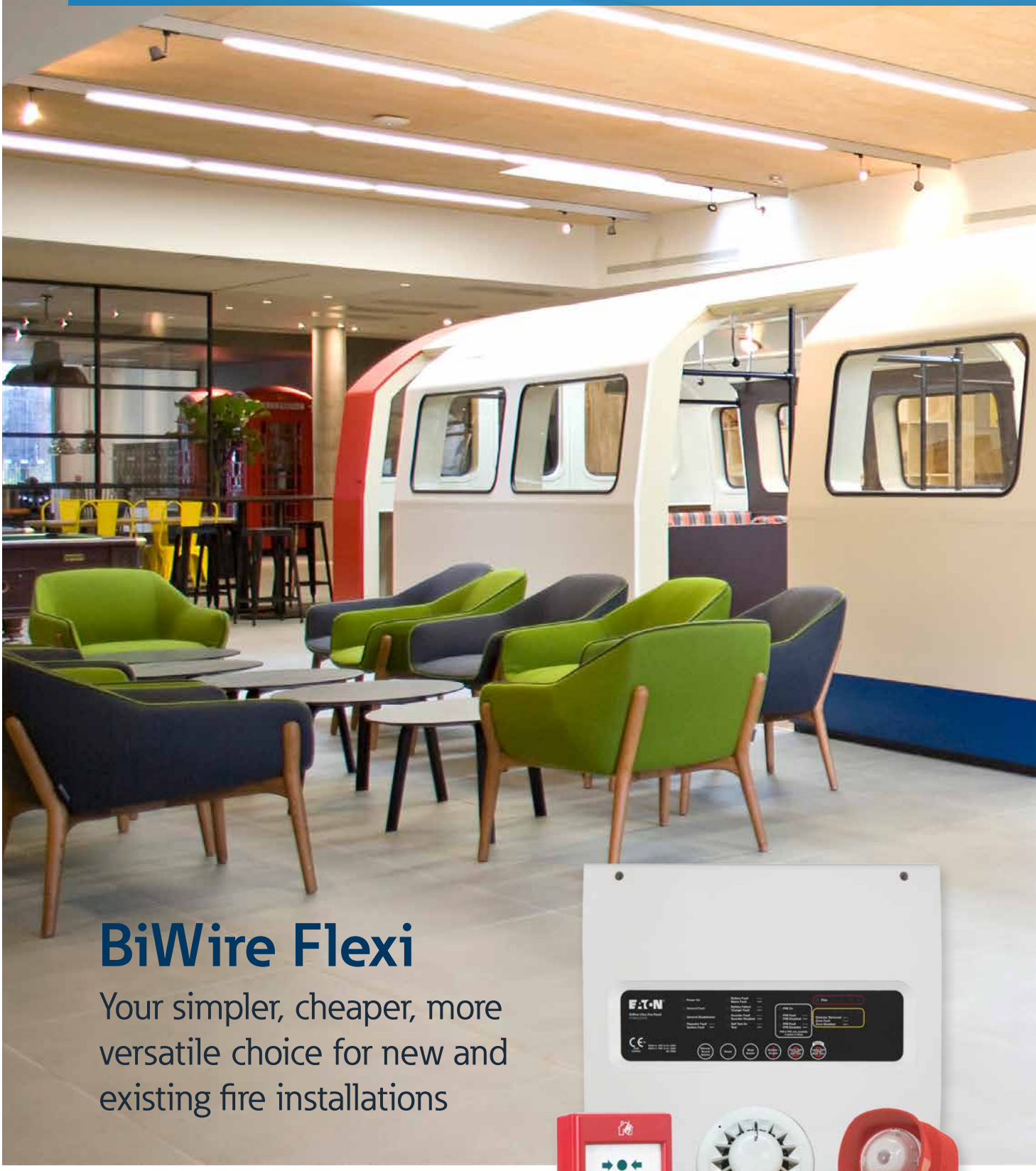
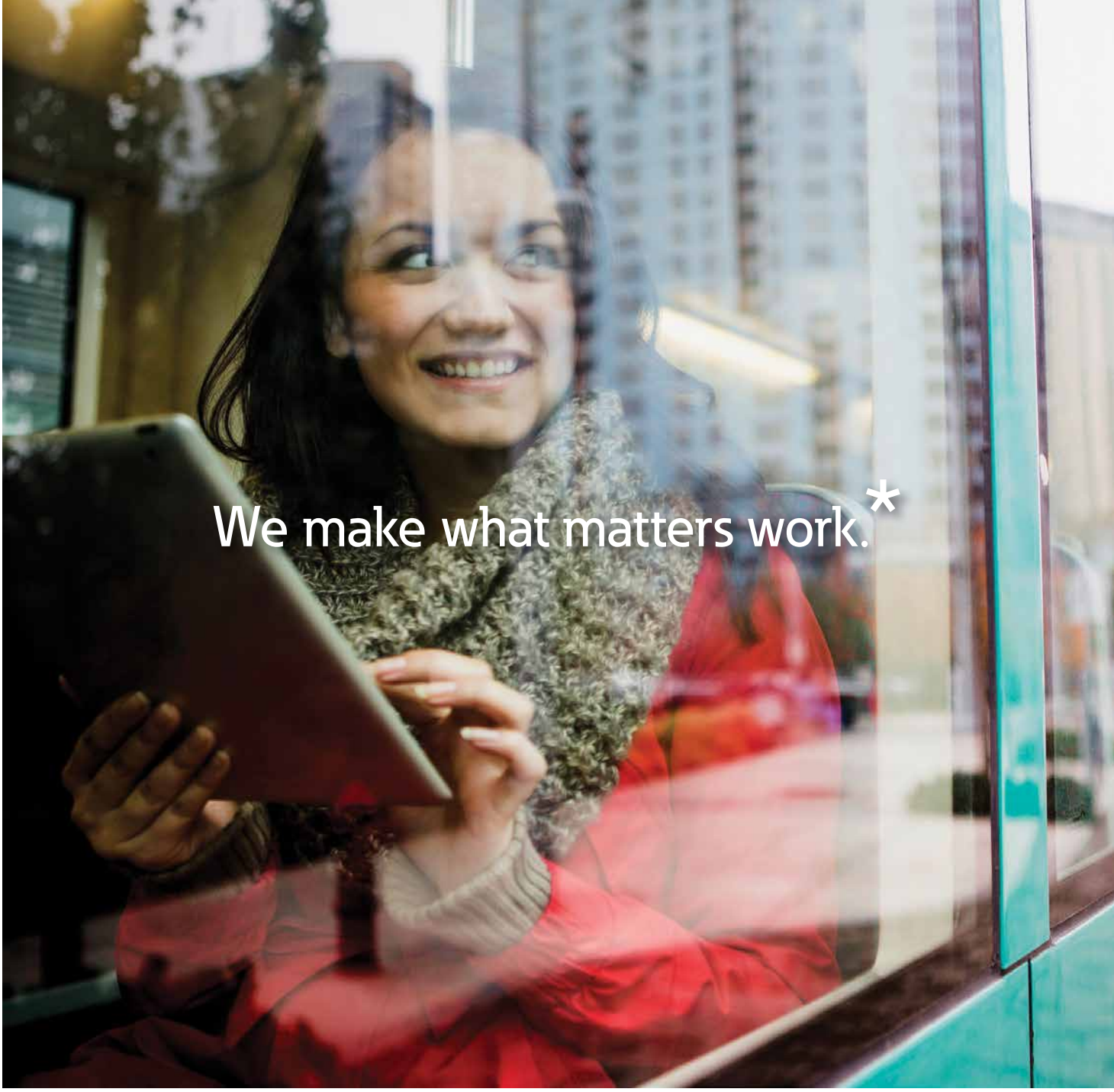
BiWire Flexi fire system
Product brochure



