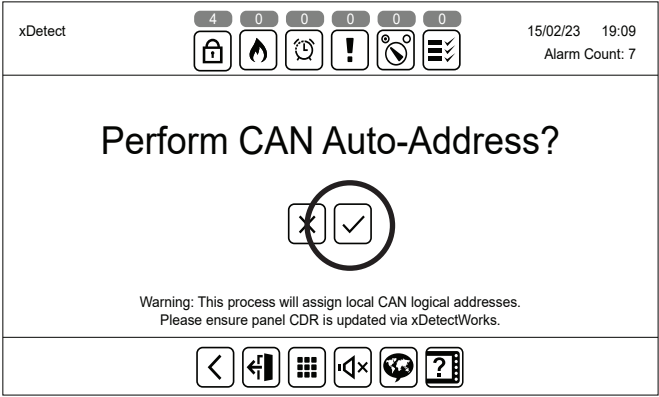


Figure 169. Initiating CAN addressing

When the CAN addressing process finishes, the following screen is displayed.

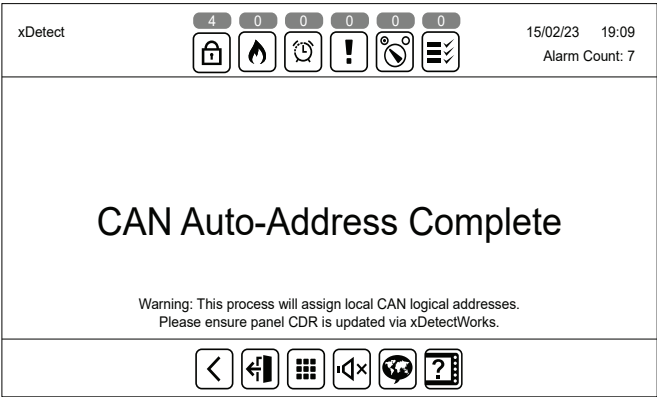


Figure 170. Confirmation of completed CAN addressing

- 7. Auto-learn the loops in the system.
For detailed information, see “10.1.1 Auto-Learn” on page 82
Note: If you have a networked system, the network should also be auto-learned at this point. To do this, navigate to Commissioning -> Auto Learn -> Network Auto Learn -> Full Auto Learn.
- 8. Navigate to View Data -> System Details and confirm that all cards are present on the panel.

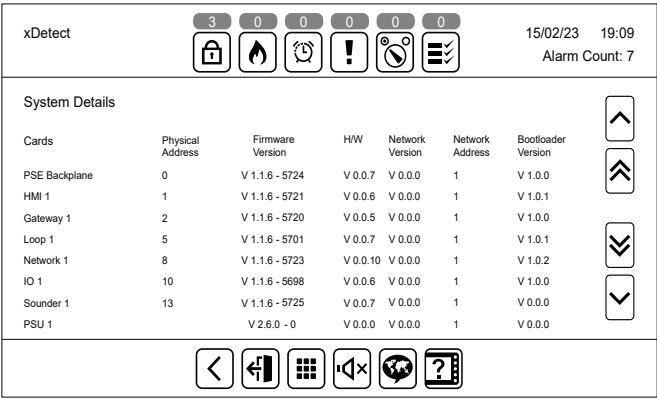


Figure 171. Viewing CAN addresses and other details of a panel’s modules

RESETTING THE PANEL

9. Hard reset the panel.

10. The panel can now be re-commissioned using xDetectWorks.

Note: This process will erase all CDR data from the panel. xDetectWorks must be used to re-commission the panel.

12. CONNECTION WITH EFGVS

Eaton Fire Graphic Visualisation Software (EFGVS) is a state of the art and powerful supervision management tool for Eaton Fire addressable systems.

Users can monitor, visualise in 2D and 3D, control and interrogate their systems to ensure alarms are located quickly and dealt with efficiently.

EFGVS enables 2D floor plan visualisation and provides a global building 3D view. It delivers alarm information through image and sound notifications and records all other system events and faults, allowing the generation of comprehensive reports.

System control access through EFGVS can be tailored based on local regulations and user credentials.

EFGVS has the following components:

- **Site Monitor:** Enables remote access and centralised monitoring of the system. You can use Site Monitor connect to the xDetect panel and monitor the outputs and actions of the system in real time.
- **Site Graphics:** Enables observing real-time output from the xDetect fire alarm system in a concise, 3D graphical representation.

To connect the panel to EFGVS, do the following:

1. Connect the micro-USB cord to the Gateway module card of the panel. For detailed information, see “Figure 29. Gateway Card wiring connections” on page 54.
2. Connect the other end of the USB cord to your PC and open the Site Monitor software.
3. In Site Monitor, do the following:
 1. Right-click the site and click **Add Network**.

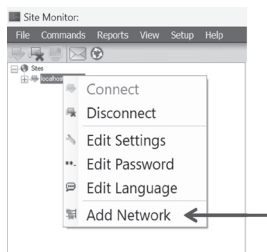


Figure 172. Adding a network

2. Enter the following details:
 1. Enter a **Network Name**.

CONNECTION WITH EFGVS

- 2. Enter the **Network Address ID**.
- 3. In **Network Type**, select **xDetect Panel USB**.
- 4. In **Network Protocol**, select **xDetect Panel**.
- 5. In **Serial Port**, select the USB port that is connected to the panel's Gateway card.

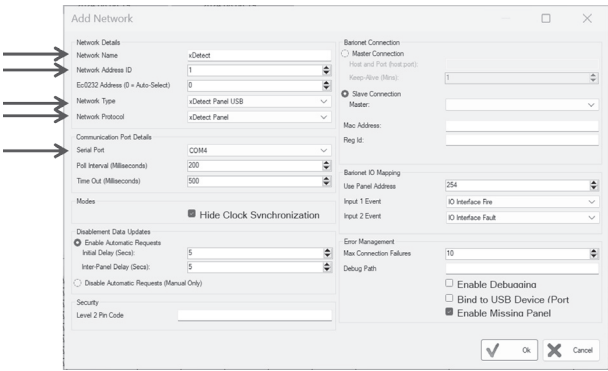


Figure 173. Configuring network details

- 3. In the menu bar, select **Commands -> Pin Registration**.

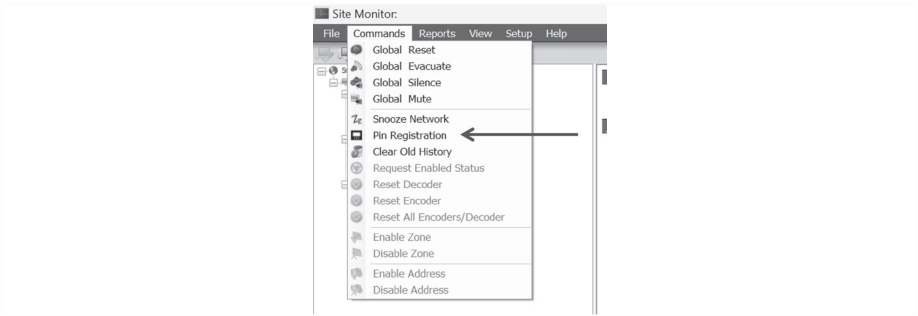


Figure 174. Establishing the connection between Site Monitor and the panel with the PIN

- 4. The Pin Registration dialogue is displayed.

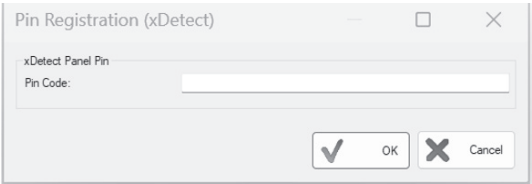


Figure 175. Pin Registration dialogue

- 4. On the panel, do the following:
 - 1. Log in to the panel as a level 3 Engineer user.
 - 2. In the main menu, tap **Computer**.

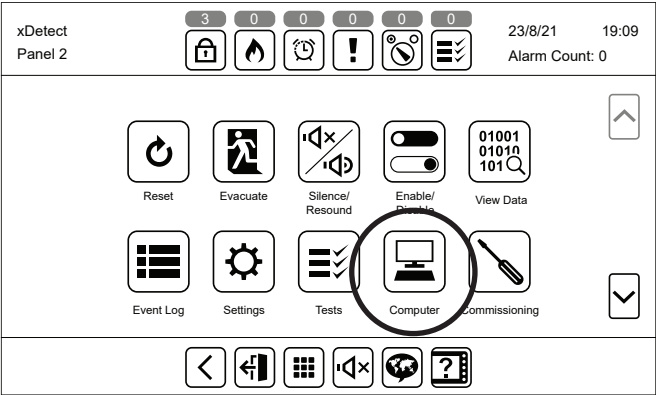


Figure 176. Viewing Computer functions

- 3. Tap **Download to PC**.

CONNECTION WITH EFGVS

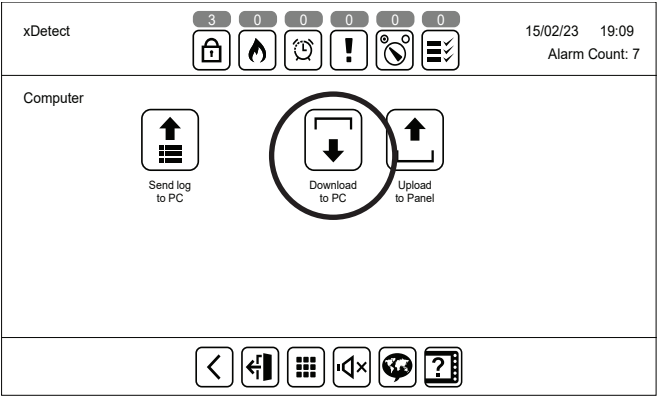


Figure 177. Sending data to software on a PC

- 4. A PIN is displayed

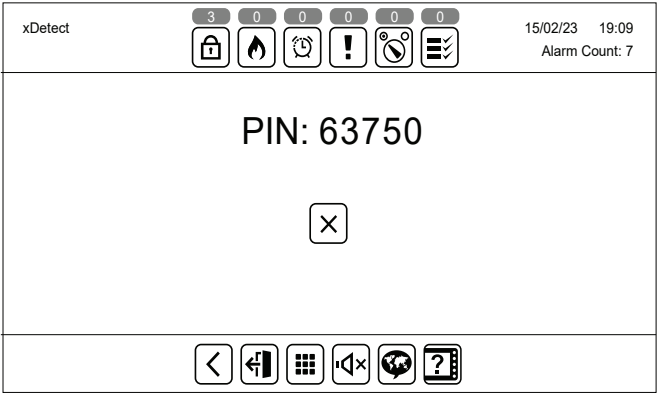


Figure 178. PIN for connection with PC software

- 5. In Site Monitor, in the Pin Registration dialogue, enter the PIN displayed on the panel.
The connection between EFGVS and the panel is established.

13. TESTING

The test modes available include:

- Panel LED Test
- Weekly Test
- Walk Test
- Zone Test
- PSU Monitor
- Analogue Values
- Loop Oscilloscope

13.1 Panel LED Test

Allows the user to visually confirm the operation of each LED on the system. The test requires user level 2 access or level 3 (Engineer) access.

1. Select **'Tests'** from the main menu.

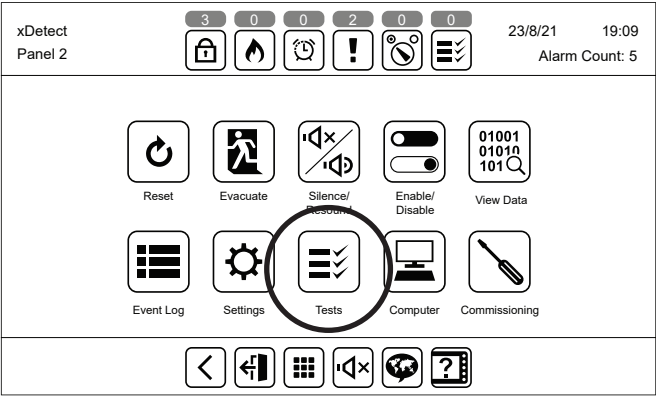


Figure 179. Viewing Tests

2. Select **'Panel LED Test'** from the Tests menu.
Depending on your user access, the options available in the Tests menu will differ; as a level 2 user, you will only be able to perform a Panel LED Test and a Weekly Test.
As an Engineer (level 3 and above) user, you can perform all tests.

TESTING

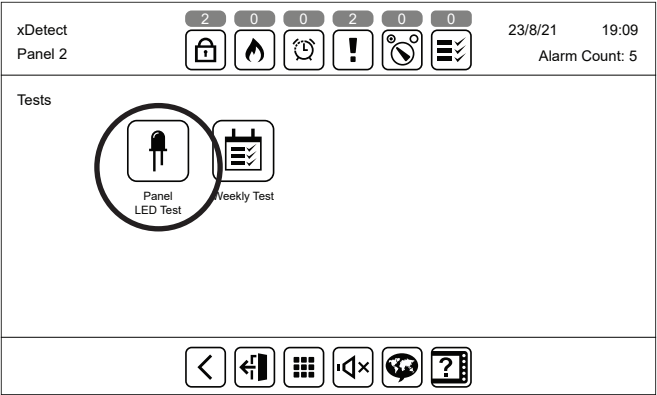


Figure 180. Performing a Panel LED Test as a level 2 user

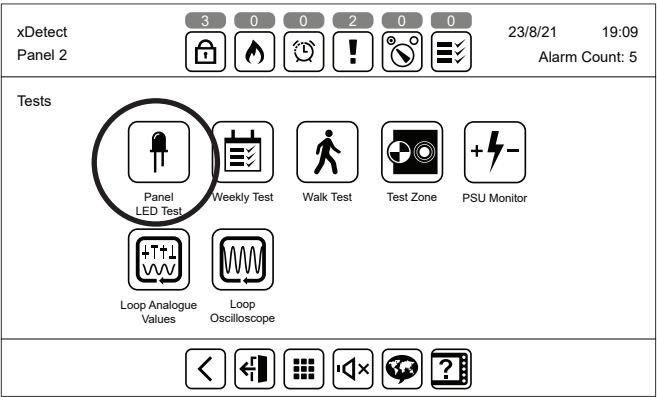


Figure 181. Performing a Panel LED Test as an Engineer user

3. A screen prompt to begin the LED test is displayed. Tap the **confirm** button.

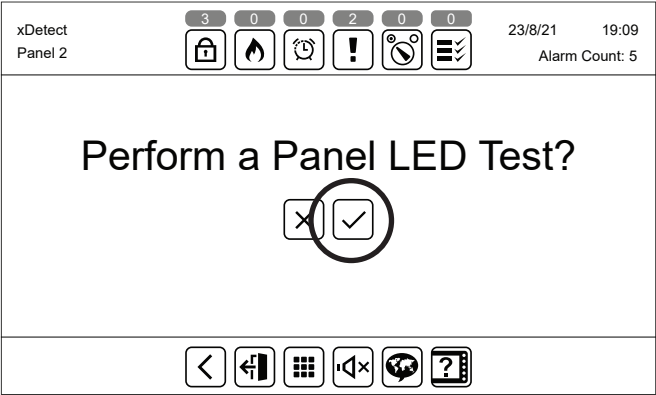


Figure 182. Performing a Panel LED Test

The screen indicates that an LED test is in progress.

