



Fire Systems for
**Historic and
Heritage Sites**



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Lincoln Castle, Lincoln, UK

An Advanced fire system protects Lincoln Castle and its copy of Magna Carta.

Cover image: Hagia Sophia, Istanbul, Turkey

A Complex Challenge

Historic buildings pose many challenges for those tasked with protecting them from fire.

The threat and consequences of fire in any building are serious. However, in the case of historic sites, the loss of irreplaceable artifacts of high monetary and historic value is permanent and costly to our heritage.

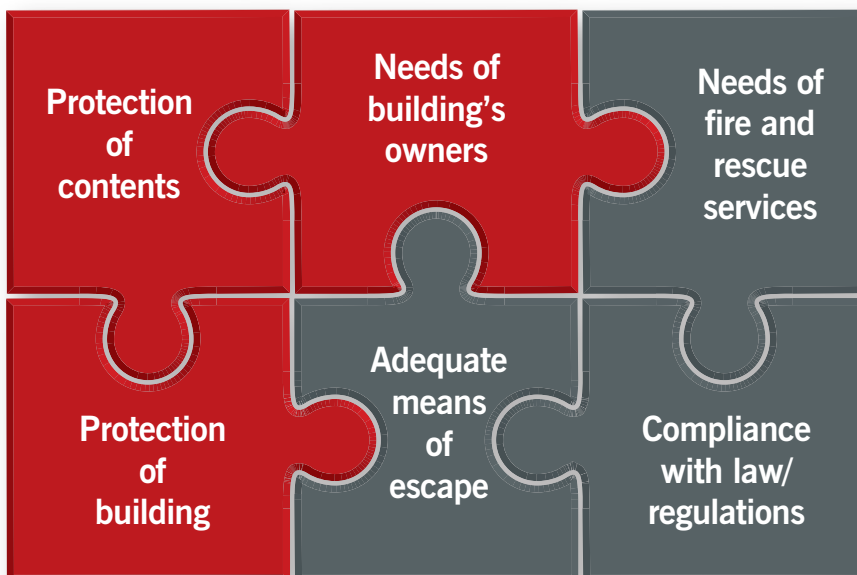
Furthermore, given their unique nature, many historical assets can only be insured for damage rather than total loss by fire.

Added to this, these buildings frequently have permanent/volunteer staff and attract high numbers of visitors, so life safety must be of paramount importance.

Ensuring that lives, as well as the historic value and authenticity of buildings, are safeguarded is extremely challenging and demands specialist knowledge and solutions.

Factors Involved in Solving the Puzzle

Conservation Factors



Life Safety Factors

The following table provides some useful considerations when designing fire systems that provide reliable protection, while also conserving a building's aesthetics and heritage.

Guide for Practitioners 7

Fire Safety Management in Traditional Buildings*

Essential

Only those systems that are central to meeting the objectives of the protection of life, buildings and contents should be considered.

Appropriate to risk

Any physical measures installed must be appropriate to the level of risk involved.

Sensitively integrated

Aesthetics should have a high priority in determining what improvements should be implemented.

Minimally invasive

Any measures taken should have minimal physical impact on the fabric and décor of the building.

Reversible

Any changes made to the building should be reversible.



The Royal Albert Hall, London, UK

An Advanced fire system protects this iconic Grade I-listed concert hall, opened by Queen Victoria in 1871.

*Guidelines by Stewart Kidd, issued by Historic Scotland.

Appropriate Fire Protection

In addition to the guidelines in the 'Fire Safety Management in Traditional Buildings' table on page 3, the overall approach to fire protection should be founded on the need to:

- Reduce the risk of fire breaking out.
- Prevent the spread of flames and smoke.
- Put measures in place to detect and extinguish as quickly as possible.
- Ensure that all occupants are evacuated safely.
- Enable the emergency services to take action.

In the case of historic sites, the nature of the building to be protected should also be carefully considered. In some cases it is a building's contents that are of greatest significance, in others, protecting the building's fabric is of paramount importance.

Complying with Regulations

The Regulatory Reform (Fire Safety) Order requires a suitable and sufficient FRA (Fire Risk Assessment) for all premises other than private dwellings.

The FRA (Fire Risk Assessment)

This should be regularly reviewed/updated and cover:

1. Identification of the fire hazards.
2. Identification of people at risk.
3. Evaluation, removal or reduction of the risks.
4. Recording of findings, preparation of an emergency plan and provision of training.



Durham Cathedral, Durham, UK

Protected by Advanced multiprotocol panels.

The Fire Safety Management Plan

The Fire Safety Management Plan

In the case of historic sites, a comprehensive fire safety management plan should accompany the fire risk assessment.

The plan should ideally encompass four main elements:

- Preparation.
- Prevention.
- Protection.
- Management.



Iona Abbey, Scotland, UK

Advanced fire panels protect this remote UNESCO World Heritage Site accessible only by sea.

1. Preparation:



Ensure availability of:

- Accurate plans of the building.
- Up-to-date information on hazards, fire fighting equipment and salvage strategies i.e. the basis of how the fire and rescue service will respond, should a fire occur.
- Means of communication - many heritage buildings are isolated and mobile phone coverage is unreliable/unavailable.

N.B. Preparation should be done with the involvement of local fire and rescue services.

2. Prevention



Identification of ignition sources/flammable materials.

Removal/mitigation of fire hazards.

Questions to ask include:

- When were electrical circuits and appliances last tested?
- Are curtains/tapestries/other flammable materials a safe distance from potential sources of ignition?
- Is there adequate provision for smoking outside the building?
- Are flammable substances stored safely?
- Is there sufficient security to reduce the threat from arson?

3. Protection



Divided into active and passive measures.

Controversial in historic buildings as they can be disruptive/harmful to the building's fabric and can be difficult to install.

Many protective measures that are sympathetic to historic settings are now available – see solution 1, page 7.

4. Management



Putting a fire safety management plan in place helps ensure that:

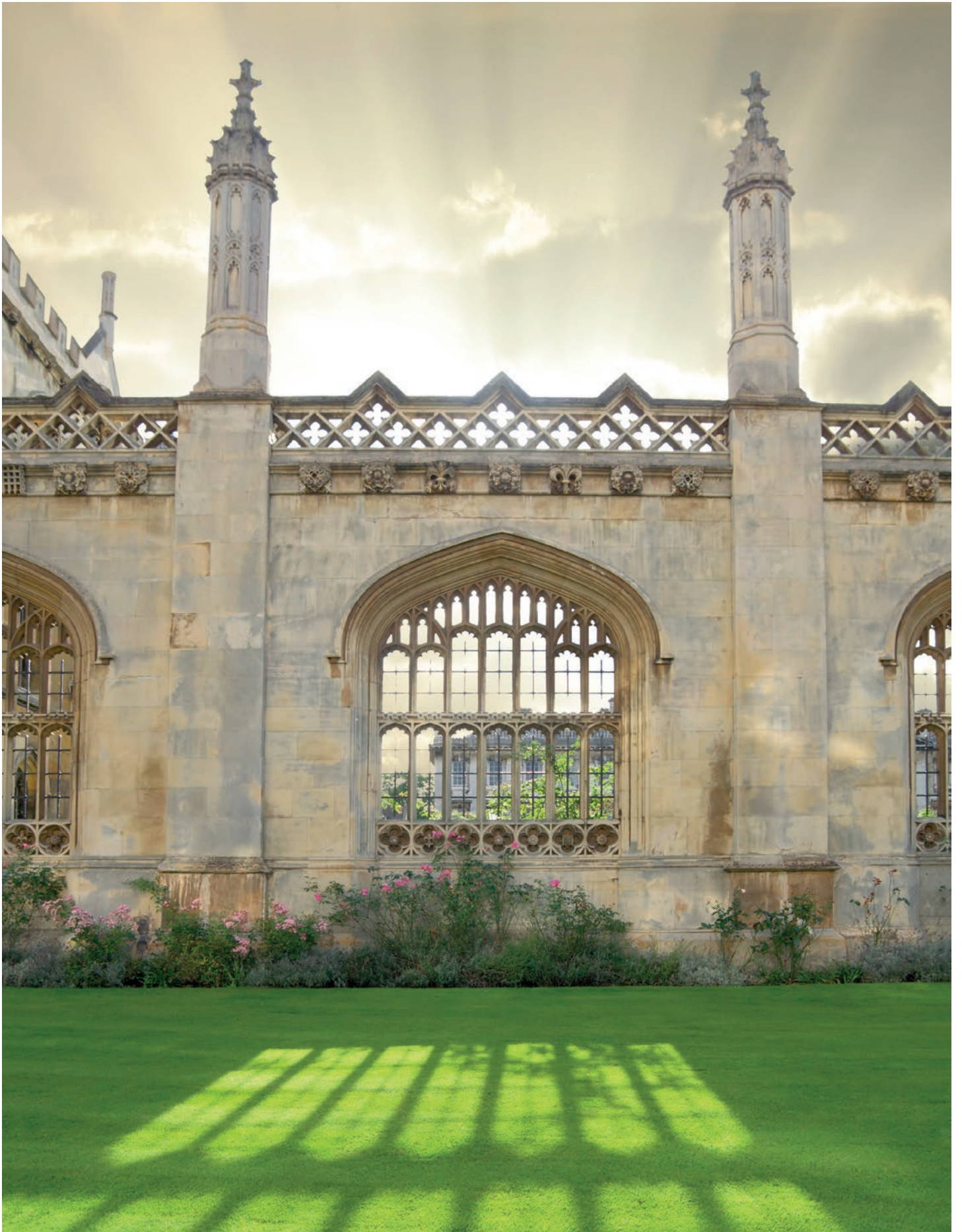
- Measures identified at prevention stage are regularly reviewed.
- Maintenance schedules are in place to check that protective measures are working effectively.
- Staff training is undertaken in all aspects of fire prevention and safety.
- Emergency drills are performed.
- Regular reviews of the fire safety management plan take place to ensure it's effective.