BiWire Flexi

Your simpler, cheaper, more versatile choice for new and existing fire installations

Powering Business Worldwide



* Every day, people depend on things like technology, transportation, energy and infrastructure to keep their daily lives on track. But without power, none of it would be possible. That's why companies around the world turn to Eaton. We're dedicated to improving people's lives and the environment with innovative technologies that help manage power more safely, reliably and sustainably. To meet today's challenges, and tomorrow's. Because this is what really matters. And we're here to make sure it works.

To learn more go to: Eaton.com/whatmatters

EATON
Powering Business Worldwide

We make what matters work.

Eaton fire systems you can depend on

Robust fire systems are essential for protecting people and property – both in the commercial buildings on which business continuity depends and in domestic settings.

The risks associated with failure – from loss of life to irreparable reputational damage – make selecting the right fire system a critical process. Detecting fire risk early can prevent multiple catastrophes. So to ensure the highest levels of safety, everyone involved in a fire system's purchase, installation, commissioning, operation and maintenance needs to know it can be relied upon, along with all associated devices.

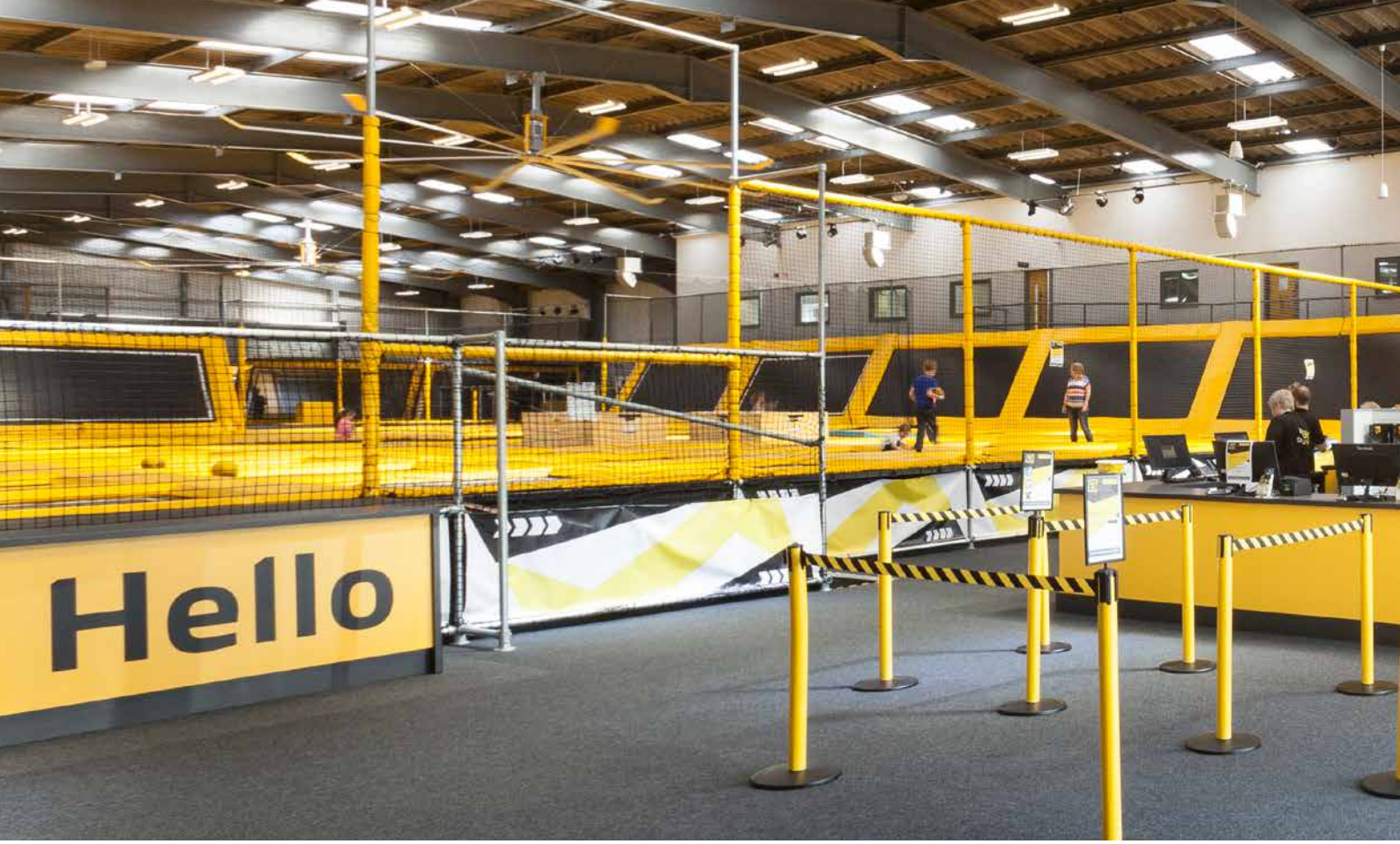
Eaton brings decades of expertise to fire systems development, working closely with industry organisations and customers to shape the future of fire safety through innovation and service excellence. Our product range spans state-of-the-art control panels, detectors and alarm devices – all seamlessly compatible – underpinned by a rigorous testing process that assures their quality.