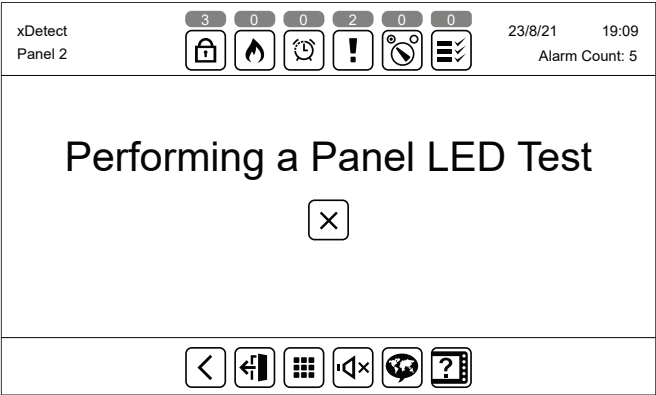


Figure 183. Indication that a Panel LED Test is in progress

The Panel LED Test commences.

The internal buzzer is activated for the duration of the test. During the test, each LED is activated and remains active for a few seconds. The test completes once all the LEDs are de-activated. If required, further tests may be performed.

The Panel LED Test can also be terminated at any time by selecting the **cancel button** and confirming that you want to exit the test mode.

TESTING

Upon exiting the test mode, any previous LED indications are reinstated.

13.2 Weekly Test

Allows the user to confirm that the panel can operate under a fire alarm condition. The test requires user level 2 or 3 (Engineer) access.

- 1. Select **'Tests'** from the main menu.

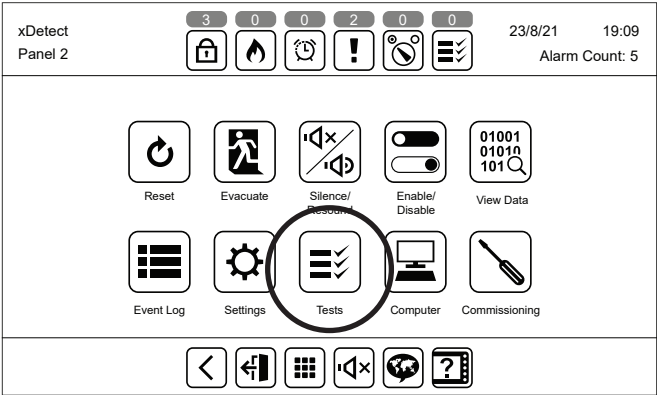


Figure 184. Viewing Tests

- 2. Select **'Weekly Test'** from the Tests menu.
Depending on your user access, the options available in the Tests menu will differ; as a level 2 user, you will only be able to perform a Panel LED Test and a Weekly Test.
As an Engineer (level 3 and above) user, you can perform all tests.

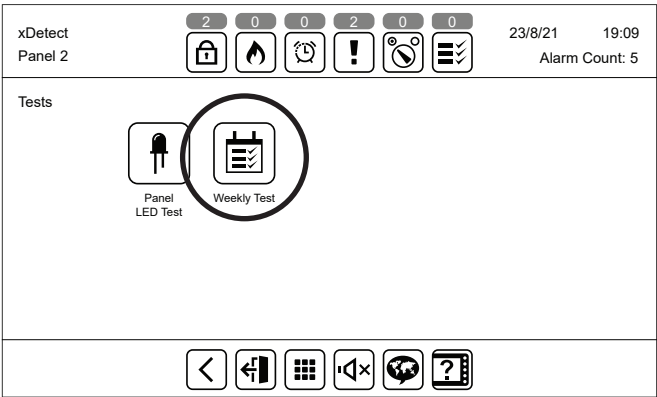


Figure 185. Performing a Weekly Test as a level 2 user

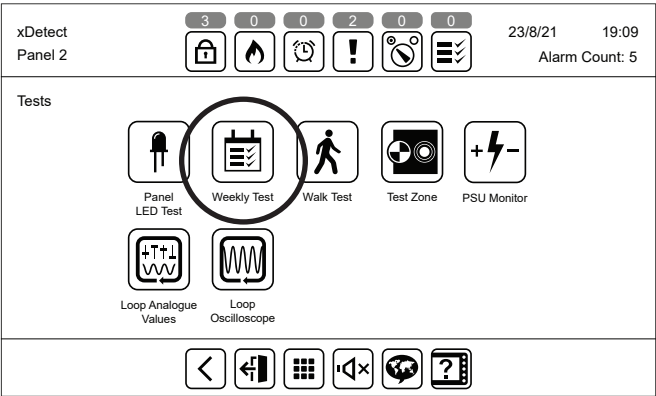


Figure 186. Performing a Weekly Test as an Engineer user

3. A screen prompt to begin the Weekly Test is displayed. Select the **confirm** button.

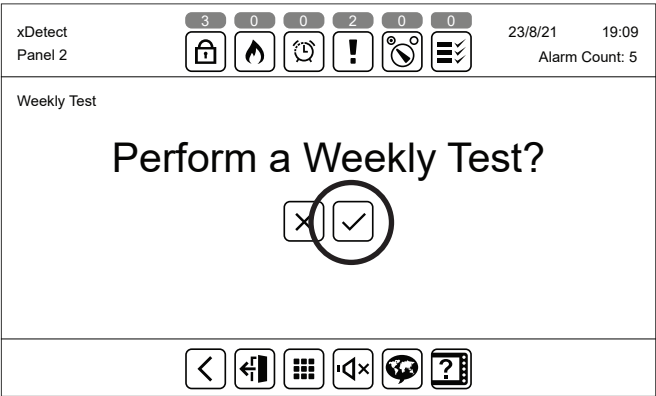


Figure 187. Performing a Weekly Test

The screen indicates that a Weekly test is in progress.

TESTING

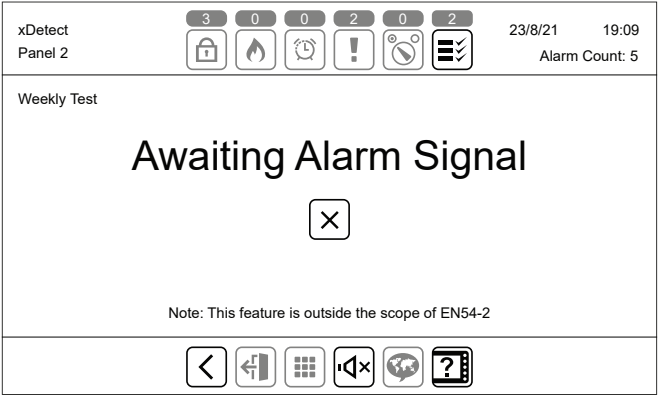


Figure 188. Indication that a test is in progress

The general test LED is activated for the duration of the test.

The internal buzzer pulses for the duration of the test.

A Weekly Test can now be performed: A triggered input device shall activate the panel zone LED, and all sounder/beacon devices in all zones, for 3 seconds, after which the output devices are deactivated and the test for that zone is complete. If required, further tests can be performed.

4. Select **top-bar test button** to display details of the current test.

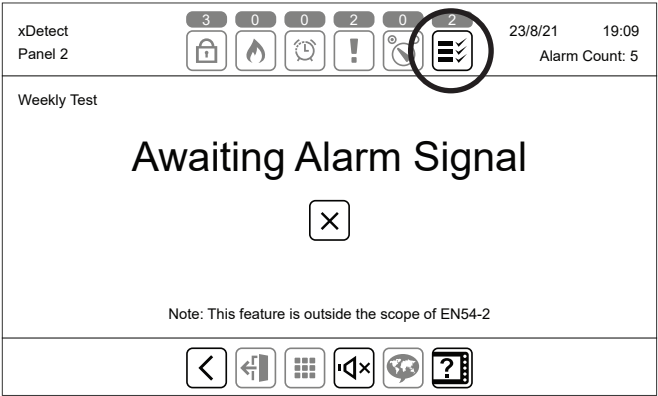


Figure 189. Viewing current test details

The current test details are displayed. Select the **back button** to return to the Weekly Test 'Awaiting Alarm Signal' screen.

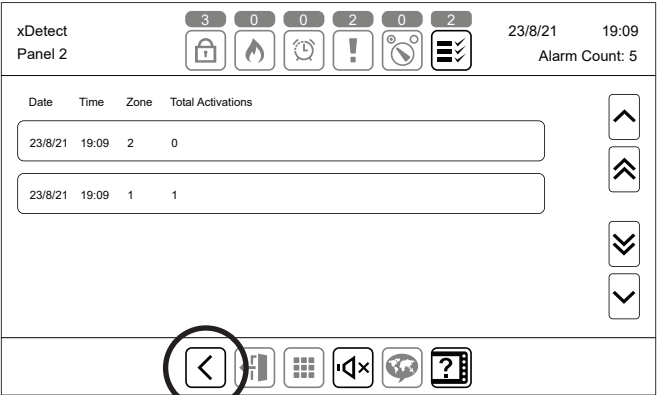


Figure 190. Returning to the Weekly Test (Awaiting Alarm Signal) screen

- 5. The Weekly Test may be terminated at any time by tapping the **cancel button** on the Awaiting Alarm Signal screen. Select the **confirm button** when prompted to confirm exiting from the test mode.

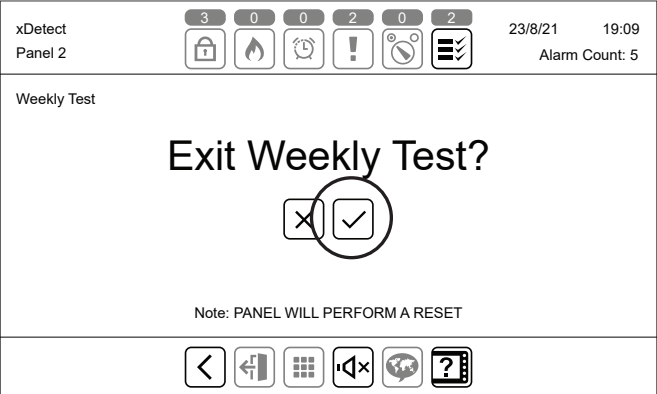


Figure 191. Confirming termination of the Weekly Test

TESTING

Upon terminating the Weekly Test, the panel undergoes a soft reset before returning to normal quiescent operation. A log record for each test event, which indicates the Weekly Test start, activation and termination, is created.

13.3 Walk Test

Allows the user to confirm that the panel can operate under a fire alarm condition. The test requires user level 3 (Engineer) access.

- 1. Select **'Tests'** from the main menu.

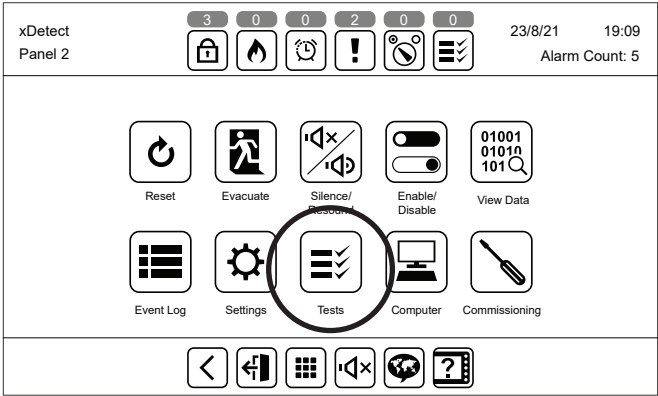


Figure 192. Viewing Tests

- 2. Select **'Walk Test'** from the Tests menu.

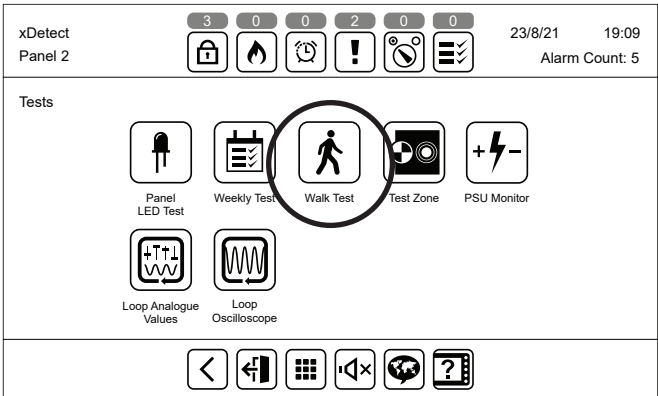


Figure 193. Performing a Walk Test

3. A screen prompt to begin a WalkTest is displayed. Select the **confirm** button.

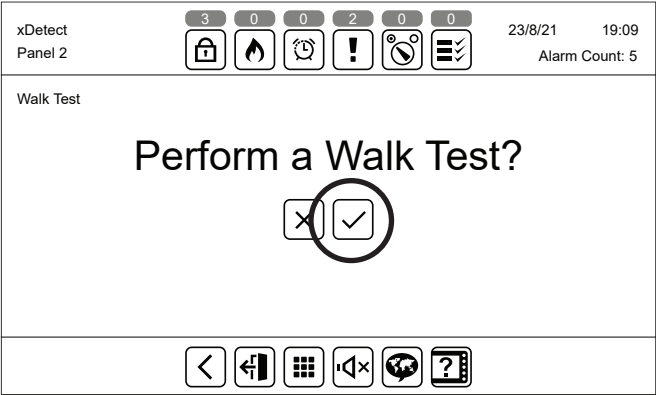


Figure 194. Performing a Walk Test

The screen indicates that a Walk Test is in progress.