*Summarised from *Fire Safety and Heritage Buildings* by Peter Barker, published on the website of the NBS (National Building Specification).

As part of the fire risk assessment and management plan, particular attention should be given to the broad categories of cause* of fire and fire spread in historic buildings:

Causes of fire	Causes of spread of fire
Electrical faults	Open and ill-fitting doors
Open fires/defective flues	Thin wall construction
Building maintenance work	Structural discontinuity
Vandalism	Unknown wall and floor voids
Arson	Unstopped ventilation
Smoking	Unstopped service routes
Lightning strikes	Undivided roof voids
Accident	Lack of compartmentation

*As detailed in *COST Action C17: Built Heritage: Fire Loss to Historic Buildings - The Challenge before Us*. Ingvál Maxwell, DA (Dun), RIBA, FRIAS, AABC, FSA Scot.



Cambridge University, Cambridgeshire, UK

Lux Intelligent emergency lighting panels have been installed in several key buildings around the university.

Advanced Active Fire Prevention

Many common problems face those tasked with protecting historic buildings from fire. Advanced offers a wide range of solutions to help you overcome them:

Solution 1. Minimising Aesthetic Impact

Of paramount importance in heritage settings, the fire system installed must be unobtrusive yet highly dependable.

There are numerous ways to reduce the visual impact of the various fire system components:

Detection

ASD (Aspirating Smoke Detectors) Wireless Detector Networks



Unlike traditional point detectors, these have minimal aesthetic impact as the pipework on which they rely to continually sample the air is generally concealed on or within ceilings. Their extreme sensitivity helps to decrease the time taken to detect smoke.

ASDs are particularly suited to:

- Rooms with high ceilings, where the distance between the origin of the fire and the detectors in the ceiling can be considerable and cause serious delays in detection.
- Glass display cases with light fittings, which may overheat or suffer other electrical faults.
- Areas where early warning of the risk of fire is crucial.

Wireless systems are ideal in areas where installing wires is not possible/permissible. All of the most common detector types – smoke, heat and multi-sensors are now available in wireless formats.

Smoke Detectors/Multisensors for Heat/Smoke



In compliance with BS5839, these devices are ideal for any location where multiple ignition sources may be present e.g. candles/cooking. These devices can be made to blend in more effectively with historic surroundings as they are available in bespoke colours.

Beam Detectors

Comprising an infrared transmitter and detector along with a reflector attached to the opposite wall, installation is relatively simple.

Beam detectors are suitable for any room where the ceiling height exceeds 6m and they can cover distances of up to 100m. This means that relatively few detectors are needed thereby reducing the impact on the fabric of the building.



Control and Indicating Equipment

MxPro



Axis EN

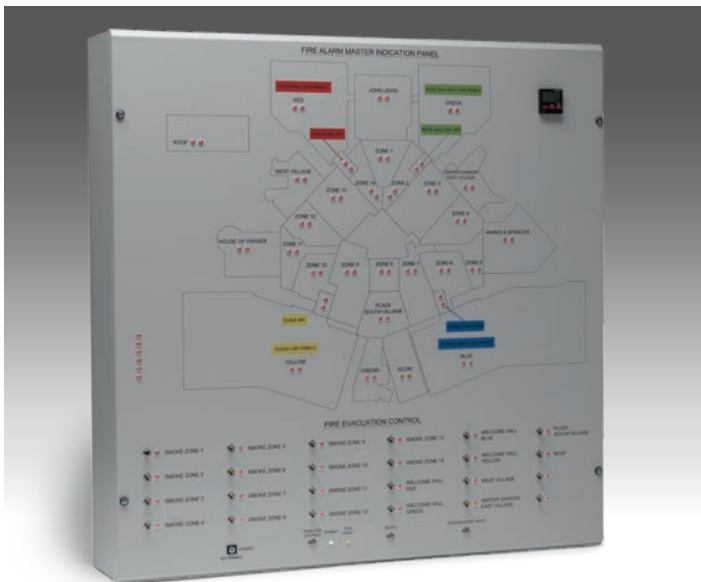


The MxPro range of panels delivers performance, choice and real freedom.

MxPro includes two panel ranges, the advanced MxPro 5 and the benchmark MxPro 4. Both come in 1-8 loop formats and are compatible with Apollo, Argus, Hochiki and Nittan protocols. MxPro panels provide a reliable, scalable solution that can grow as your specification changes, all backed up by lifetime technical support.

Axis EN is our solution when you need a high-performance, EN54-approved system. It combines our most advanced 1-8 loop, networkable fire panels with a complete range of wired and wireless field devices and powerful software peripherals.

AdSpecials Bespoke Panels



We design and manufacture fully customised panels, interfaces and enclosures to meet specialist needs.

We regularly manufacture discreet enclosures in a wide range of RAL colours and special finishes that blend in with/complement surroundings.

TouchControl



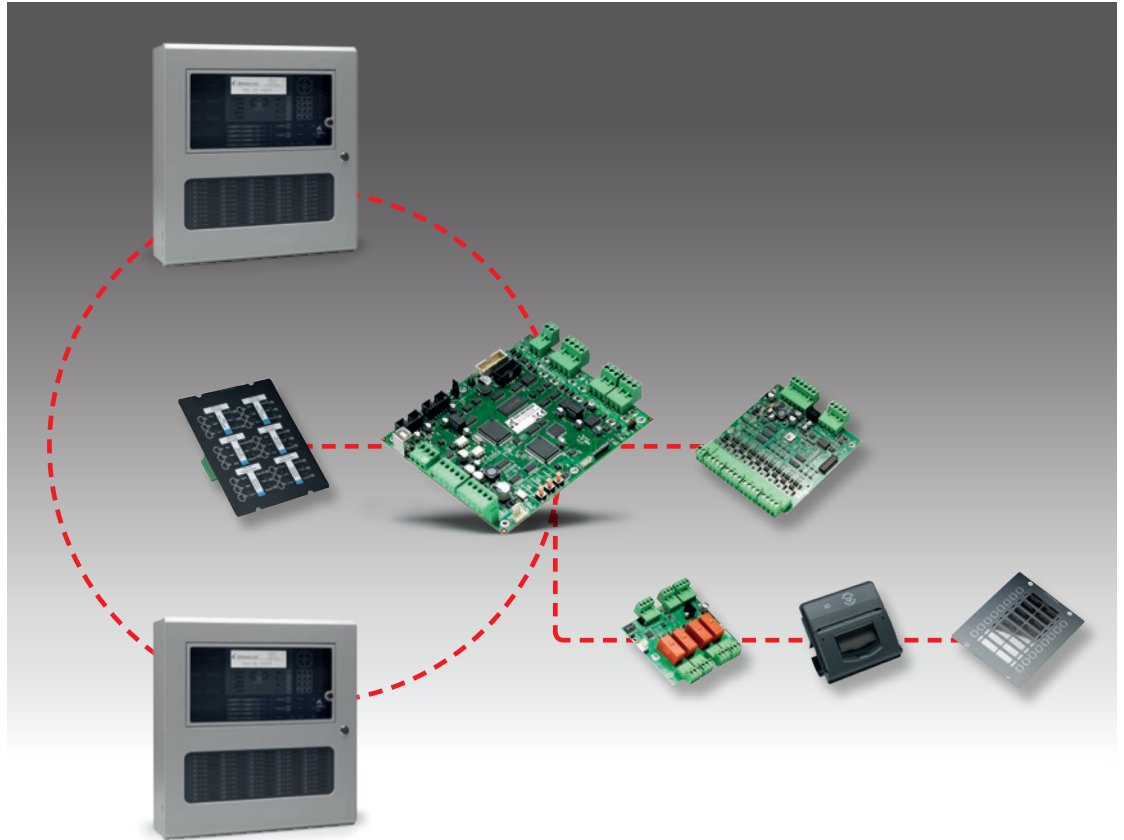
In historic sites, it's paramount that fire panels be as unobtrusive as possible without compromising performance. By using repeater panels, such as the TouchControl touchscreen remote control terminal, you can hide the primary fire panel and fully control and monitor the system via TouchControl in strategic locations. Its low-profile, high-resolution, 10-inch touchscreen is very discreet and, when in standby, its display can be dimmed as well as used to show visitor information or images in keeping with the surroundings.

Expanding Existing Fire Protection Systems

PENN (Peripheral Expansion Network Node)

This card and network node allows our range of peripheral input and output cards to be placed anywhere on the network and up to 1.5km from the nearest fire panel or next PENN node.

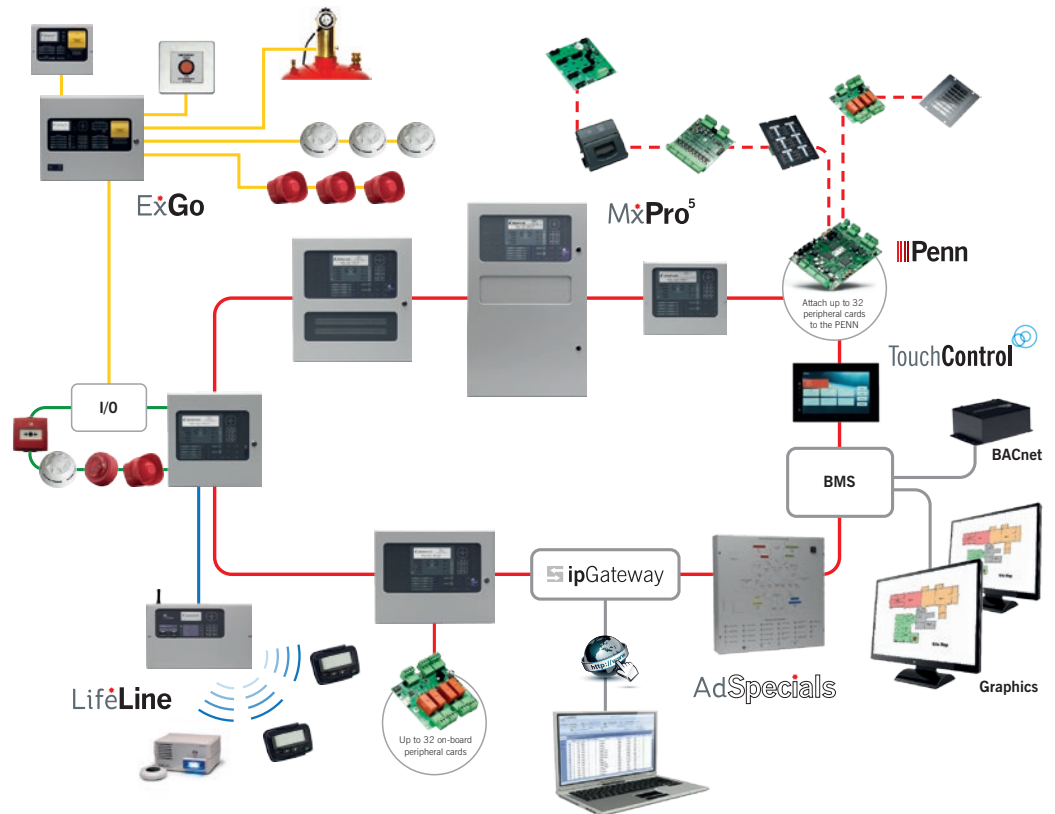
You can add up to 32 peripheral cards to a PENN and 199 PENNs to a network. This means you have the flexibility to place over 6,000 peripheral cards almost anywhere on the network.



Networking

Advanced panels, remote terminals, BMS/Graphics interfaces, mimic units and a wide range of peripheral devices can all be integrated within networks without the use of special installation spurs or other dedicated interfaces and wiring. This means minimal impact on the building's fabric.

For more information on networking, see page 26.



Solution 2: Reliable Protection

When protecting heritage sites, fire system reliability is paramount.

Standards Compliance

Advanced's MxPro 5 panels are approved to the highest international standards – including EN54 Parts 2, 4 and 13 – and offer a range of status monitoring options for complete peace of mind. These include:

- Built-in oscilloscope, voltage and current meters.
- Complete device history from each panel.
- On-board remote battery temperature sensor.
- Circuit monitoring from any panel or repeater.
- 5,000 event log entries for detailed monitoring.



Lincoln Castle, Lincoln, UK

Our MxPro and ExGo panels protect the Magna Carta at this historic site.

EN54 Part 13

Advanced was one of the first manufacturers to gain EN54 Part 13 approval.

The standard involves rigorous third party testing to prove that individual component parts will work together when combined into one system.

Benefits of EN54-13-approved systems:

Elimination of common problems that can affect installations, including:

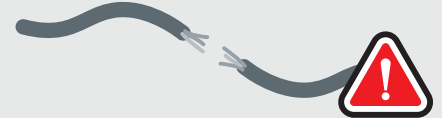
- Voltage falling below minimum required levels.
- Insufficient power at the last devices on the circuit.



- Slow speed of response on networked systems.



- Partial open and short circuits.



- On-site cable length alterations which affect resistance.



- Potential problems that could compromise the system and put building occupants at risk.



Monitoring of voltage and current being used on each circuit to let you:

- Check if a system is overloaded.
- Correctly diagnose faults quickly.

Peace of mind that your fire system will work when it's needed.



Unique High-Speed Networking Protocol

Advanced networks operate at speeds up to five times faster* than those stipulated by EN54 Part 13 standards. As a result, they provide maximum reaction time following the occurrence of any system 'events', which ensures ultimate protection for people, property and precious assets.

*EN54 Part 13 requires a maximum propagation delay of 20 seconds for faults and 10 seconds for fire alarms.

Advanced Extinguishing Control



ExGo extinguishing panels are used all over the world to protect sensitive and strategic assets, including historic and cultural collections. They are particularly suited to protecting closed rooms housing sensitive objects, which would be easily damaged by water.

ExGo includes a main control panel and range of devices comprising repeater units, hold and abort buttons, plus active end-of-line modules.

Thanks to its on-board, programmable inputs and outputs, ExGo can be integrated into our MxPro and Axis EN fire systems via a simple fire protection interface or connected with other third party fire systems by means of an I/O loop device.

On-board diagnostics make it very easy to conduct system tests and control disablements. In addition, the specific nature of any faults is clearly displayed on the panel and time-stamped logs track all activation events, which can be downloaded to a PC tool for reference, storage and printing.



Case Study: **Magna Carta**

One of only four surviving original Magna Carta, signed by King John at Runnymede in 1215, is protected by Advanced fire panels.

The irreplaceable document is housed in a special vault at Lincoln Castle fitted with an ExGo extinguishant release system. The castle, itself a scheduled monument constructed in the 11th century by William the Conqueror, is also protected by Advanced equipment.

A spokesperson for Lincoln Castle said: "As the castle is a listed building, it was essential that the panels and detectors be as discreet as possible, particularly in the Magna Carta vault. We're very pleased with the Advanced systems installed."

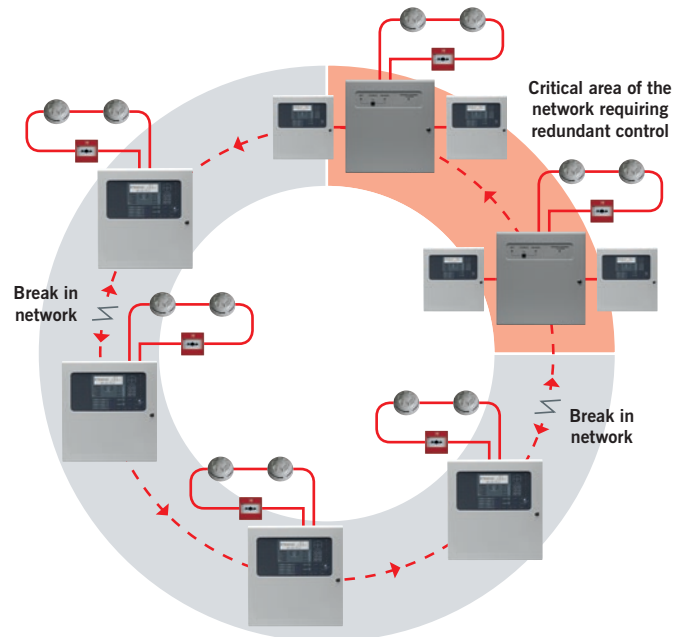
100% Fire System Redundancy



The loss of fire protection through faults or equipment failure has serious consequences and can result in irreversible damage in historic sites. Redundant control from Advanced ensures 100% redundant backup and total peace of mind that your fire system will continue to work – and valuable assets will be fully protected – even when faults occur.

The Advanced redundant fire alarm panel operates in 'hot standby' mode and is ready to automatically take over full control whenever the main panel detects a system trouble/fault. Available on Advanced's MxPro 5, Axis EN, Axis AX and Axis AU panels, Dual Redundant Control Modules can be housed in standalone boxed enclosures, incorporated into rack mounts or bought individually for customisation to meet your exact redundancy requirements.

For added reassurance, our fault-tolerant networks continue to operate fully even if there is a single open or short-circuit fault condition on any one of the installation cables.



No Loss of Fire System Coverage

When expanding an existing system, it is critical that the addition of new panels does not compromise the cover provided by other panels on the system i.e. there should be no 'downtime'.

Solution 3: Quick, Safe Evacuation

Cause and Effect Programming

Historic buildings frequently have irregular layouts, narrow and/or single points of entry and exit and escape routes that are longer than normally permitted.

These characteristics can pose many fire safety issues, especially when the building has permanent occupants e.g. hotels and apartments.

Advanced networking lets you program up to

230,000
CAUSE AND EFFECT
RULES PER NETWORK

That's why our systems are specified on the smallest to the very largest and most complicated sites.

Advanced networks let you access up to 230,000 cause and effect options, giving you ultimate scope to customise your system to meet your exact needs.

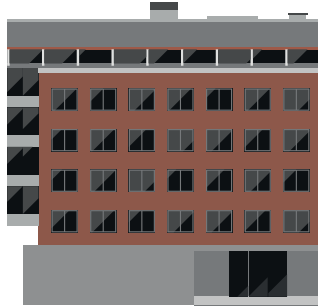
Well-planned cause and effect programming can help overcome many of the problems encountered on historic sites. For example, it can:

- Allow **control of phased evacuation**, thereby preventing dangerous 'bottlenecks' in escape routes.
- Let you **set alarm verification and investigation delays** in critical areas to ensure that alarms are genuine and avoid unnecessary evacuation of difficult spaces.
- Signpost safe escape routes using **intelligent emergency lighting systems**.
- Trigger automated paging so that detailed evacuation instructions can be given to occupants with visual or hearing impairment.