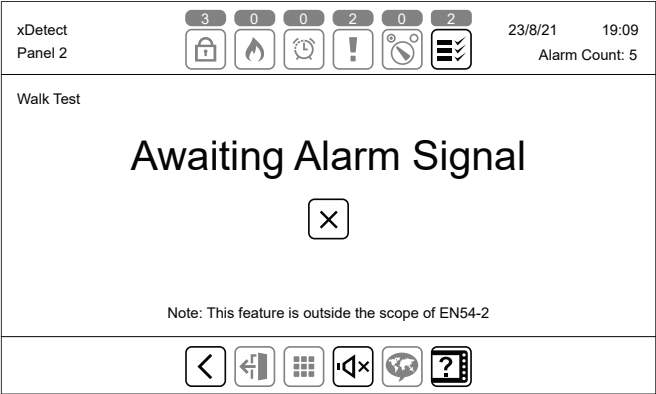


Figure 195. Indication that a test is in progress

The general test LED is activated for the duration of the test.
The internal buzzer pulses for the duration of the test.

TESTING

A walk test can now be performed: A triggered input device shall activate the panel zone LED, and all sounder/beacon devices in all zones, for 3 seconds, after which the output devices are deactivated and the test for that zone is complete. The sounder feedback time is adjustable through xDetectWorks. If required, further tests may be performed.

- 4. Select the **top-bar test button** to display the details of the current test.

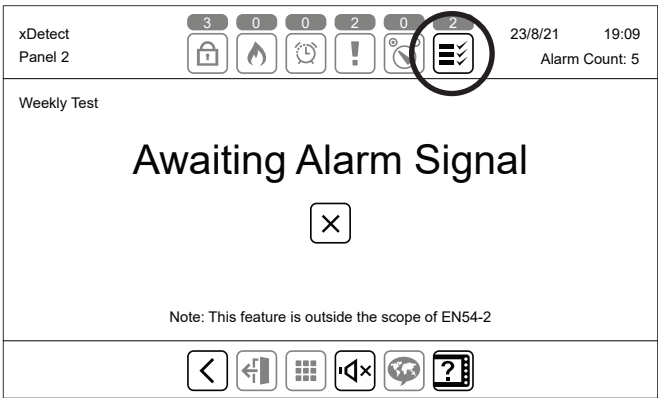


Figure 196. Viewing current test details

- 5. The current test details are shown. Tap the **back button** to return to the Walk Test 'Awaiting Signal' screen.

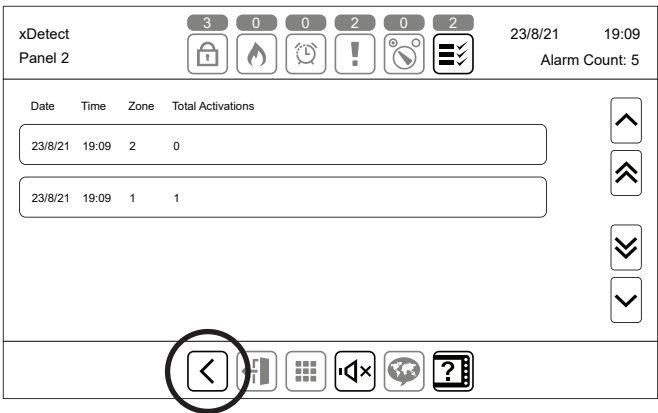


Figure 197. Returning to the Walk Test (Awaiting Alarm Signal) screen

- 6. The Walk Test can be terminated at any time by tapping the **cancel button** on the Awaiting Alarm Signal screen. Select the **confirm button** when prompted to confirm exiting from the test mode.

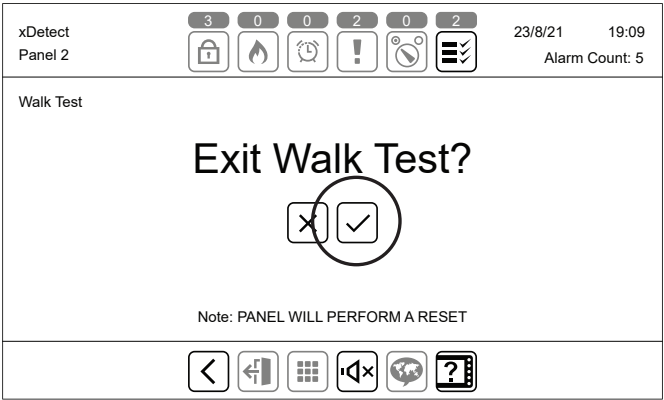


Figure 198. Confirming termination of the Walk Test

Upon terminating the Walk Test, the panel undergoes a soft reset before returning to normal quiescent operation. A log record for each test event, which indicates the Walk Test start, activation and termination, is created.

13.4 Zone Test

Allows the user to confirm that a zone is operational during fire alarm condition. The test requires user level 3 (Engineer) access.

- 1. Select '**Tests**' from the main menu.

TESTING

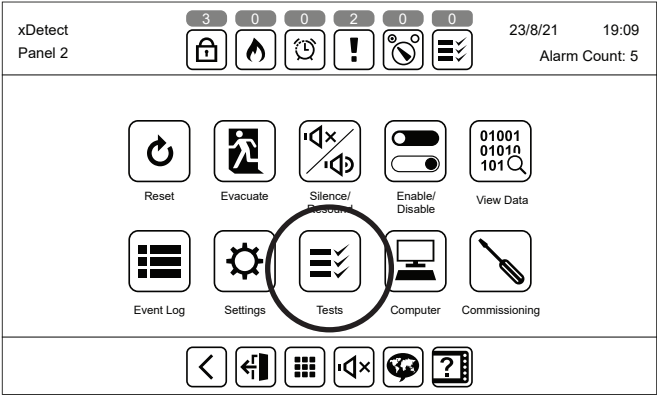


Figure 199. Viewing Tests

2. Select **‘Test Zone’** from the Tests menu.

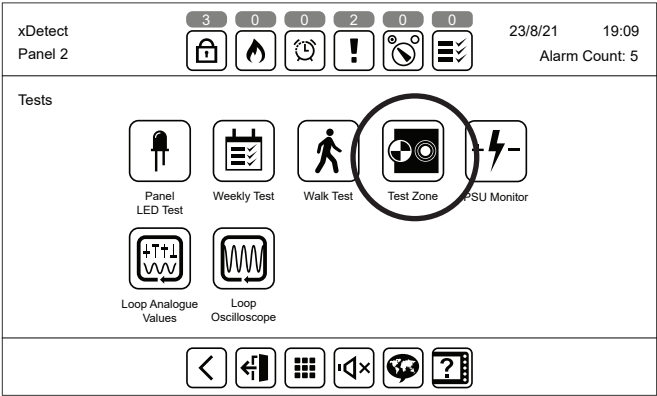


Figure 200. Performing a Zone Test

A screen prompting you to select zones is displayed. Any number of zones can be placed in the test state.

3. Select the **zone buttons** to place zones into the test state.

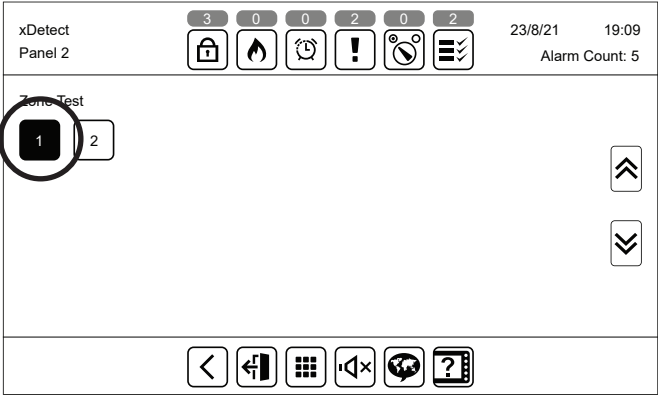


Figure 201. Selecting zones to place in the test state

The highlighted buttons confirm zones in test.

The general test LED is activated for the duration of the test.

A zone test can now be performed: A triggered input device shall activate all sounder/beacon devices in all zones, for 3 seconds, after which the output devices are deactivated and the test for that zone is complete. The zone remains in test. The sounder feedback time is adjustable through xDetectWorks. If required, further tests can be performed.

4. Select the **top-bar test button** to display the details of the current test.

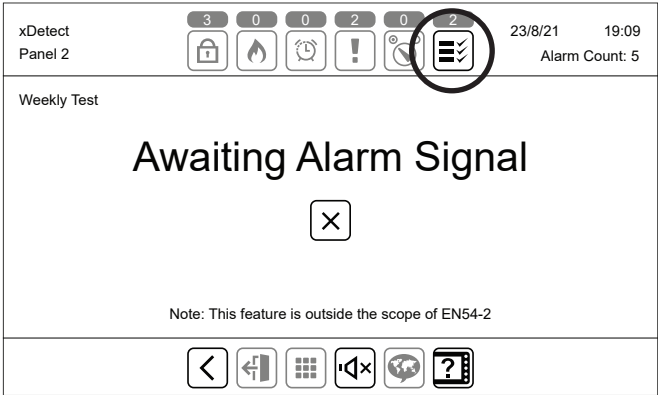


Figure 202. Viewing current test details

TESTING

5. The current test details are shown. Select the **back button** to return to the zone selection screen.

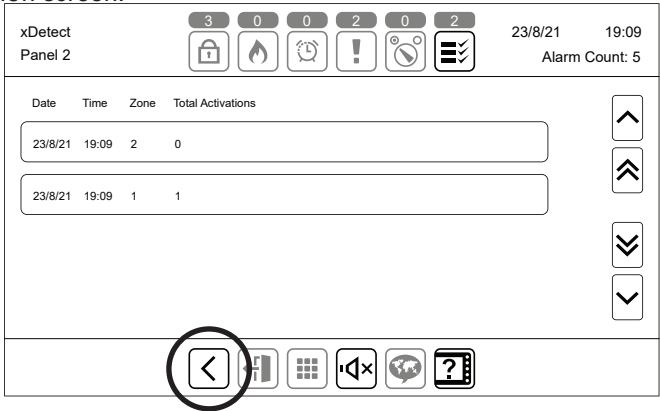


Figure 203. Returning to the zone selection screen

6. You can remove a zone from the test state by selecting the highlighted zone button again.

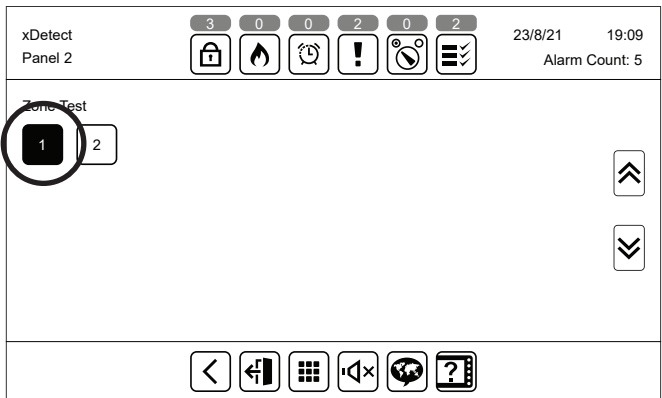


Figure 204. Removing a zone from the test state

The zone is removed from the test state

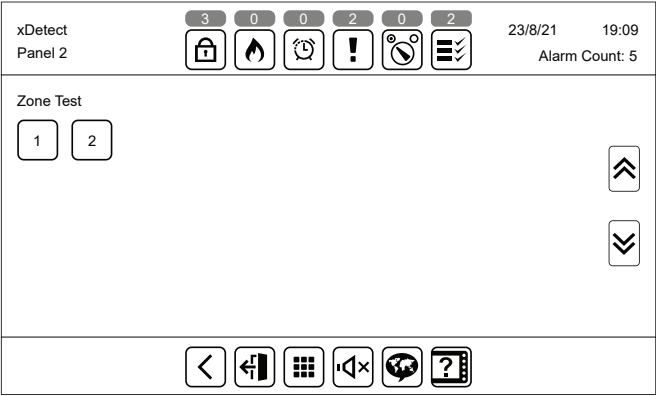


Figure 205. Example of a zone selection screen with no zones in test state

A log record for each test event, which indicates the zone test start, activation, and termination, is created.

Note: Regarding testing of automatic smoke detectors; given the unpredictable nature of smoke dissipation within the device under test (initial smoke charge, ambient air movement, device mounting etc.) on exiting the test state, sufficient residual smoke may exist to allow the device to enter the alarm condition.

13.5 PSU Monitor

Informs you about the power supply readings in the panel. The test requires user access level 3 (Engineer).

- 1. Select **'Tests'** from the main menu.

TESTING

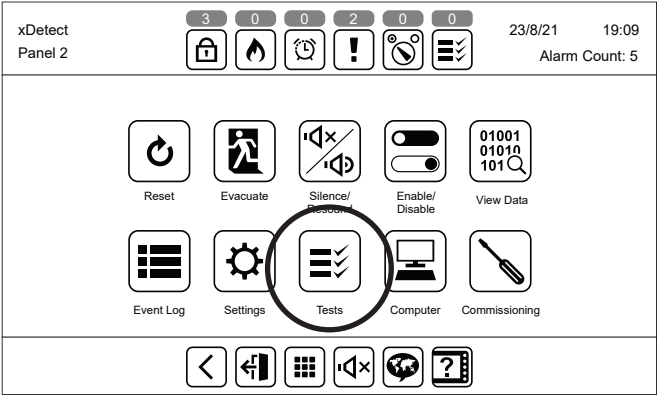


Figure 206. Viewing Tests

2. Select 'PSU Monitor' from the Tests menu.

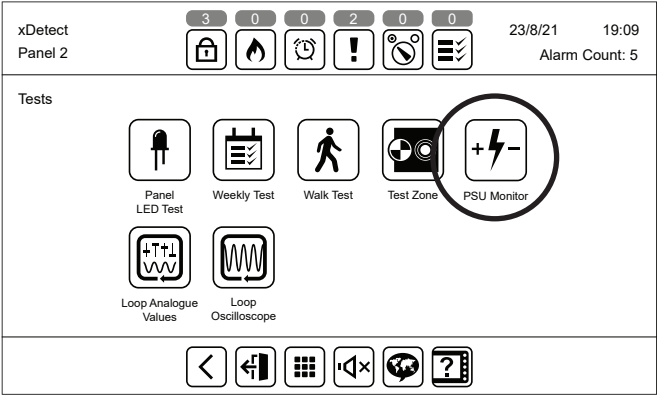


Figure 207. Monitoring the PSU

3. Select the PSE of which you want to view information.

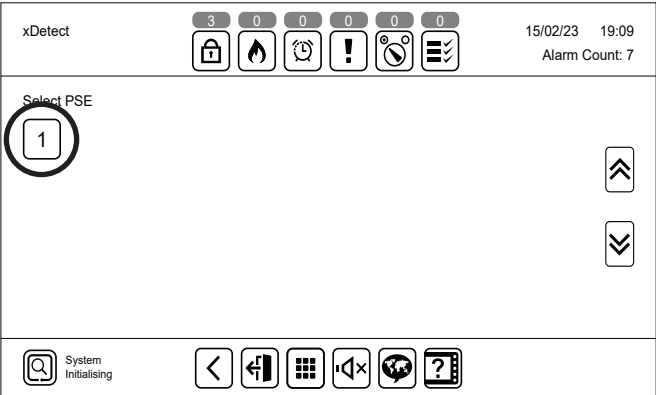


Figure 208. Selecting the PSE

The readings of the power supply units are displayed.