Fire Audio Options

Research shows that a fire alarm signal alone is not always sufficient to:

- Warn building occupants of potential fire.
- Prompt immediate action.
- Initiate evacuation.
- Provide enough time to escape safely.



Building evacuation delays can account for three quarters of total evacuation time



Research has shown that evacuation delays can take up three quarters of the total evacuation time. Evacuation delay time can be radically reduced/eliminated when additional means of informing occupants are used.

Studies of real fire situations confirm that providing information over a voice communication system is one of the most effective ways of ensuring that people leave a building without delay. This in turn means that best use is made of the precious minutes and seconds before the emergency services arrive, during which safe evacuation can be most effectively achieved.

Immediate reaction to alarms is paramount in historic settings where escape routes can be convoluted and/or longer than normally prescribed and where fire spread can be rapid due to the nature of the building's construction.

Four minutes total evacuation time following fire alarm activation



- 3 minutes delay (investigating, gathering belongings etc.)
- 1 minute evacuation

Advanced's fire audio systems ensure immediate activation of audio signals upon alarm as well as total synchronisation of identical messages across 200-panel networks in less than five seconds.

Advanced's non-UL panels support a wide range of third-party voice evacuation systems.

LifeLine

In areas where it is important to prevent a sudden rush of people towards emergency exits upon fire alarm activation, (e.g. where escape routes are restricted), you can use Advanced's LifeLine system to inform staff of fire system events via pager.

You can automatically send information following a range of pre-programmed triggers including alarms, pre-alarms or device faults, giving staff the opportunity to instruct the public according to predetermined evacuation plans.



Lux Intelligent

Lux Intelligent is a complete emergency light testing solution, with easy installation, real time status via the cloud and, most importantly, demonstrable proof of compliance to BS 5266-1.

Lux Intelligent saves money, time and makes it so easy to manage a compliant system, you can do it on your phone.



The Easiest Installation	Loves Your Lights	No Limits
Use existing wiring, or your LAN for a 'no wires' network. Unlimited, low-cost, anytime, networking of panels anywhere via LAN.	Works with almost any light or luminaire, including LEDs. Easy conversion of existing lights.	Works with any existing emergency lighting system including central battery.
Forget The Panel	Save Time & Money	Proof
Cloud monitoring and reporting of any system anywhere in the world, on your computer, phone or tablet. Live status report gives immediate indication of any issues.	Cost and efficiency benefits with automated testing and reporting. One-click sharing of maintenance or test reports right from your phone.	Full test history available any time. The easy way to demonstrate compliance to BS5266.



Syon House, London, UK
Protected by Advanced MxPro fire panels.



Trinity Episcopal Church, Newport, Rhode Island, USA

The church, a National Historic Monument, was built in 1726 entirely from wood, so poses a unique fire risk.

Solution 4: Eliminating Unwanted Alarms

AlarmCalm

False alarms are a major issue causing significant disruption, distress and expense. Not only that, if frequent, they can also lead to complacency and a failure to act swiftly in real fire situations.

AlarmCalm is the complete false alarm management solution and ideally suited to heritage sites where disruption from unwanted alarms can be extremely inconvenient and costly.



Verification

Investigation

Reduction

Operating at exceptionally high speeds, AlarmCalm's sophisticated verification and investigation delay technology ensures the maximum possible time available to check if an alarm is genuine, thereby avoiding unnecessary building evacuation.

AlarmCalm gives you a vast array of investigation and verification delay options and can be configured to your exact needs. These include delays based on device type, number of activated devices, time of day/day of week, device mode change and many more.



Many Fire and Rescue Services in the UK now charge organisations for repeated false alarm callouts.

Common Causes of False Alarms

- ✓ Faults
- ✓ Dust
- ✓ Cooking
- ✓ Toasters
- ✓ Smoking
- ✓ Weekly testing
- ✓ Accidental activations
- ✓ Steam
- ✓ Aerosols
- ✓ Water ingress
- ✓ Malicious activations
- ✓ No access to premises
- ✓ Call point misuse
- ✓ Artificial smoke
- ✓ Hot works
- ✓ Sprinkler maintenance
- ✓ Contractor activity
- ✓ System maintenance



Heythrop Park Hotel, Oxfordshire, UK

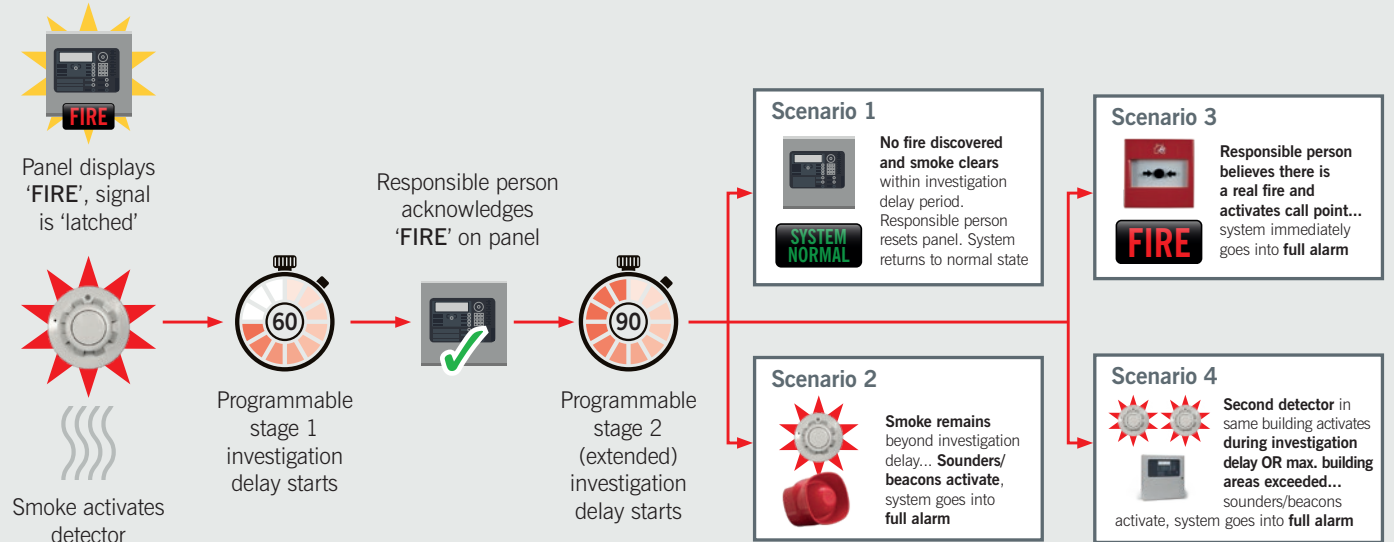
Dating back to 1710, the hotel is protected by two networked MxPro 5 panels controlling ten loops and supporting more than 700 individual devices.

Example Investigation Delays

During the hours when a building is staffed, you can set an investigation delay to trigger a pre-programmed countdown when a detector is activated. This gives staff time to attend the area in question and check if the alarm's cause is reason to evacuate.

If the detector activation is false, you can reset the panel and avoid unnecessary evacuation. If a fire has caused the activation, you can immediately halt the delay and put the system into full alarm to initiate evacuation.

These delay the operation of certain outputs after the fire condition displays on the panel



Investigation Delays:

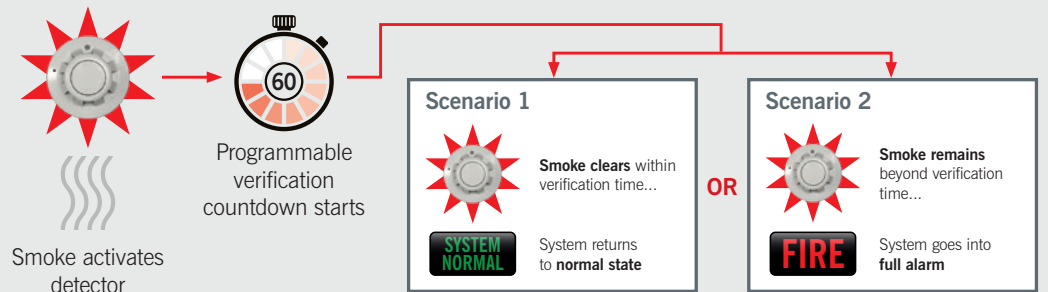
Used to:	Ideal for circumstances when:	Benefits:
Physically check if an activated device is genuinely in alarm <i>after</i> a fire condition is displayed on the panel.	A Responsible Person is usually present.	Human input brings certainty in identifying the cause of the alarm. Flexibility - can be turned on/off depending whether the Responsible Person is present. Reduces false alarms.

Example Verification Delay

AlarmCalm is invaluable in ensuring that only genuine incidents initiate full alarm mode, thereby minimising cost, inconvenience and complacency while providing complete peace of mind. You can set a verification delay, which allows the system to automatically check if an activated device is genuinely in alarm before a fire condition is displayed on the panel.

AlarmCalm allows a range of alarm verification methods

Example 1: Verification Delay (Type A – not displayed)



Verification Delay:

Used to:	Ideal for circumstances when:	Benefits:
Automatically check if an activated device is genuinely in alarm <i>before</i> a fire condition is displayed on the panel.	A Responsible Person is not always in attendance.	System works 'independently' and can verify the alarm without human input. Flexible - many timing options and scenarios can be easily accommodated. Reduces false alarms.

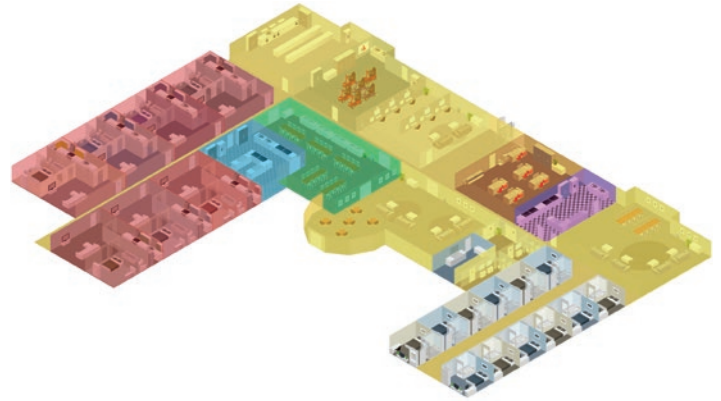
Optional AlarmCalm Button

The AlarmCalm Button is an optional element within our AlarmCalm system. It allows trained residents or staff to acknowledge an alarm and initiate a programmable verification delay that gives obvious false alarm triggers chance to clear.



The Button is a fully intelligent loop device offering multiple configuration options.

Building Areas

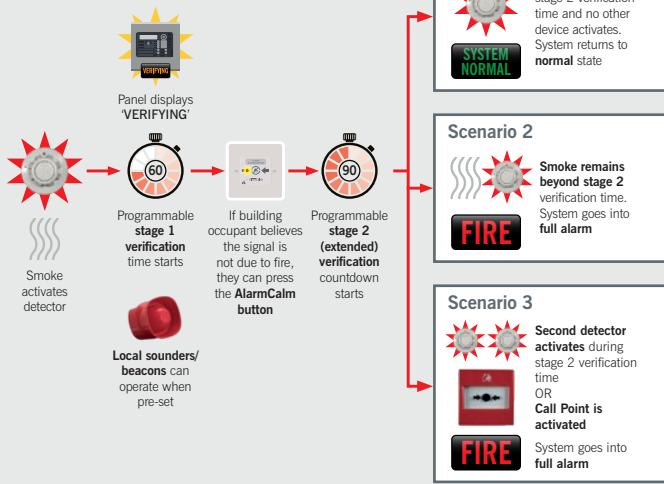


AlarmCalm is easy to use, simple to set up and offers a vast range of configuration options thanks to the way it is programmed, using Building Areas. These are virtual areas that by default match fire zones but can be specified independently to cover multiple zones and points, or individual points per panel.

Each building area can have entirely independent false alarm management strategies, or can be grouped and share common settings.

Alarm Verification Methods

Extended verification delay by activating AlarmCalm button



Adjustable Device Sensitivity

Historic sites often have higher than normal levels of through-drafts and dust. These factors can both interfere with the performance of detectors and result in unwanted alarms. Our systems allow device sensitivity to be quickly and easily adjusted via the panel or the settings available in our DynamixTools software.

Our panels also feature a valuable soak test facility that allows the optimum sensitivity of a newly installed system to be checked before final commissioning. This can vastly reduce the number of false alarms that occur due to unusual environmental conditions present in some historic sites.



Case Study: Hagia Sophia

Hagia Sophia was built in Constantinople in 537 on the orders of Eastern Roman Emperor Justinian I.

For nearly 1,000 years it was the world's largest cathedral before being conquered by the Ottomans and becoming an important mosque for almost 500 years.

Known as the 'eighth wonder of the world', it is Turkey's most visited tourist attraction, welcoming millions of visitors every year.

A recent upgrade to its fire system saw the installation of an Advanced MxPro 4 fire system, supporting optical smoke and air sampling detection, as well as a range of input and output devices.

Gerda Koberidze Özkan, spokesperson for installers D Sistem Ltd., said: "The improvements to this historic building have involved ensuring that it has the best quality fire alarm system and meets the highest standard in fire safety. We have used Advanced panels for several projects in the past as they are highly reliable, adaptable and can be upgraded in the future."



Inside King's College, Cambridge, UK

The versatility of Advanced fire systems mean they are ideally suited to meeting the complex challenges posed by heritage sites.

Solution 5: Protection for the Disabled

LifeLine

Advanced's LifeLine radio paging system is Equality Act-compliant and the perfect solution for alerting the deaf or hearing impaired to a fire alarm.

Once LifeLine is wired via relay into a fire panel and its antenna coverage is set, the panel will alert users to fire alarm conditions via pagers, or a bedside unit and vibrating pillow device (in cases where the historic building features bedrooms).

LifeLine does not interfere with other radio systems and is free of contracts or service agreements.



EN54 – 23 VADs (Visual Alarm Devices)

The new European standard for Visual Alarm Devices (VADs) ensures that all beacons used as a primary method of notification must be able to alert all members of the public to an evacuation, including the hearing impaired.

EN54 – 23 helps to ensure safe evacuation in a variety of locations, including:

- Areas where people may be alone e.g. hotel rooms and public conveniences.
- Environments with high levels of ambient noise, e.g. auditoriums, large lobbies etc.
- Public escape routes – corridors and stairwells.
- Buildings with rooms equipped for the disabled.

Advanced panels work effectively with a wide range of third-party VADs.



Solution 6: Peace of Mind for Unstaffed Sites

Remote Monitoring



ipGateway

ipGateway is our fully interactive, secure Internet portal which allows you to check the real-time status of your Advanced fire system from any location using a standard web browser – no special software is required.

As long as internet access is available, ipGateway is ideally suited for use on historic sites which may be very remote or don't have a permanent staff presence.

It lets you inspect the state of each device on the network via your PC and from this you can enable/disable zones, enable/disable devices, reset, mute and silence/resound sounders on the network.

Notification of Fire System Events

ipGateway

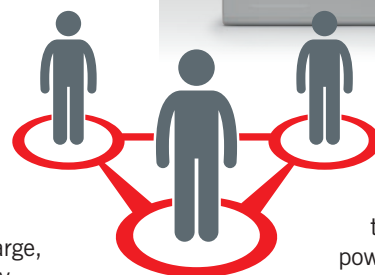
You can program ipGateway to send emails/text messages to configured recipients in response to specific events on the network.

This helps to initiate the correct level of response based on the nature of the system issue.

For example, you can set fault notifications to be issued to the service team alone, with all other fire system users alerted only when a fire alarm activation occurs.

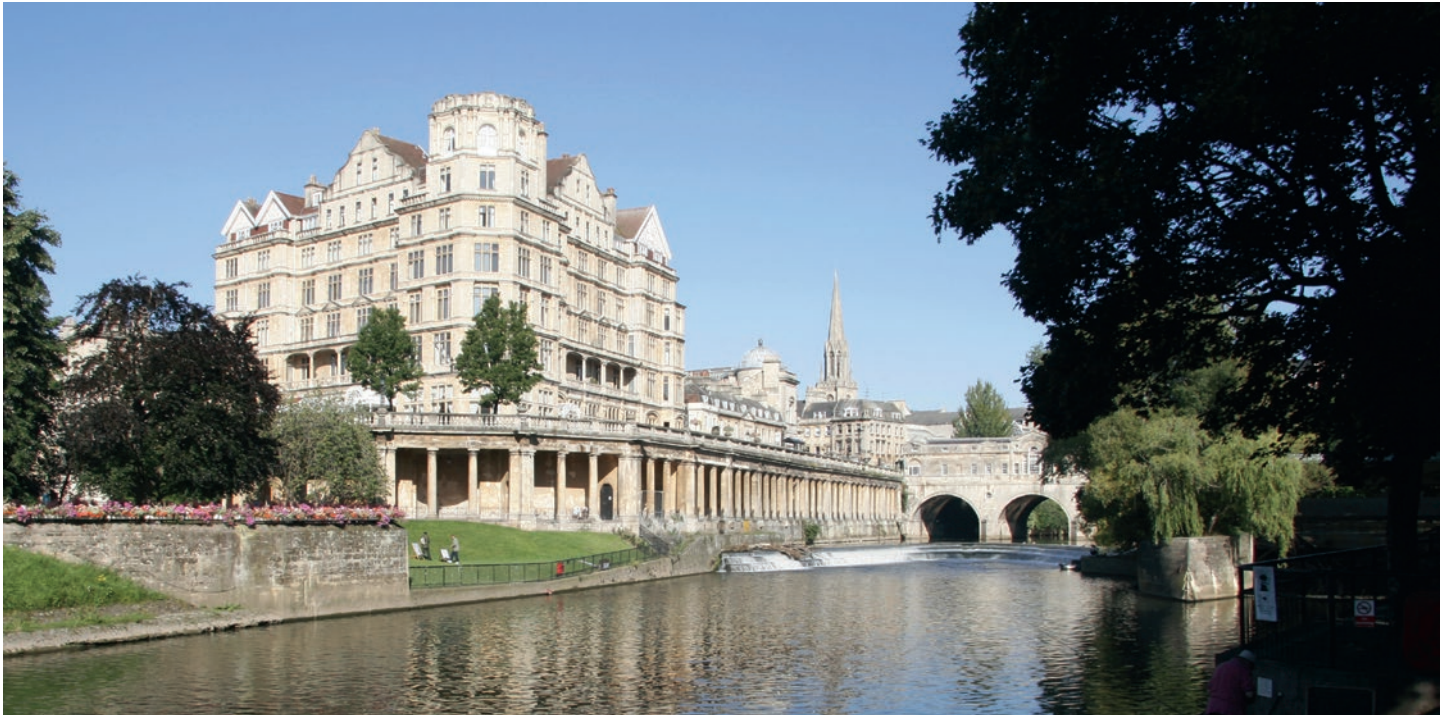
LifeLine

Designed to quickly and effectively meet fire system radio paging requirements, LifeLine can operate from any standalone conventional or addressable panel, or across a large, addressable network. It is quickly integrated via an ESPA card for detailed



fire paging. LifeLine runs a variable power, 2W transmitter, optimising power usage and delivering precise coverage, even across complicated buildings and sites.