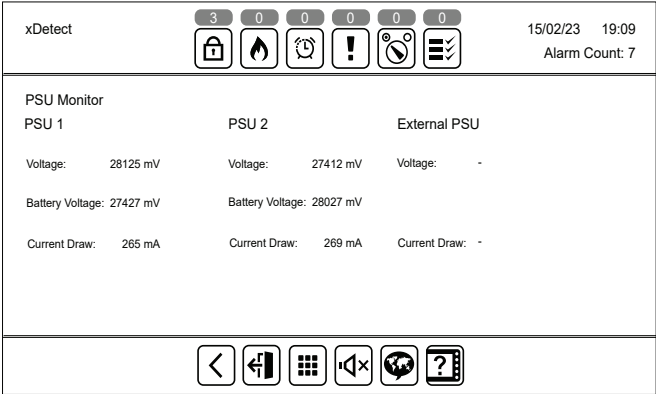


Figure 209. Power supply readings

13.6 Loop Analogue Values

Provides you with readings of analogue values of devices on loops in the panel. The analogue values represent how the different devices communicate their status to the panel. The response is sent as a byte embedded in the voltage on the loop.

The test requires user access level 3 (Engineer).

TESTING

- 1. Select 'Tests' from the main menu.

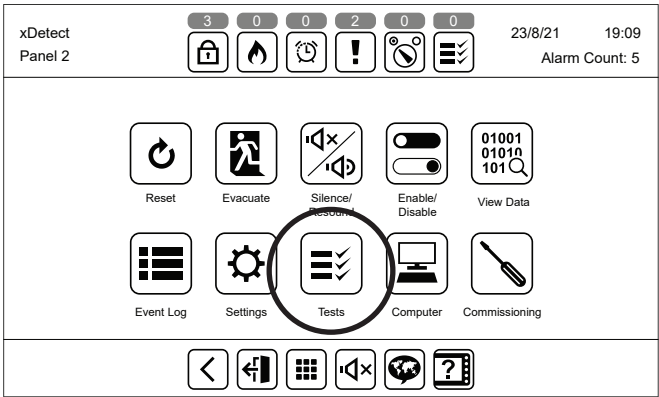


Figure 210. Viewing Tests

- 2. Select 'Loop Analogue Values' from the Tests menu.

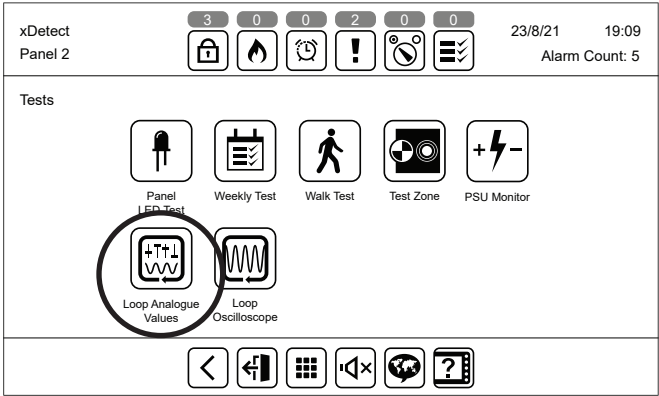


Figure 211. Viewing Loop Analogue Values

- 3. Select the loop that contains the device of which you want to view information.

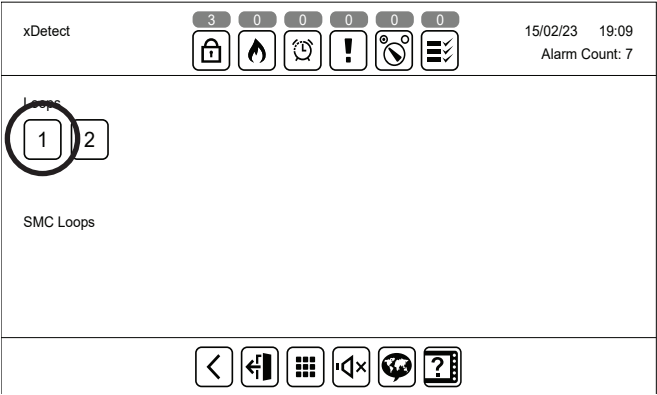


Figure 212. Selecting the loop that contains the device

4. Select the address of the device on the loop.

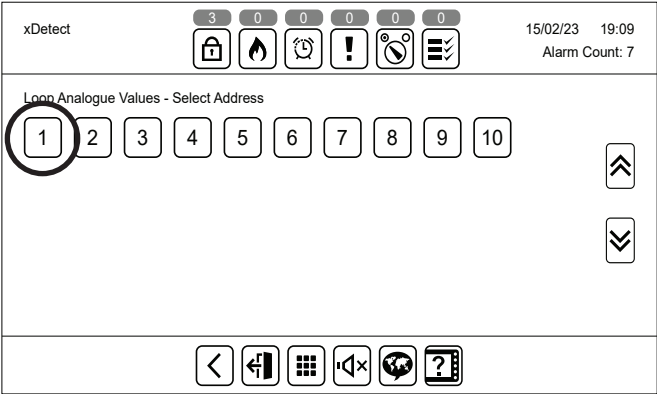


Figure 213. Selecting the device address

The loop analogue values are displayed.

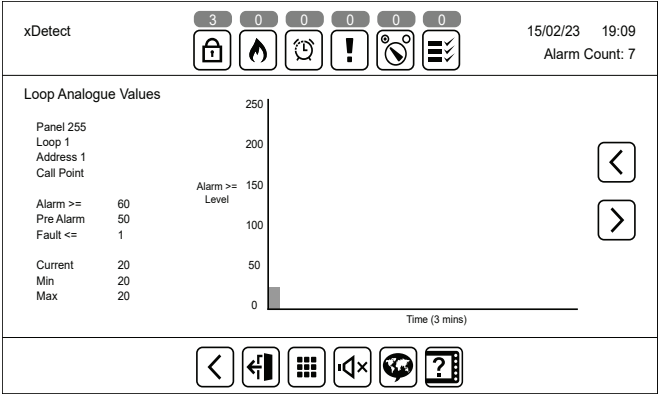


Figure 214. Loop analogue value readings

Specific values or ranges of these readings indicate different conditions on the panel, such as fire, pre-alarm, fault, and more.

For example, a reading of ≥ 60 denotes fire (alarm), 50 denotes pre-alarm, and 1 or 10 denote faults.

13.7 Loop Oscilloscope

Enables commissioning engineers to view real-time loop voltage transmission data and loop loading during critical sections of the commissioning process. This feature enables engineers to confirm the load in their design and anticipate overheads by visualising real-time load conditions. The test requires user access level 3 (Engineer).

- 1. Select 'Tests' from the main menu.

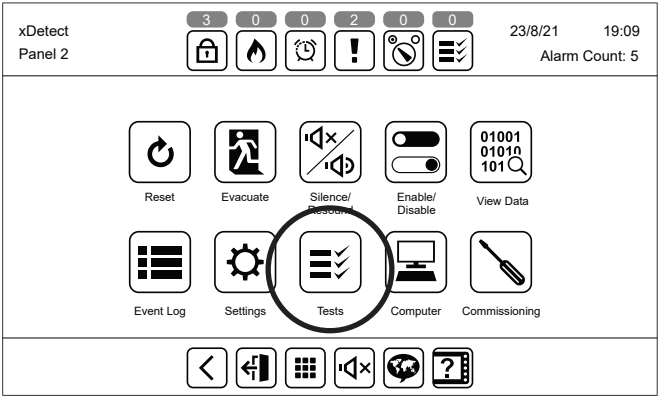


Figure 215. Viewing Tests

- 2. Select 'Loop Oscilloscope' from the Tests menu.

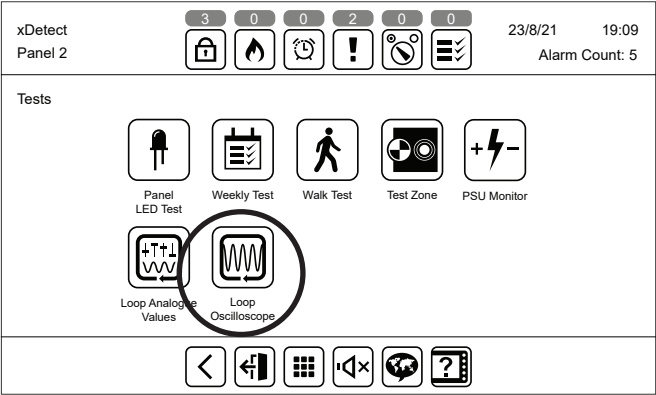
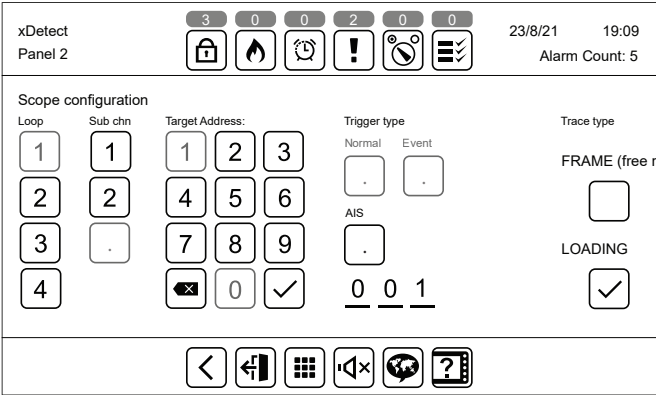


Figure 216. Viewing the Loop Oscilloscope

- 3. In the configuration screen, do the following:
 - 1. Select the loop and sub-channel of the device.
 - 2. Enter the target address of the device.
 - 3. Select your required trigger types.
 - 4. Select the trace type for which you want to view the analysis.



TESTING

Figure 217. Configuring the oscilloscope

4. Based on your selection, one of the two screens is displayed:
- Load analysis: Images the real-time DC load component of the loop communication.

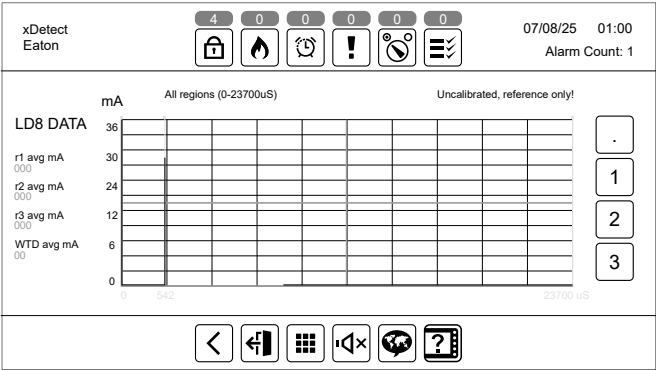


Figure 218. Example of a loop loading analysis

- Frame analysis: Images the device's data stream and responses to provide information about interference or erroneous data

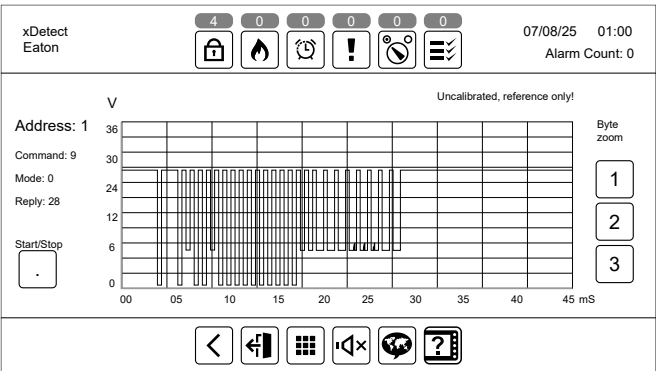


Figure 219. Example of a frame analysis

14. DELAYS

You can enable or disable delay timers using the Investigation Timers option, which is available in Commissioning -> Panel for Engineer users.

1. Select 'Investigation Timers' from the Panel menu.

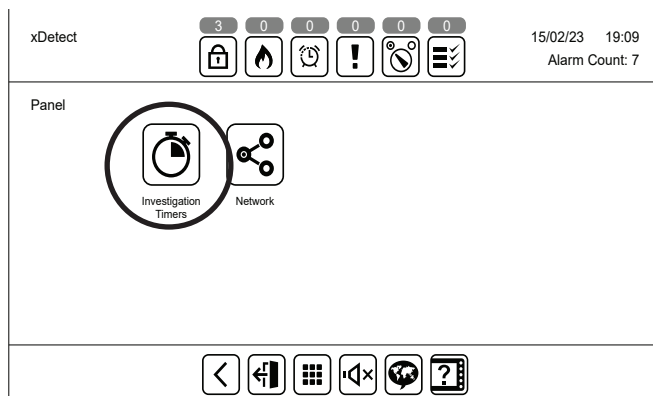


Figure 220. Viewing Investigation Timers

2. You can toggle the timers on/off.

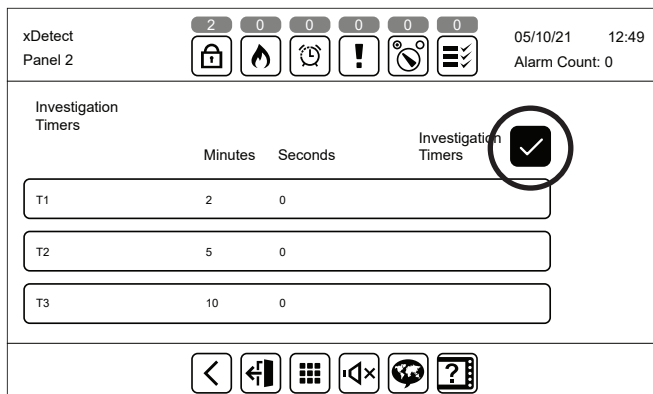


Figure 221. Toggling investigation timers on or off

Note: While delay timers can be toggled on/off from the panel HMI, they must be configured via xDetectworks.