Empire Hotel, Bath, UK

MxPro 5 panels are installed in this Grade II-listed building housing retirement apartments, leisure facilities and restaurants.

Solution 7: Easy Maintenance and Service History Checks

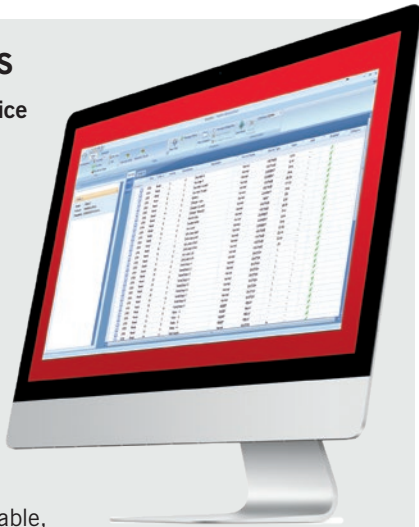
Service Records

Our panels feature a service tool, which provides a simple, efficient way to manage and check on the servicing history of any Advanced fire system. It allows you to:

- Extract device information and event logs from single or multiple panels.
- Check the history of each device, including last activation, test, enable, disable and date created.
- Define filters that allow data to be grouped and searched in many different ways.
- View device status, analogue values and drift information.
- Conduct network simulations and tests.
- Categorise events and create customised reports.

Keeping on top of fire system servicing across sites can be a challenge.

The service tool provides hard proof that a system has been checked and ensures that any vulnerabilities are identified before problems occur.



Advanced Network Diagnostics

Faultfinding on networks can be difficult and time-consuming. However, our fault-tolerant networks have diagnostics built in.



This feature significantly reduces investigation time as the location of fire alarms, pre-alarms, false alarms, open/short circuits or other faults is immediately and clearly displayed on the panel.

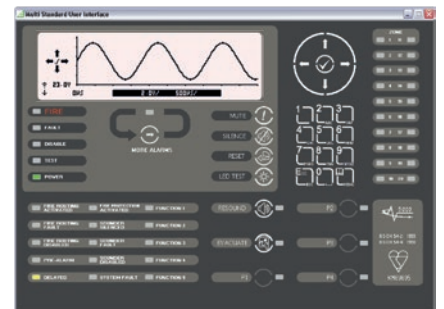
In statistical analysis mode, you can view network package data. This acts as a useful early warning system by helping to identify potential problems before they become more serious issues.

For added reassurance, our fault-tolerant networks continue to operate fully even if there is a single open or short circuit fault condition on any one of the installation cables.

On-Board Scope

The oscilloscope function is one of the diagnostics tools built into the MxPro 5 control panels.

It provides a graphical representation of the signalling voltages/currents and waveforms on the display. This gives you a detailed view of the loop operational condition, which can't be viewed using multi/volt meters.



Solution 8: Easy Expansion of Existing Systems

Backwards Compatibility

We've developed our fire panel technology with convenience and ease-of-use firmly in mind.

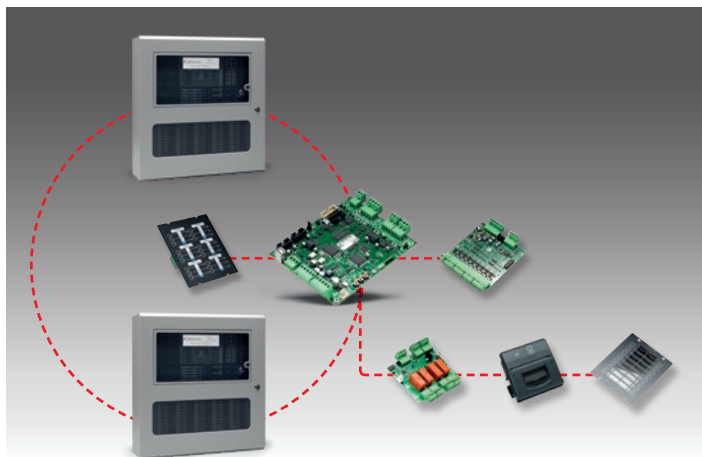
As a result, our latest panels are compatible with our oldest and they'll work just as well with detectors installed over 20 years ago as they do with the newest models.

This backwards compatibility means you can get a system up and running quickly without needing to replace older equipment. Once you decide it's time to upgrade, replacing outdated equipment is a quick and simple process thanks to our easy installation and commissioning.



Greater Power and Versatility for Your Fire System

The PENN (Peripheral Expansion Network Node) lets you add a wide spectrum of features to Advanced's MxPro 4 and 5, Axis EN and UL fire panel ranges.



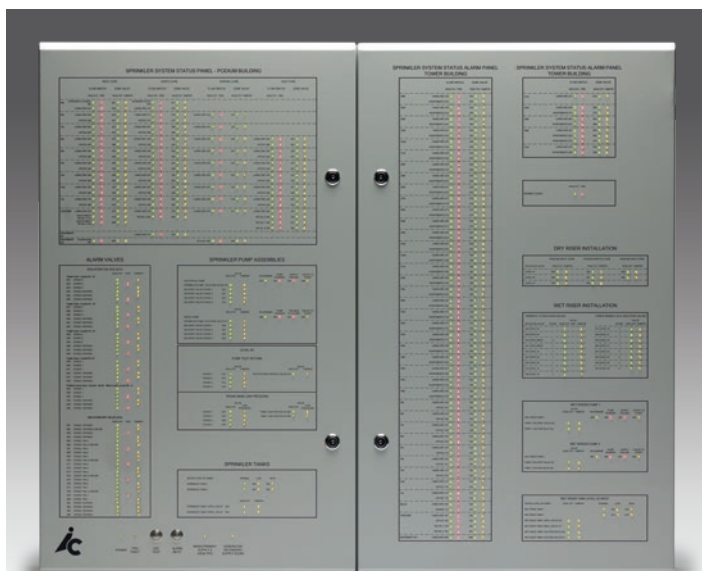
Whether designed into new installations or retrofitted to existing systems, the PENN allows you to access Advanced's comprehensive range of peripherals without needing to install additional panels – saving you time, money and inconvenience.

The PENN is particularly suited to use in heritage buildings as it:

- Allows you to expand/reconfigure your fire system without affecting the existing installation.
- Lets you install peripherals in locations that would be impossible to access by other means.
- Helps you to reduce costs and disruption by allowing remote input and outputs to be connected directly to the network instead of having to wire them back to a panel, which may be distantly located and cause aesthetic issues.
- You can attach up to 32 peripheral cards to a PENN and 199 PENNs to a network. This means you have the option to place over 6,000 peripheral cards almost anywhere around the network.

As you'd expect from Advanced, PENN configuration is straightforward using our DynamixTools software.

Panels Customised to Your Needs



As part of our AdSpecials service, we design and manufacture fully customised panels, interfaces and enclosures to meet specialist requirements.

This service is of proven value to those working on historic sites with difficult and/or unusual fire safety issues to overcome.

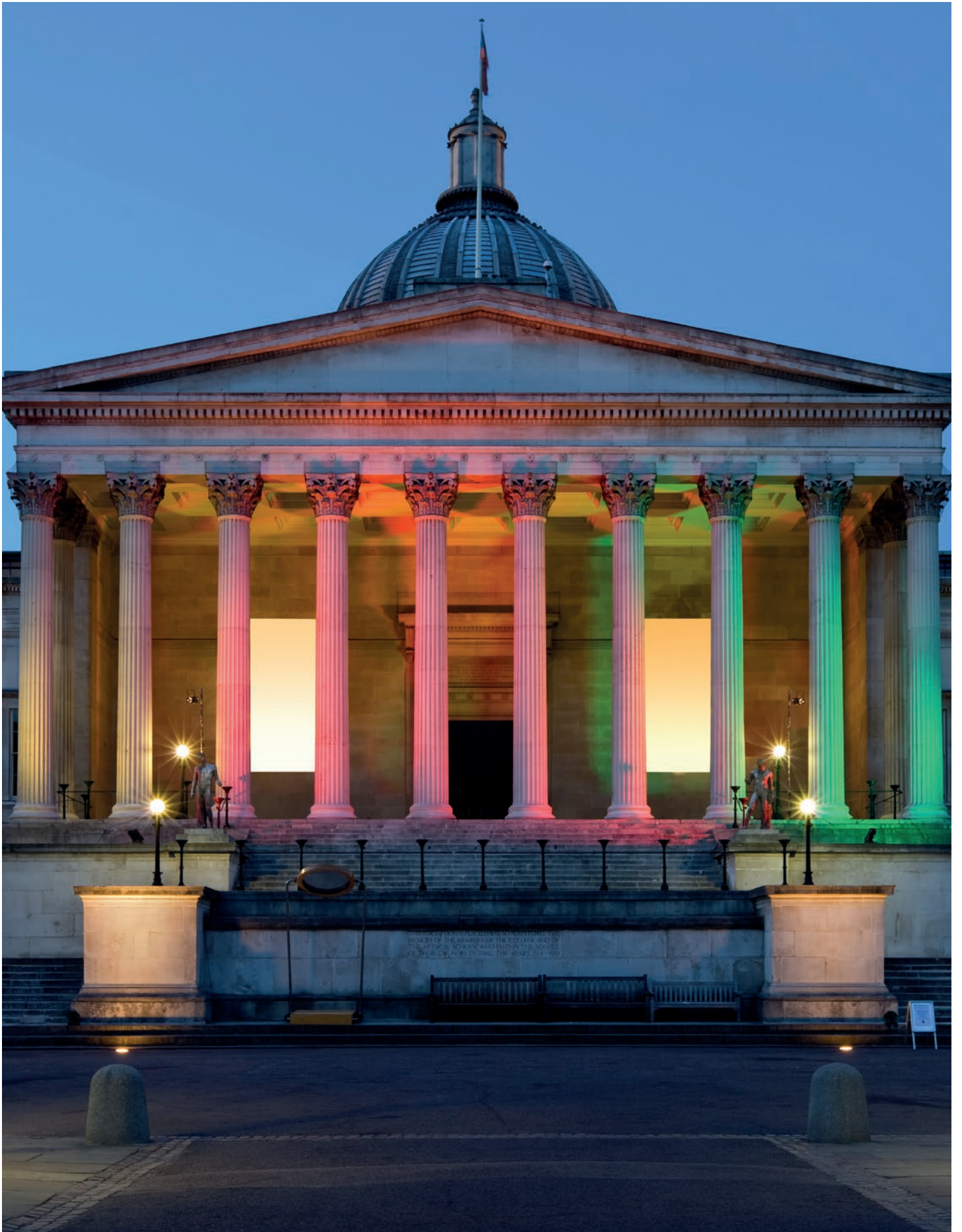
We regularly manufacture:

- Specialist panels that combine control of different systems in one housing.
- Mimic panels that give clear indication of room locations across complex sites.

We offer you an exceptionally high degree of customisation, which means you're in control of every option, including:

- The combination of panel functions.
- Location of all components.
- Indication.
- Labelling.
- Enclosures.
- Switches.
- PCB design.
- Colours.

We will work with you to develop your brief into a finished special panel, covering practically any requirement.



University College London, London, UK

Founded in 1826, this prestigious university is protected by Advanced.

Solution 9: Clear Notification of Fire System Events

Historic buildings often have complex layouts, which can make it difficult to pinpoint the location of any fire system events.

Graphical Control

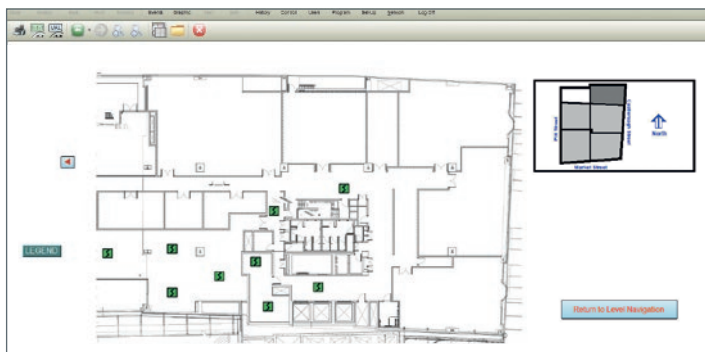
Our Graphical Control Software lets you view and control your fire system, down to point level, via detailed site maps.

Simple control buttons let you enable/disable and silence/reset field devices. You can also get analogue values from all devices via simple menu selections.

The software includes a high capacity history log to monitor all activity over the lifetime of the system. This data can be easily analysed thanks to extensive search options.

TouchControl

Our TouchControl repeater also uses interactive maps to represent the site for easier location of system events. Its display features LED indicators that highlight fire, faults, disablement, test and power – for fast, efficient system monitoring.



Example of graphical control screen view.

BMS Interface

The BMS/Graphics Interface allows BMS systems and third-party graphics systems to be integrated with the MxPro 5 series of fire control panels and remote terminals.

The interface allows all network traffic and event prioritisation to be handled via a PC, using a simple RS232 connection.

You can connect multiple interfaces to the network to cater for sites requiring control from a number of graphical PCs.

Instant Staff Paging

Once connected to a fire system via the standard ESPA protocol, LifeLine instantly transmits detailed information on the whole system and individual panel and device conditions to personal pagers.



Eight programmable trigger inputs and four fascia buttons on each panel can be pre-programmed to transmit specific messages after a numeric password is entered or key switch enabled.

You can program alerts to activate in response to a range of events e.g. pre-alarms, alarms or faults. Early warning allows fire system managers to reduce false alarms and cancel or initiate evacuation and communicate important system messages without alerting the public.



This feature has been successfully used across a range of historic sites, and especially on large estates, where information needs to be communicated over a wide area.



Case Study: Natural History Museum

Known as the 'Cathedral to Nature', London's Natural History Museum is the pre-eminent centre for natural history and related research.

The Museum is the third most popular in the United Kingdom and houses a collection estimated to include in excess of 70 million specimens – some of which were collected by Charles Darwin.

Located in Kensington's Museum Quarter the museum was established in 1881. Grade I-listed, the building comprises seven blocks, including the original Waterhouse Building, the Earth Galleries, the Palaeontology block and the twin Darwin Centres.

At the heart of the active fire protection for the museum is a network of 24 Advanced MxPro 5, intelligent, multiprotocol panels, plus remote control terminals, BMS interface and a bespoke PC-based graphical user interface.

Kirk Short, spokesperson for Pacific, the company which configured and commissioned the system, said: "The MxPro 5 panel stands alone in the market for ease of installation and maintenance, network stability and speed.

"We needed a system that would be simple to operate, while also offering backwards compatibility with some of the loop devices that were already installed on site."

Solution 10: Easy Installation, Configuration and Operation

Protecting historic sites from fire is complex enough, which is why we've kept programming, configuring and operating Advanced fire systems as easy as possible.

Advanced Panels

Heritage properties have a wide variety of room and area uses with different detection, input and output requirements. Our panels feature a range of options to meet these varied needs.



MxPro 5

Our highest performance analogue addressable fire panel delivers an array of configuration, networking, display, status, cause and effect and control options.

This flexibility makes MxPro 5 ideally suited to the peculiarities of historic sites, whatever their size, as highly customised solutions are very simple to program using our DynamixTools software.

Features:

Scalability:

1, 2, 4 or 8-loop formats

Up to 254 devices per loop (protocol dependent)

Up to 2,000 fire detection zones

Over 200,000 devices per network

The MxPro 5 panel is as suitable for small, simple installations as it is for the largest, most complex and challenging networked sites.

Flexibility:

Networkable up to 200 nodes

True peer-to-peer networking with the option for master/slave configuration where required

200 programmable false alarm management areas per panel

Compatible with Apollo Discovery and XP95, Argus Vega, Hochiki ESP and Nittan Evolution protocols

Direct USB and RS232 PC connections

Peripheral expansion built in

Advanced logic, delivering huge configuration opportunities

Backwards compatibility with MxPro network

20 built-in, fully programmable LEDs and 4 programmable push buttons

Timed enablement of isolated zones, input and output devices

Programmable screen logo

Supports intelligent remote terminals, BMS interface, IP Gateway and programmable I/O devices

The MxPro 5 offers unmatched networking capabilities and configuration options.

It is compatible with a wide range of detectors and is easily integrated with third-party building management systems.

Historic sites typically have pre-existing systems and unusual layouts. The chosen fire system needs to be backwards compatible and also as discreet as possible.

Simplicity:

Simple 'select and click' programming and configuration

Autolearn and loop detection

Quick start and protect – a working system after an autolearn

Protecting historic sites from fire is complex enough, which is why we've kept programming and configuration as quick and simple as possible.

TouchControl



Installation is trouble-free, thanks to the panel's two-part enclosure with slide-in chassis.

Setup is straightforward thanks to our DynamixTools Map App, which allows you to create a menu structure to suit your installation, with folders for the whole site, individual buildings and floors.

There's no limit to the number of areas you can add, so it's as suitable for large, complex networks as it is for simple, one-storey sites.



Once the folders are in place, you simply import your plans into them. These can

include site layouts, photographs or Google maps in any common file format. Drawings can be flat, isometric, line or full colour – the choice is yours.

The next step is zone allocation, which is a simple matter of drawing hotspots onto your maps, plans or images.



At this point you can easily link from one view to another. For example you can set navigation from isometric drawing to plan to fire zone, ensuring that users will have a complete and clear view of the entire site.

Finally, you simply export your maps to a microSD card and insert the card into the slot in the TouchControl.



LifeLine



LifeLine can operate from any standalone conventional or addressable panel or across a large addressable network and is quickly integrated via:

- An ESPA card – for detailed fire paging.
- A simple relay connection – for hearing impaired alerts.

LifeLine runs a variable power 2W transmitter, optimising power usage and delivering precise coverage, even across complicated buildings and sites.

Whatever the paging solution you require, setup is quick and simple and we also offer a radio survey kit to make the system as easy to configure as it is to use.



Case Study: Trinity Episcopal Church

Built in 1726, Trinity Episcopal Church is constructed entirely of wood, putting it at high risk of fire.