DISABLEMENTS

15. DISABLEMENTS

The Disablements menu requires user level 2 (or higher) access. To view it, select **Enable/Disable** from the main menu.

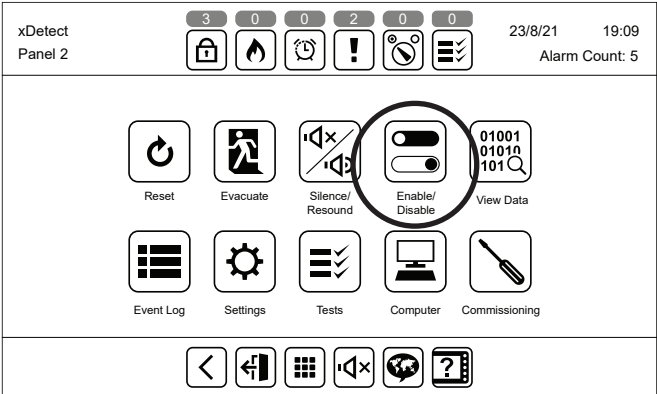


Figure 222. Viewing the Disablement menu

The disablements menu is displayed.

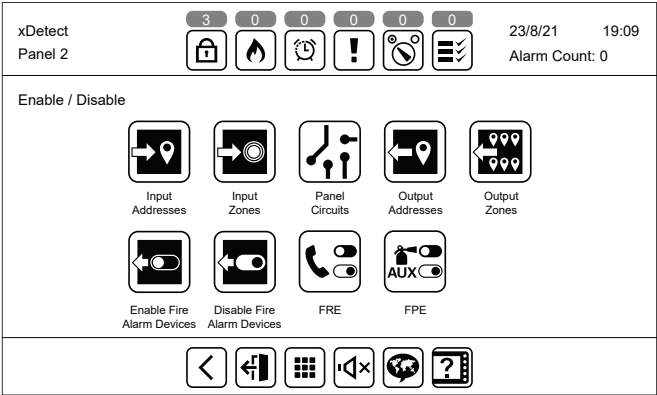


Figure 223. Viewing the Disablement menu

15.1 Enable/disable input or output addresses

To enable/disable input or output addresses:

- 1. Select ‘Input Addresses’ or ‘Output Addresses’ from the disablements menu.

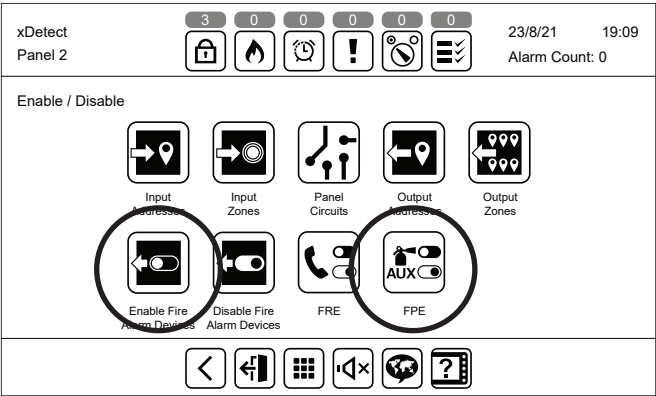


Figure 224. Selecting the required disablement option

- 2. Select the loop on which you wish to enable/disable addresses.

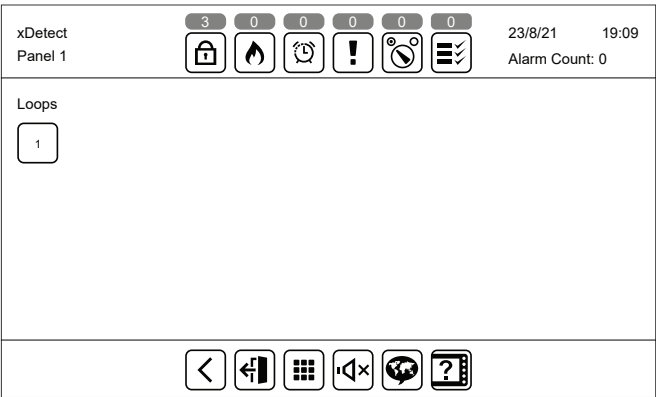


Figure 225. Selecting the loop that contains the address

- 3. Select addresses to enable or disable.

DISABLEMENTS

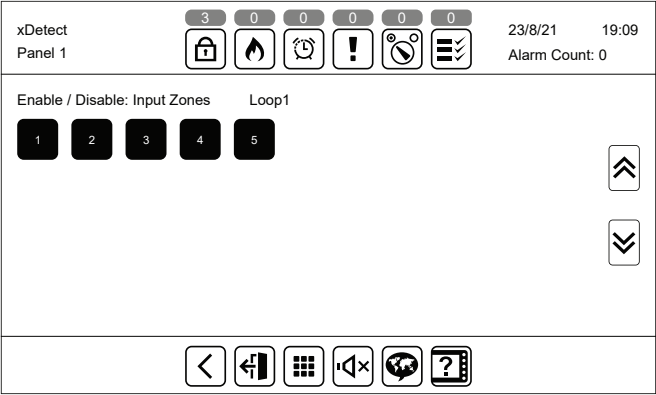


Figure 226. Selecting the addresses on the loop to enable or disable

15.2 Enable/disable input or output zones

To enable/disable input or output zones:

1. Select **'Input Zones'** or **'Output Zones'** from the disablements menu.

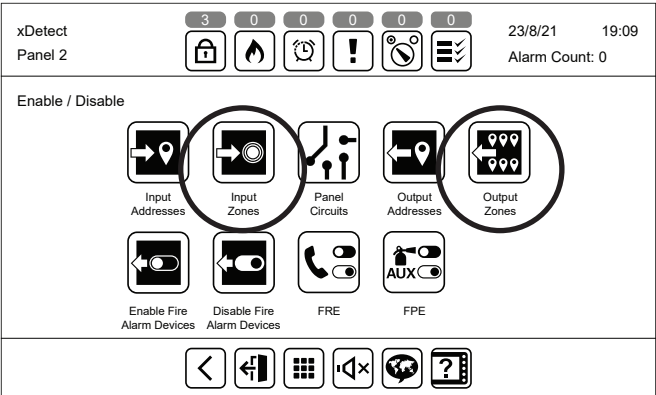


Figure 227. Selecting the required disablement option

2. Select the zone you want to enable or disable.

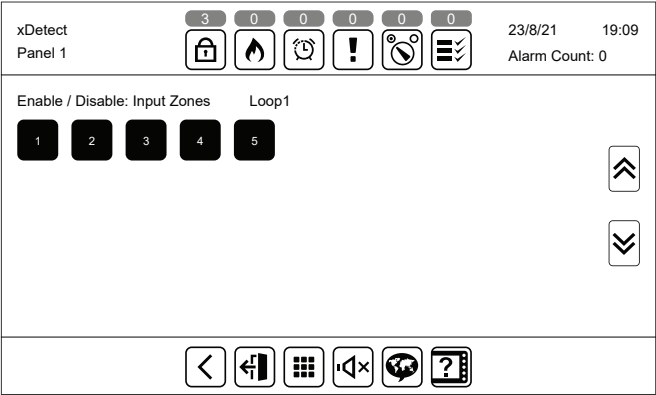


Figure 228. Selecting the zones to enable or disable

15.3 Enable/disable panel circuits

To enable/disable panel circuits:

- 1. Select 'Panel Circuits' from the Disablesments menu.

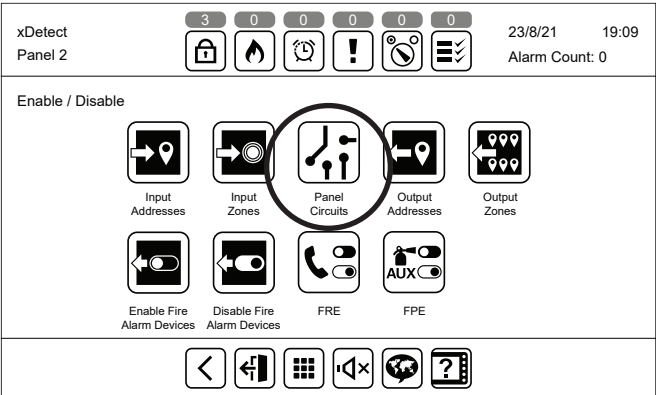


Figure 229. Configuring panel circuit disablesments

- 2. Select the module card that contains the circuit you want to enable or disable..

DISABLEMENTS

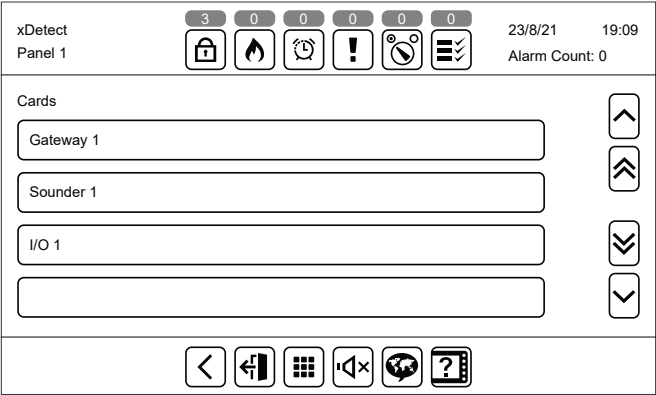


Figure 230. Selecting the module card

3. Use checkboxes to enable or disable panel circuits.

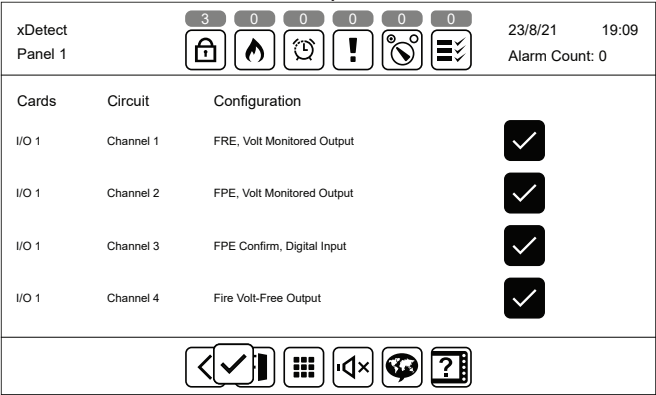


Figure 231. Selecting the circuits to enable

15.4 Enable all fire alarm devices

1. Select '**Enable Fire Alarm Devices**' from the disablements menu.

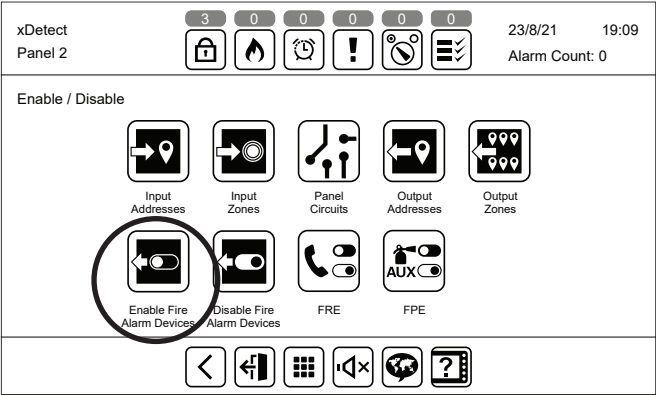


Figure 232. Enabling all fire alarm devices

- 2. Select the 'confirm' button.



Figure 233. Enabling all fire alarm devices

Note: This will enable all fire alarm devices on the network.

15.5 Disable all fire alarm devices

- 1. Select 'Disable Fire Alarm Devices' from the disablements menu.

DISABLEMENTS

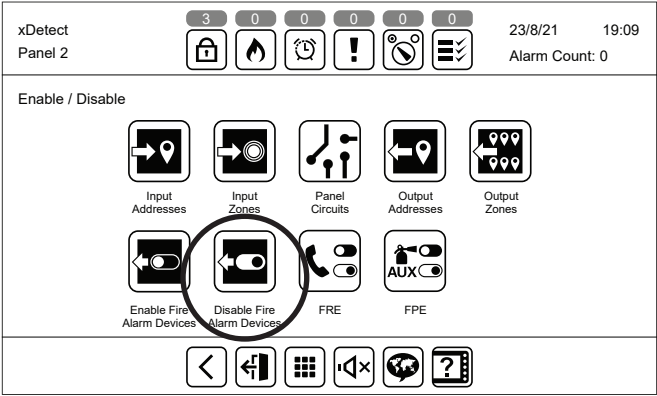


Figure 234. Disabling all fire alarm devices

2. Select the 'confirm' button.



Figure 235. Confirming that you want to disable all fire alarm devices

Note: This will disable all fire alarm devices on the network.