Its fire protection system was outdated and an updated system was necessary for the church to remain in compliance with local fire codes.

However, the new system would have to be easily operated by church personnel to avoid false activations caused by smoke from candles during church services. US State law also required that the fire panel be inoperable by the public.

An Advanced fire system was chosen because of its ability to meet a range of exacting requirements.

An Axis AX fire panel controls all beam and duct detectors, sprinkler monitoring, HVAC shutdown and a radio callbox to protect the large open space of the church.

The panel allows church personnel to easily set timed disablements through a key switch or annunciator to correspond with church services, without requiring extensive reprogramming.

Charles Niles, of installing contractor Security Supply Inc., said: "There are a million reasons why we like Advanced for any installation, but in this case, the engineer's plans called for a level of accessibility and functionality that we knew Advanced equipment could offer."

ExGo

Comprising a main control panel and optional repeater units, hold and abort buttons plus active end-of-line units, ExGo is very easy to install thanks to its removable chassis, PSU and 30 enclosure knockouts.

All programming is done at the control panel via a simple and intuitive menu structure and LCD screen. All of the sensitive circuits are analysed and configured by the panel menu system, with no adjustment of electronic components required. The specific nature of faults is displayed to aid diagnosis.

A time-stamped log tracks all activation events and can, along with all panel settings, be downloaded to a PC tool for reference, storage, filtering and printing.

You can access onboard diagnostics from the panel menu and easily control all test modes and disablements.

ExGo can be integrated into the MxPro or Axis EN fire systems via a simple fire protection interface or any third party fire alarm system via an I/O loop device.

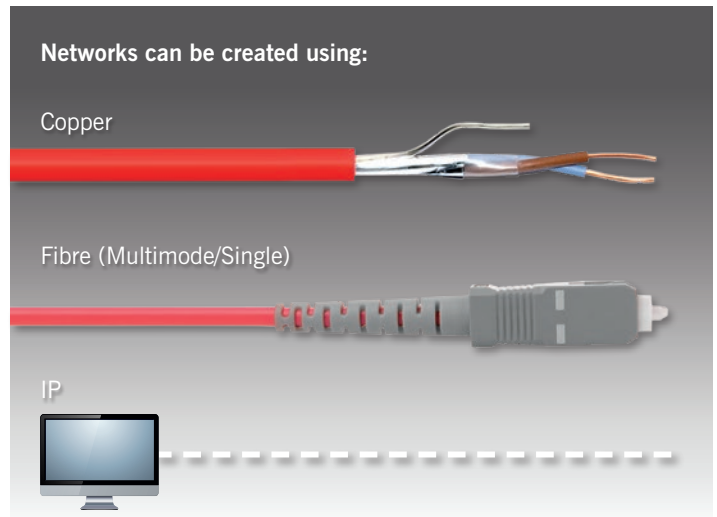


Networking

Advanced panels are fast, powerful and extremely easy to network.

You can network any MxPro 5 panel or remote terminal simply by adding and connecting a network card. All other nodes on the system are aware of a panel as soon as you give it a valid network node address, which makes adding extra panels very straightforward.

Programming and configuration can be done directly from the panel or via PC using a simple-to-follow 'select and click' menu structure.

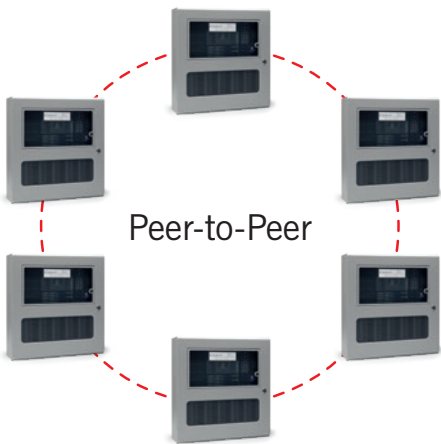


Scalability and Flexibility

We offer three main choices of network – standard, fault-tolerant and multiplied – to suit the particular needs of your site.

Type	Typical Use	Setup	
Standard Network	Sites where one panel per building controls evacuation	Standard Network Card: Mxp-503 and Mxp-003	
Capacity			
Cable length (copper): 1.5km No. of nodes: 32 (50 with booster) No. of zones: 1,000 on MxPro 4 / 2,000 on MxPro 5 Typical time to communicate first event: 32 node network: 0.6 seconds 50 node network: 0.9 seconds			
Type	Typical Use	Setup	
Fault-Tolerant Network	Sites where more than one panel per building controls evacuation	Fault-Tolerant Network Card: Mxp-509 and Mxp-009	
Capacity			
Cable length between nodes (copper): up to 1.5km Loop length: 20km No. of nodes: 200 No. of zones: 1,000 on MxPro 4 / 2,000 on MxPro 5 No. of sectors: 50 on MxPro 4 / 100 on MxPro 5 Typical time to communicate first event on 200 node network: 3.5 seconds			
Type	Typical Use	Setup	
Multiplied Network	For gathering data in one central location from different networks across many sites	Via Advanced's own graphics package or third party BMS (using BACnet and Modbus interface)	
Capacity			
Dependent on type of GUI used: 255 networks of up to 15 fire panels (3,825 nodes in total) 10 networks of up to 200 panels (2,000 nodes in total)			

Peer-to-Peer Networking as Standard



This means:

- The network operates as a true peer-to-peer system so information from any input or output device is passed over the network and displayed on any control panel/remote terminal.
- You can view fire notifications, general alarms, pre-alarms, faults, analogue values, test instructions, status information as well as control inputs and disablements.

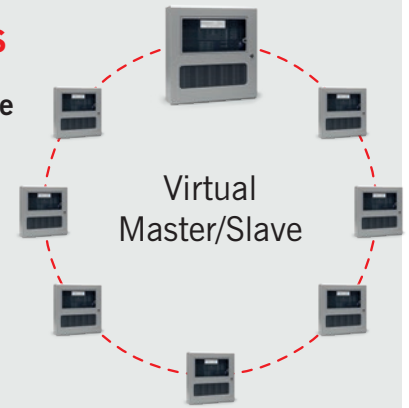
Dynamic Zoning and Sectors

Dynamic zoning allows the system to share up to 2,000 zones.

It also provides non-confusing indication and location of faults as well as better cross-panel reporting and site-wide control.

Sector-based programming allows you to restrict the information passed around the network.

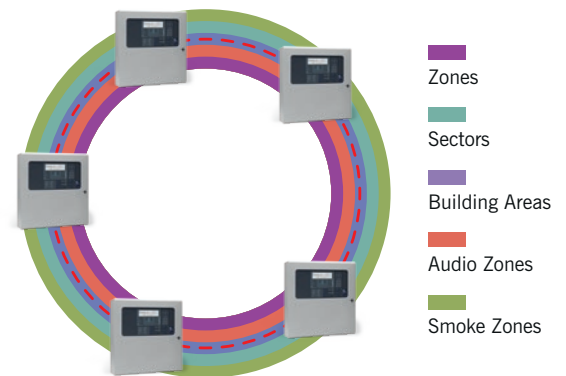
If you don't need/want total control from every panel, e.g. on multi-use sites, you can program the system using zones and building areas/sectors to create separate subdivisions with individual settings and/or create a virtual master/slave configuration.



More Control

It's simple to divide networks into zones, sectors, building areas, audio zones and smoke zones via a series of drop-down menus in the DynamixTools software.

This makes it easy to configure a wide range of fire alarm, false alarm, audio, smoke control or building use strategies to suit any site's needs.



Any input device can be programmed to operate any output device on any panel.

A Complex Challenge – Solved

Advanced offers powerful, reliable yet discreet fire protection to give you complete peace of mind that people, buildings and irreplaceable assets are safeguarded.

To arrange a demo and discover how Advanced's market-leading fire protection range could help you, please email: sales@advancedco.com or call your nearest Advanced office:

UK, Europe, Africa & Asia:

+44 (0)1670 707 111

US:

(508) 435 9995

Middle East:

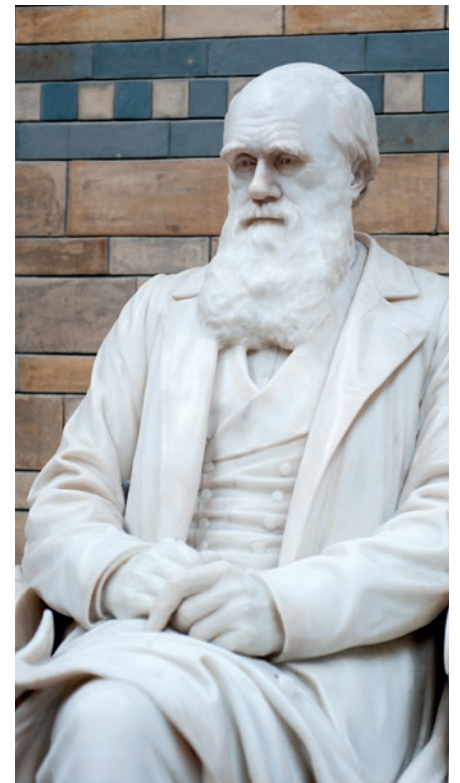
+971 4 299 0908

India:

+91 988 028 0326

Australia:

+61 (0) 2 9631 3400



Statue of Charles Darwin in the Natural History Museum, London, UK

A network of 24 MxPro 5 panels, plus remote control terminals, BMS interface and bespoke PC-based graphical user interface, protect this iconic Grade-I-listed heritage site.



Email: sales@advancedco.com
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