15.6 Enable/disable FPE

1. Select 'FPE' from the disablements menu.

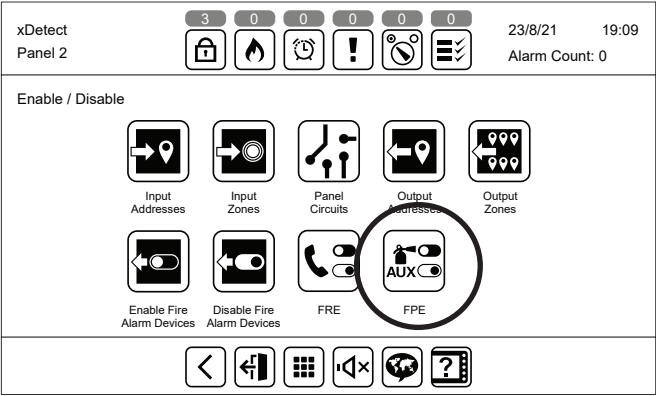


Figure 236. Enabling or disabling FPE

2. Select '**Enable FPE**' to enable all FPE on the panel. Select '**Disable FPE**' to disable all FPE on the panel.

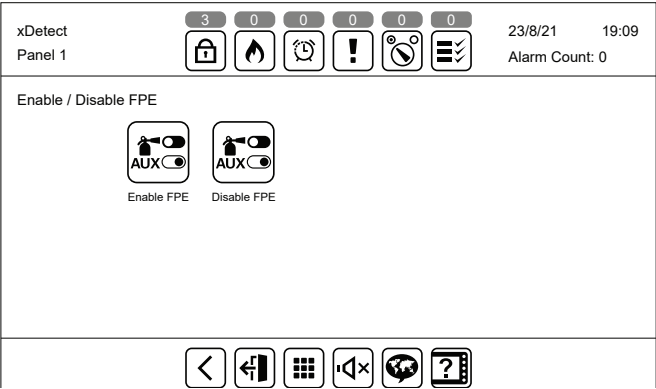


Figure 237. Enabling or disabling FPE

3. Select the '**confirm**' button.

DISABLEMENTS

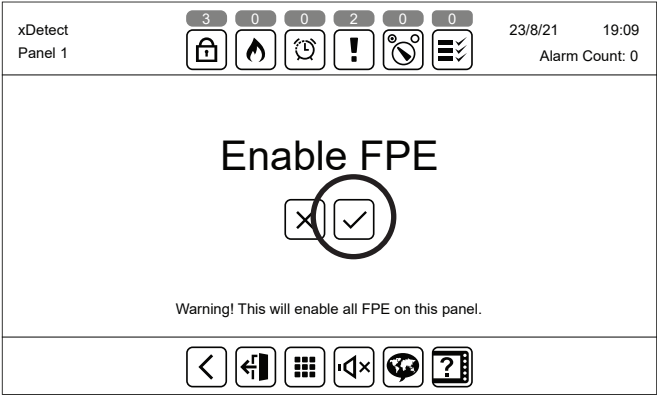


Figure 238. Example of confirming you want to enable FPE

15.7 Enable/disable FRE

- 1. Select 'FRE' from the disablements menu.

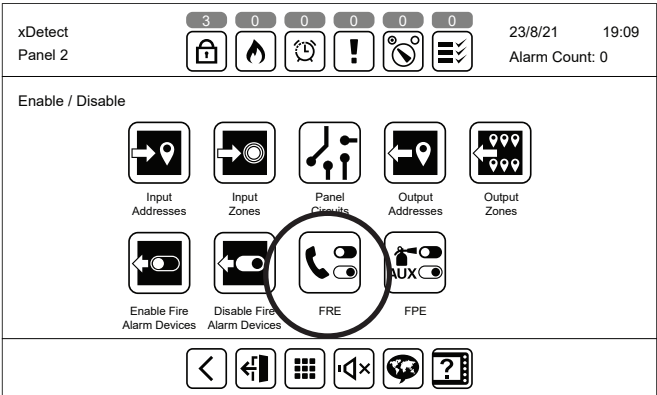


Figure 239. Enabling or disabling FRE

- 2. Select 'Enable FRE' to enable all FRE on the panel. Select 'Disable FRE' to disable all FRE on the panel.

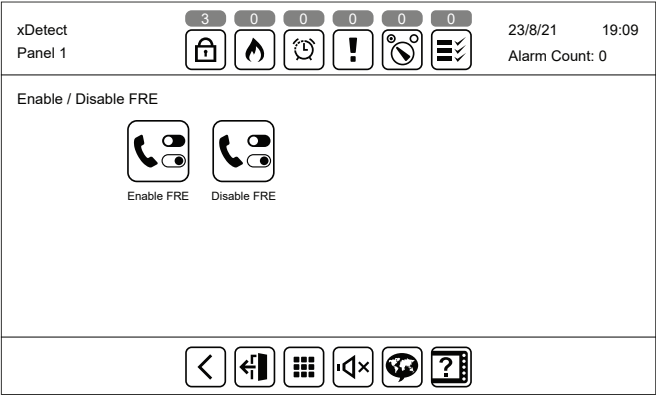


Figure 240. Enabling or disabling FRE

3. Select the **'confirm'** button.

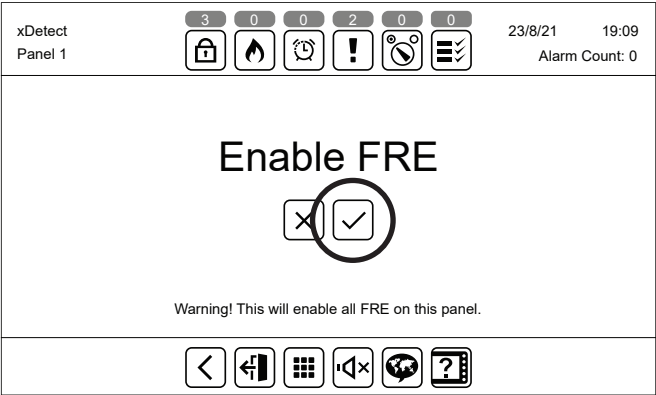


Figure 241. Example of confirming you want to enable FRE

15.8 Enable/disable FWRE (Gateway)

FWRE can be disabled at access level 3. To enable/disable FWRE:

1. Select **'Panel Circuits'** from the disablements menu.

DISABLEMENTS

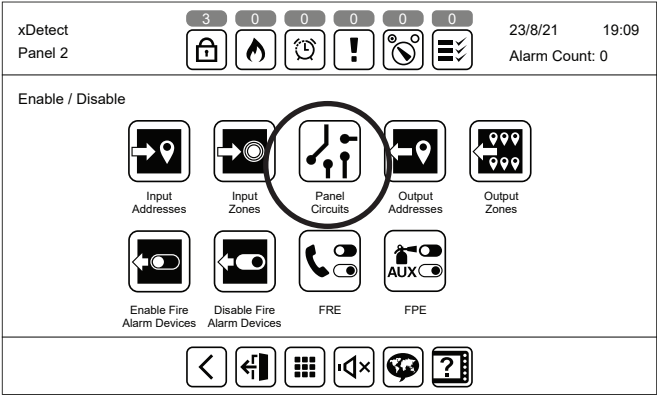


Figure 242. Configuring panel circuit disablements

2. Select '**Gateway 1**'.

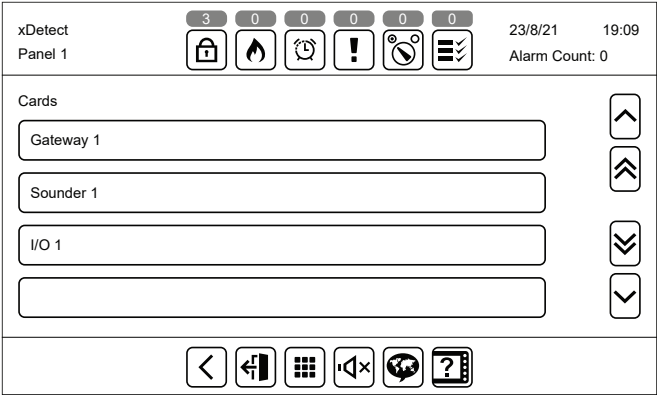


Figure 243. Selecting the Gateway module card

3. Use checkbox to enable or disable **Gateway 1**.

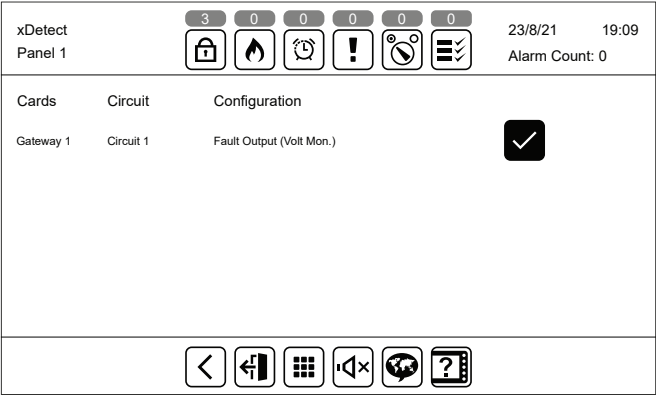


Figure 244. Example of enabling FWRE

Zone/Device Counters and Alarm Device Warnings

- If a single device is disabled, the counter will count the device AND the zone in which it resides, and will therefore indicate 2 disablements.
- When ALL fire alarm devices are disabled, interface outputs are also included. A warning is displayed on the CIE and in xDetectWorks.

OVERVIEW OF THE FIRE SCREEN

16. OVERVIEW OF THE FIRE SCREEN

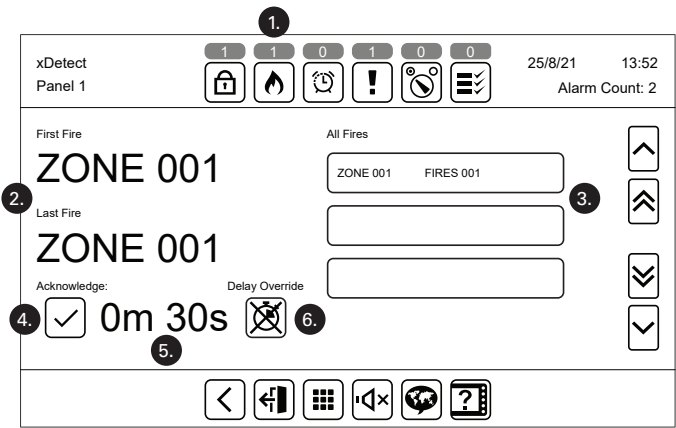


Figure 245. Understanding the Fire screen

Description	
1	Count of zones currently in fire. Tap to see details of all fires.
2	This section shows the first and last zones to go into fire.
3	This section shows all zones which are currently in fire and displays how many fires are currently active in the zone. Tap on a box to see more details of the zone in fire. Use the arrows on right to scroll through the list.
4	Acknowledge fire and switch to Timer 2 countdown.
5	Timer 1 delay countdown.
6	Override delay (system goes into alarm).

Timer T1/T2 (Option not required by EN54 pt2)

Note: The panel displays an option for T3. This is invoked ONLY with the Italian timers option. For more information, see "" on page 14.

The panel has customisable delay timer functionality to delay the system going into alarm upon fire detection. In the event of a Fire the timer T1 can be set from 1 to 600 seconds where the alarm will be displayed on the panel and no output activation, if during this time the alarm is acknowledged then timer T2 can be set from 1-600 seconds where the alarm can be investigated and alarm reset. However if timer T1 & T2 time out during alarm activation, the outputs will be activated.

Timer T1/T2 with Call point Override (Option not required by EN54 pt2)

This is similar to the above except a call point alarm will activate the output instantly.

OVERVIEW OF THE FIRE SCREEN

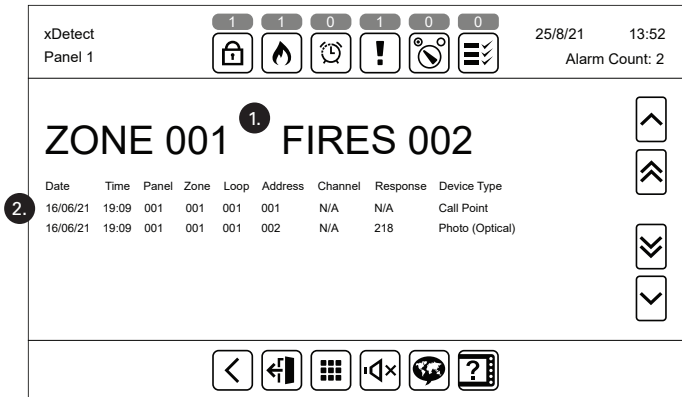


Figure 246. Viewing fire information

Description

- 1 This section shows the zone currently selected and the number of fires currently active in the zone.
- 2 This section shows details of all fires currently active in the zone.

Use arrows on right to scroll through the list

Use the **back action button** to go back to fire overview screen.

OVERVIEW OF THE FAULTS SCREEN

17. OVERVIEW OF THE FAULTS SCREEN

Fault screen 1 shows all faults currently present on the system. Use arrow buttons on the right to scroll through faults. Tap on a box to see more details on the fault.

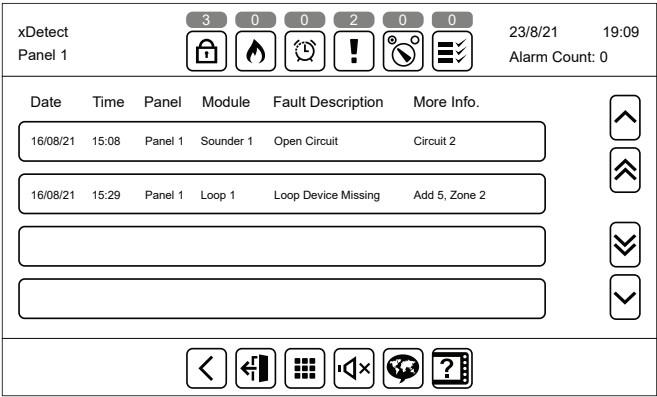


Figure 247. Understanding the Faults screen

Fault 2 screen shows the selected fault in more detail, as well as service company details.

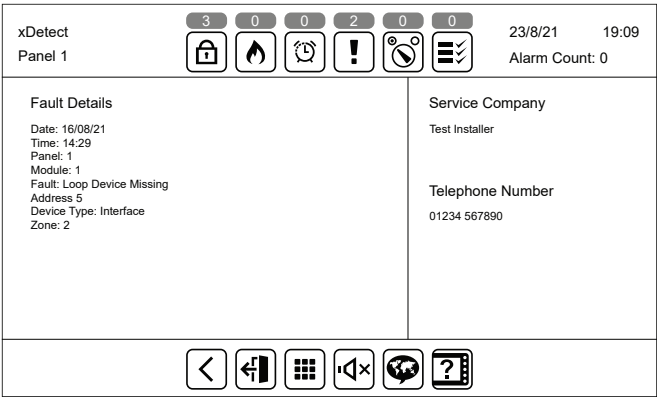


Figure 248. Viewing faults information

17.1 Network fault analysis

You can dive deep into network fault analysis in the screen available at Commissioning -> Panel -> Network. This screen provides detailed information for each panel in the network.

This feature requires user level 3 (Engineer) access.

For example, if a network break fault has occurred, you can review this screen to understand which channel on which panel is affected, which can in turn help you identify the location of the cable fault.

Information about network card unavailability is also indicated on this screen.

Figure 249. Network fault analysis

Note: On this screen, the current panel is indicated with a *.

17.2 Earth fault monitoring

An earth fault can occur when any input or output of the panel is connected to earth.

This fault can be triggered under the following circumstances, and more:

- A resistance of ≤ 6.5 Mohms if the input or output is 28V
- A resistance of ≤ 1.5 Mohms if the input or output is 0V
- Plugging in third party equipment, such as laptops, using a mains supply

To enable earth fault monitoring for a single panel, fit the jumper to CON14 located near to the mains connector on the PSE backplane. With the jumper fitted, the panel monitors for earth fault conditions and indicates occurrences through the HMI.

Note: It takes approximately 70 seconds for an earth fault to be reported and a similar amount of time for it to be cleared after removing the fault.

OVERVIEW OF THE FAULTS SCREEN

17.2.1 Network earth fault monitoring

When panels are networked, the Earth Fault Monitoring jumper should only be fitted with one panel and all others should be removed. All panels in the network will be monitored for earth faults, but only the monitoring panel will report a fault.

To identify the panel in which the fault has occurred, you must remove each panel one by one from the network and review the information displayed on the monitoring panel. If after removing a panel only a network error is reported, the removed panel is the one with the earth fault.

18. EVENT LOG

The panel is capable of storing up to 11,000 system events including fire, fault, disablements, tests, resets and pre-alarm events.

The panel is capable of filtering and displaying these system events on-screen. The events can be filtered by:

- Fire
- Fault
- Test
- Disablement
- Date
- No filter

To view event log:

1. Log in at user access level 2 (or higher).
2. Select '**Event Log**' on the main menu.

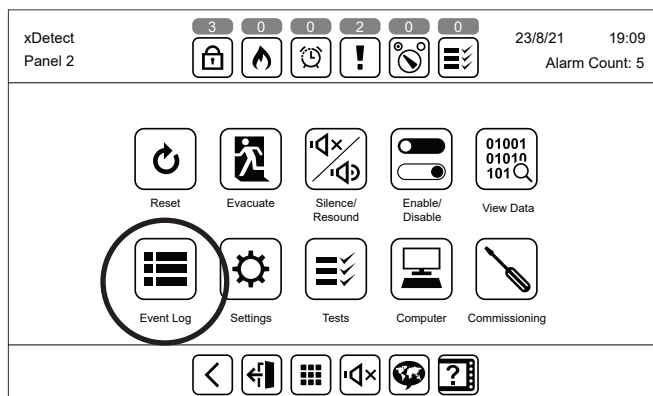


Figure 250. Viewing and managing the event log

3. Select '**View Event Log**' on the Event Log menu.

EVENT LOG

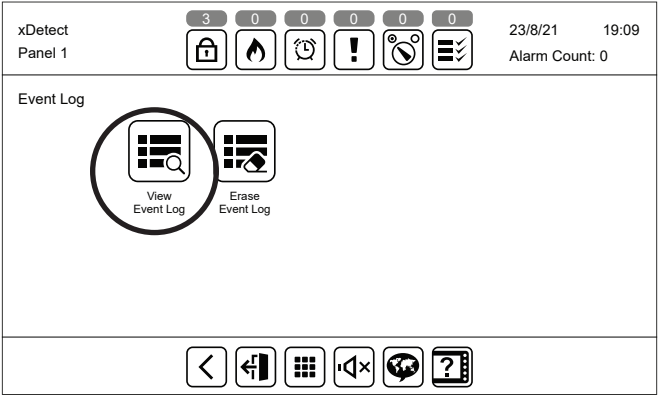


Figure 251. Viewing the event log

4. Select the desired filter.

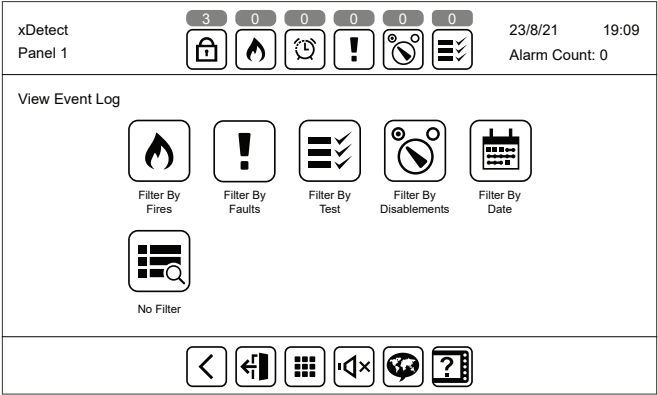


Figure 252. Selecting filters for the event log

5. Use arrow buttons to scroll through events in the filtered view.

xDetect
Panel 1

3

0

0

0

0

0

23/8/21
19:09

Alarm Count: 0

View Event Log - Page 1 / 20

Date	Time	Panel	Module	Details
16/08/21	15:08	1	Sounder 1	Circuit 2 Open Circuit
16/08/21	14:57	1	Sounder 1	Circuit 2 Open Circuit
16/08/21	14:53	1	Gateway 1	Alarm Zone 1 Enabled
16/08/21	14:34	1	Loop 1	Device Enabled. Addr 3
16/08/21	11:10	1	Gateway 1	Alarm Zone 2 Enabled

Figure 253. Viewing the filtered event log

EVACUATION

19. EVACUATION

You can trigger a system-wide or local evacuation event directly from the panel. This results in sounding all relevant alarms and can be used, for example, when conducting a fire drill or to initiate an evacuation for a non-fire emergency.

The Evacuation feature is available in the main menu only for users having access level 2 or higher. To initiate an evacuation, do the following:

- 1. Tap 'Evacuate'.

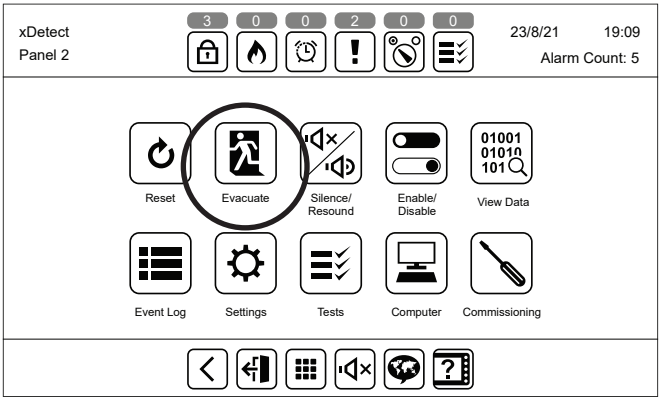


Figure 254. Initiating an evacuation event

- 2. Select one of the following checkboxes:
 - To sound all alarms across the system (from all networked panels) to initiate a system-wide evacuation, elect the **All Panels** checkbox.

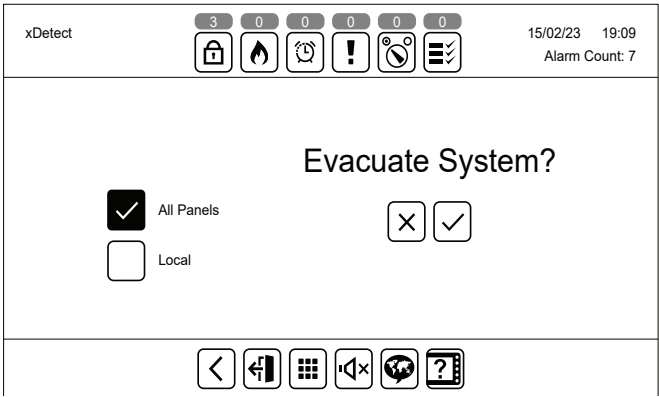


Figure 255. Initiating a system-wide evacuation

- To sound all alarms only from the same panel to initiate a localised evacuation, select the **Local** checkbox.

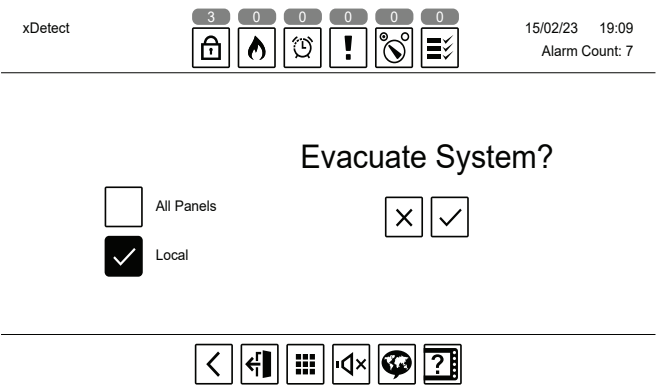


Figure 256. Initiating a localised evacuation

1. Tap the **Confirm** button.
- The corresponding evacuation is initiated.

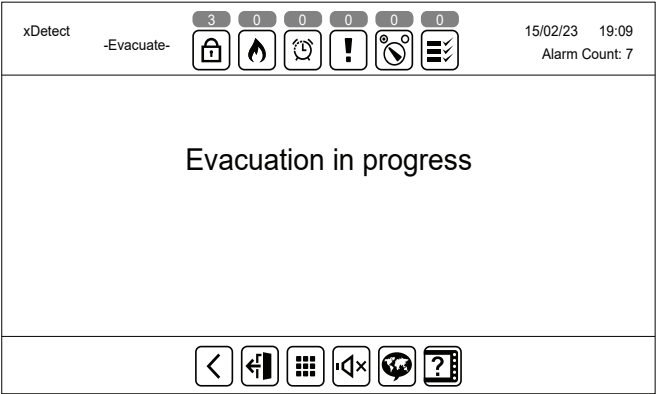


Figure 257. Indication that an evacuation is ongoing

SILENCE/RESOUND ALARMS

20. SILENCE/RESOUND ALARMS

During a fire event, you can silence all or select alarms on the system, for example, to investigate the event. Later, you can re-sound the silenced alarms based on your requirements.

The Silence/Resound feature is available in the main menu only for users having access level 2 or higher.

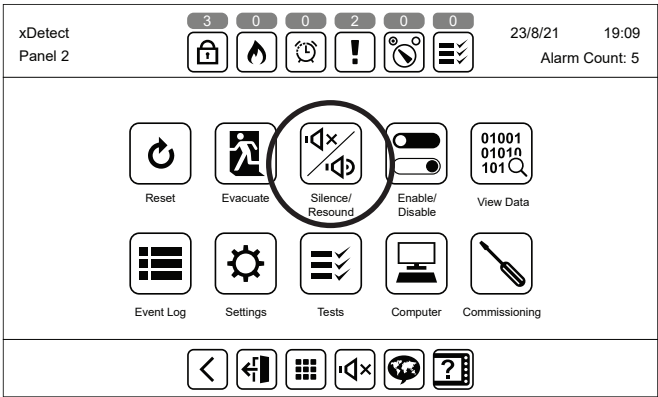


Figure 258. Silence/Resound option on the main menu

20.1 Silencing alarms

To silence alarms active in the fire alarm system, do the following:

- 1. Tap **Silence Alarms**.

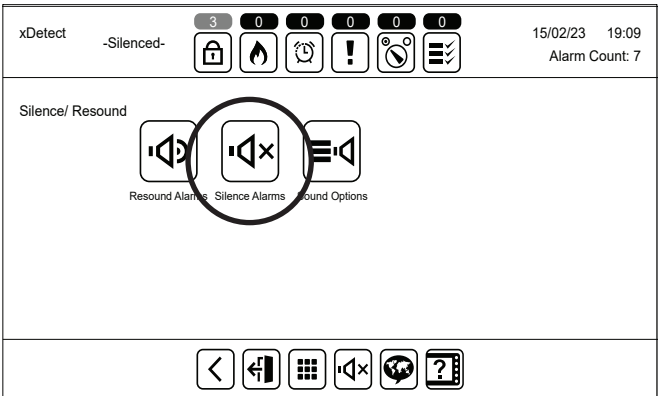


Figure 259. Silencing alarms

2. Select one of the following checkboxes:
 - To silence all active alarms across the system (from all networked panels), select the **All Panels** checkbox.

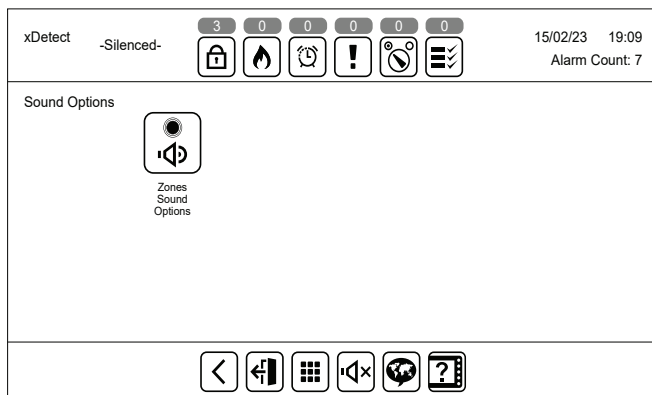


Figure 260. Silencing all active alarms across the system

- To silence all active alarms only from the same panel, select the **Local** checkbox.

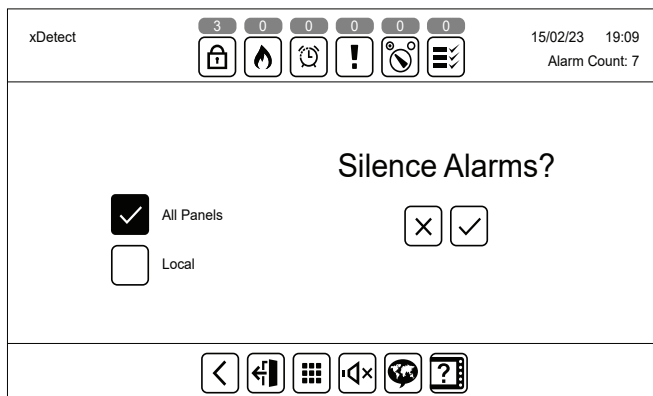


Figure 261. Silencing only local alarms

3. Tap the **Confirm** button.

SILENCE/RESOUND ALARMS

The alarms that correspond to your selection are silenced.

20.2 Re-sounding alarms

To sound the silenced alarms again, do the following:

- 4. Tap **Resound Alarms**.

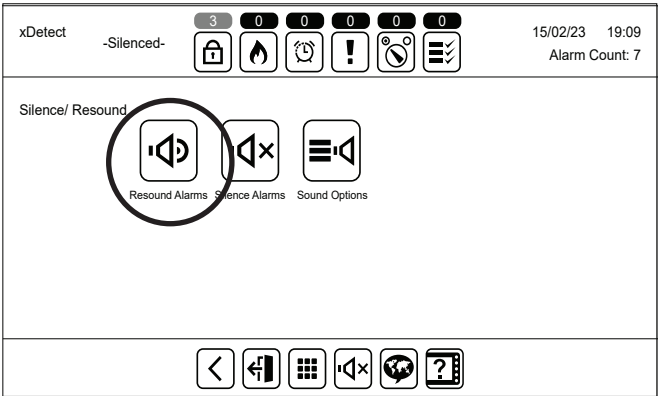


Figure 262. Re-sounding alarms

- 5. Select one of the following checkboxes:
 - To re-sound all active alarms across the system (from all networked panels), select the **All Panels** checkbox.

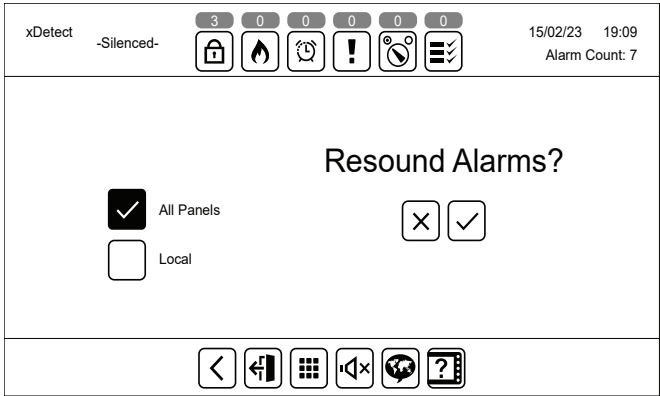


Figure 263. Re-sounding all silenced alarms across the system

- To re-sound all active alarms only from the same panel, select the **Local**

checkbox.

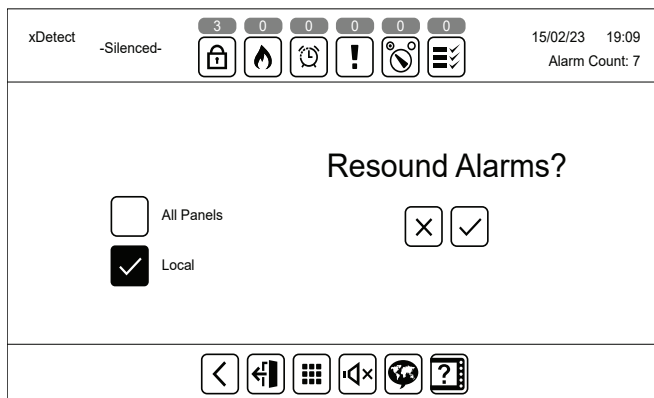


Figure 264. Re-sounding only local alarms

6. Tap the **Confirm** button.

The alarms that correspond to your selection are re-sounded.

20.3 Enabling or disabling forced alarm resounding

You can also enable or disable forced resounding of alarms for activations in new zones (which can be programmed in xDetectWorks). To do this:

1. Tap **Sound Options -> Zones Sound Options**

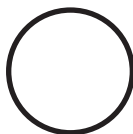


Figure 265. Configuring sound options

SILENCE/RESOUND ALARMS

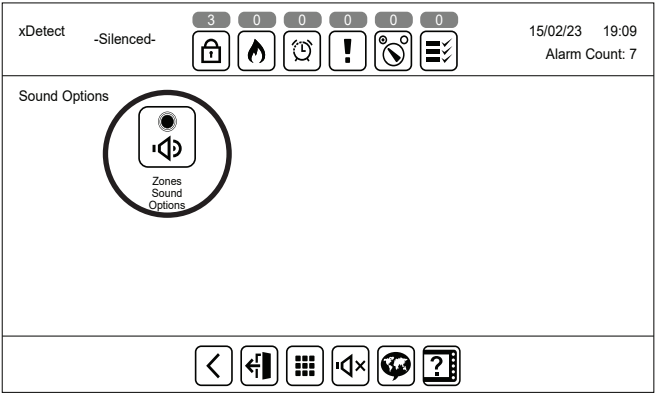


Figure 266. Configuring zone sound options

- 2. Select or clear the Resound for activations in new zones only checkbox.

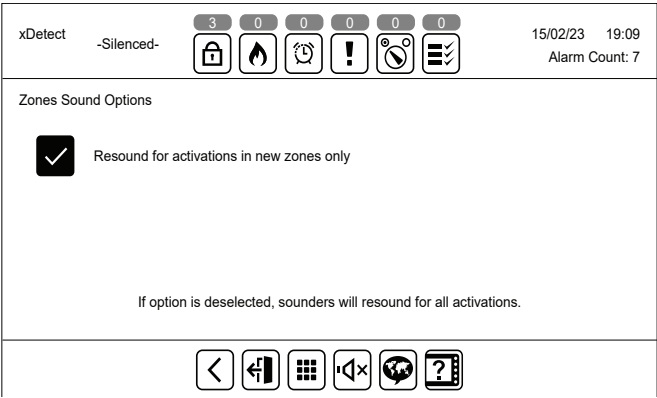


Figure 267. Example of enabling resounding alarms during activations in new zones

The selected option is enabled.

21. MAINTENANCE

This section describes briefly the relevant requirements of BS 5839-1 for maintenance of the xDetect panel. Users should align to their local codes of practice.

21.1 Responsibility

A person / organization should be appointed for maintenance of the xDetect panel. The responsible individual is expected to have been trained on system usage and maintenance by the manufacturer or installer of the system. The responsibilities include (but are not limited to below):

1. Ensuring maintenance routine described in Section 13.2 is performed as described.
2. Ensuring all required records of maintenance is maintained.
3. Ensuring all relevant staff are trained to use the system.
4. Ensuring that records are updated to reflect any changes made to the system.

21.2 Routine

Daily check

If the xDetect panel is installed in a location where audible fault warnings could be unnoticed for more than 24 hours, a special check should be performed each day to confirm that the "Power" LED is illuminated and HMI indicates there are no faults, or any faults that are indicated are receiving necessary attention. Notify any faults to a system supervisor.

Note: This check only needs to be performed if the Buzzer goes unheard for 24 hours. This inspection does not need to be recorded.

Weekly check

The weekly test is designed to confirm that the panel can report a fire condition from an input device and create an alarm condition, usually operating programmed sounders or Voice Alarm systems. It should also send a signal to any connected ARC/Communicator.

The test is usually undertaken by activating a manual callpoint, using a different call point every week until all are tested then starting again. You can operate a call point as if it were a real fire event which would operate ALL programmed outputs or you can use the Weekly Test feature on xDetect so that only the programmed sounders are operated.

1. Log into the Panel at L2, select Tests -> Weekly Test from the HMI menu, and confirm that you wish to proceed with the test.
2. Activate a callpoint.

MAINTENANCE

Only the programmed sounder outputs and ARC signalling will operate. The interfaces programmed on the system will not operate. The Panel will reset automatically after 5 minutes or you can reset it manually.

3. Confirm that the panel has registered the fire event, the details are correct, the programmed sounders have operated, and a signal has been sent to the ARC.

The test should be recorded in the system Logbook.

Quarterly

Check all previous log book entries and verify that remedial action has been taken. Carry out the weekly test. Visually examine the batteries and their connections.

Disconnect the mains supply and check that the batteries are capable of supplying the alarm sounders, by operating a call point.

Only systems using Vented Batteries as a standby supply should check the terminals & electrolyte levels of the batteries. Electrolyte should be topped up as required.

Annual test

As Weekly Test and Quarterly Test above. Additionally test all sensors and call points and check operation.

A periodic inspection and test should be carried out annually. See local standards for specific details.

Alongside this, the entire system should be inspected & tested over a period of twelve months on at least two visits. One visit can include the annual periodic test. All detectors and call points should be tested. All alarm devices should be tested. Cable fixings should be checked visually. The cause & effect program should be confirmed in at least one scenario. The standby power supply capacity should be checked to ensure suitability for duration required. Confirmation of a suitable zone plan is located adjacent to all CIE. On completion, the log book should be updated and any defects reported.

Every 2-3 years

During the normal servicing cycle check analogue levels of the detectors. If any are approaching the pre-alarm level then the proprietary cleaning methods can be adopted. e.g. high pressure air spray.

Every 5 years

Replace sealed lead acid batteries.

Remember to update the next 'Service date' for the system after the check.

21.3 Non routine

From time to time, the xDetect panel may require non-routine attention, including

special maintenance. Non-routine maintenance includes:

1. A special inspection of an existing system when a new organization takes over maintenance of the system.
2. Repair of faults or damage.
3. Modification to take account of extensions, alterations or changes in occupancy.
4. Inspection and test of the system following a fire.

SUPPORTED LANGUAGES

22. SUPPORTED LANGUAGES

Although English is the default language, xDetect supports multiple other languages.

Contact your regional Customer Support team to order additional language packs based on your requirements.

The panel can support the following languages (if you have installed the respective language pack): Italian, Vietnamese, Arabic, French (Belgium), Dutch (Belgium), Portugese (Brazil), Romanian, Greek, Turkish, Spanish, and Hungarian.

To install additional languages, you can use the **Update Languages** option in the Settings menu. To switch between installed languages, you can use the **Change Language** action button at the bottom of the screen.

xDetectWorks can also support multiple languages (if you have installed the respective language pack), such as: Greek, Hungarian, Italian, Polish, Portugese (Brazil), Portugese (Portugal), Romanian, Spanish, and Vietnamese.

To switch to a different language, click the **Settings** icon and select the required language in the right pane.

  
  
Eaton Electrical Products Ltd. Llantarnam Park Cwmbran NP44 3AW 21
BS EN 54-2 1997 & A1:2006 xDetect Control and indicating equipment for fire detection and fire alarm systems for buildings BS EN 54-2 Clause
Options (with requirements) provided 7.8 Output to fire alarm devices 7.9.1 Output to fire alarm routing equipment 7.9.2 Alarm confirmation input from Fire alarm Routing Equipment 7.10.1 FPE Output type A 7.10.2 FPE Output type B 7.10.3 FPE Output type C 7.11 Delays to outputs 7.12.3 Dependencies on more than one alarm signal-Type C 7.13 Alarm counter 8.3 Fault Signals from points 8.9 Output to fault routing equipment 9.5 Disabling of each point 10 Test condition

BS EN 54-4 1997 & A1:2002 A2:2006
xDetect
Power Supply equipment for fire detection and fire
alarm systems for buildings
BS EN 54-2 Clause

**Power rating label is located on the
inside face of the panel door**

EFXD01022	Eaton	DoP0479	xDetect 1-2 Loop Addressable Control and Indicating Equipment	DoP0479UK
EFXD01020	Eaton	DoP0480	xDetect	DoP0480UK
CXD01020	Cooper	DoP0481	1-2 Loop Analogue	DoP0481UK
JXD01020	JSB	DoP0482	Addressable Control and Indicating Equipment	DoP0482UK
MXD01020	Menvier	DoP0483		DoP0483UK
EFXD01042	Eaton	DoP0484	xDetect 1-4 Loop Addressable Control and Indicating Equipment	DoP0484UK
EFXD01040	Eaton	DoP0485	xDetect	DoP0485UK
CXD01040	Cooper	DoP0486	1-4 Loop Analogue	DoP0486UK
JXD01040	JSB	DoP0487	Addressable Control and Indicating Equipment	DoP0487UK
MXD01040	Menvier	DoP0488		DoP0488UK

Essential Characteristics	Performance	Harmonized Technical Specification	
		BS EN54-2:1997 + A1:2006	BS EN54-4:1997
Performance under fire conditions	Pass	4, 5, 7	-
Response Delay (Response Time To Fire)	Pass	7.1, 7.7, 7.11, 7.12	-
Performance Of Power Supply	Pass	-	4, 5, 6
Operational Reliability	Pass	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	4, 5, 6, 7, 8
Durability Of Operational Reliability, Temperature Resistance	Pass	15.4	9.5
Durability Of Operational Reliability, Vibration Resistance	Pass	15.6, 15.7, 15.15	9.7, 9.8, 9.15
Durability Of Operational Reliability, Electrical Stability	Pass	15.8 to 15.13	9.9 to 9.13
Durability Of Operational Reliability, Humidity Resistance	Pass	15.5, 15.14	9.6, 9.14


Eaton Electrical Products Ltd. Llantarnam Park Cwmbran NP44 3AW 25
BS EN 54-2 1997 & A1:2006 xDetect Mini Control and indicating equipment for fire detection and fire alarm systems for buildings BS EN 54-2 Clause
Options (with requirements) provided
7.8 Output to fire alarm devices 7.9.1 Output to fire alarm routing equipment 7.9.2 Alarm confirmation input from Fire alarm Routing Equipment 7.10.1 FPE Output type A 7.10.2 FPE Output type B 7.10.3 FPE Output type C 7.11 Delays to outputs 7.12.3 Dependencies on more than one alarm signal-Type C 7.13 Alarm counter 8.3 Fault Signals from points 8.9 Output to fault routing equipment 9.5 Disabling of each point 10 Test condition

BS EN 54-4 1997 & A1:2002 A2:2006
xDetect Mini
Power Supply equipment for fire detection and fire
alarm systems for buildings
BS EN 54-2 Clause

**Power rating label is located on the
inside face of the panel door**

EFXD02002	Eaton	DoP0528	xDetect 1-2 Loop	DoP0528UK
CXD02002	Cooper	DoP0529	Addressable	DoP0529UK
JXD02002	JSB	DoP0530	Control and Indicating Equipment	DoP0530UK
MXD02002	Menvier	DoP0531	(Mini Enclosure)	DoP0531UK

Essential Characteristics	Performance	Harmonized Technical Specification	
		BS EN54-2:1997 + A1:2006	BS EN54-4:1997
Performance under fire conditions	Pass	4, 5, 7	-
Response Delay (Response Time To Fire)	Pass	7.1, 7.7, 7.11, 7.12	-
Performance Of Power Supply	Pass	-	4, 5, 6
Operational Reliability	Pass	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	4, 5, 6, 7, 8
Durability Of Operational Reliability, Temperature Resistance	Pass	15.4	9.5
Durability Of Operational Reliability, Vibration Resistance	Pass	15.6, 15.7, 15.15	9.7, 9.8, 9.15
Durability Of Operational Reliability, Electrical Stability	Pass	15.8 to 15.13	9.9 to 9.13
Durability Of Operational Reliability, Humidity Resistance	Pass	15.5, 15.14	9.6, 9.14



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