Eaton industry firsts:

- Designing a low-current solution to meet the EN54-23 standard for visual alarm devices (VAD).
- Featuring a touch-screen on a fire alarm panel.
- Originating the market leading Roshni fire alarm sounder.
- Creating the first resettable manual call point.

Eaton expertise:

- Recognised as world's leading supplier of fire notification devices (IHS Fire Detection and Suppression – World, 2016).
- 2 million RoLP sounders sold in the last five years alone.
- Full compliance with local, national and international regulations and standards e.g. CE, Bosec, Intertek, LPCB, VdS, AFNOR, BAFE, CSIRO, CNBOP, UL certification.
- Trusted to supply some of the world's leading fire safety brands.
- Innovation heritage across legacy brands: Fulleon, JSB, Menvier and Nugelec.



Contents

Right for the job

Helping you match installation to needs

Choose from conventional or two-wire systems to suit the project in hand – a process made less daunting by this easy-to-read guide.

The building you're working on may already have an old, conventional fire system installed that you may need to upgrade or extend. How can you best do this efficiently – saving yourself both time and money, complying with regulations, and finding and installing compatible panels and devices?

We can help you select a conventional or two-wire system to match your needs, as well as guide you through the relevant regulations.

Conventional systems:
Ideal for smaller buildings

Conventional systems work by dividing the building into a number of areas called zones. Within each zone, detectors and call points are hardwired on dedicated circuits to the control panel. A single zone may include multiple detectors. Alarm sounders and bells require a separate cable within each zone.

If a detector or call point is triggered, the control panel can identify which circuit contains the triggered device and thereby indicate from which zone the fire alarm has come. The indicated zone can then be manually searched to locate the triggered device.

Two-wire systems:
Suitable for a wide range of applications

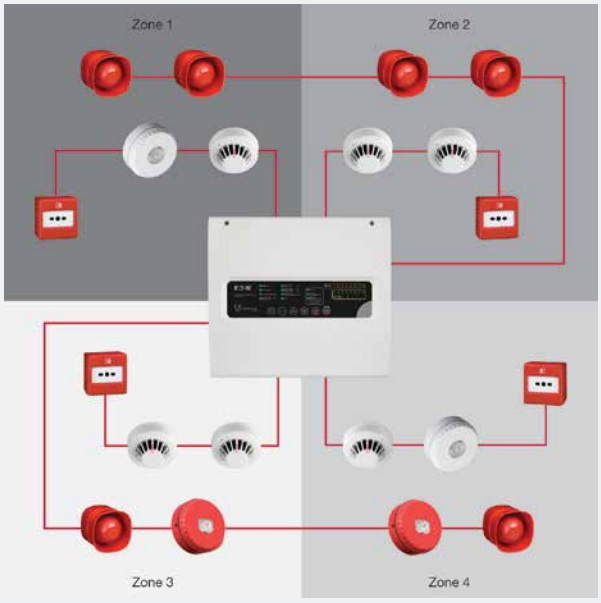
Two-wire systems are based on standard conventional system technology. However, they also incorporate additional functionality that enables the call points, detectors and sounders for each separate zone to be wired on a single common circuit.

By combining both the detection and alarm annunciation wiring into a single circuit, you can achieve considerable savings in installation time and cabling.

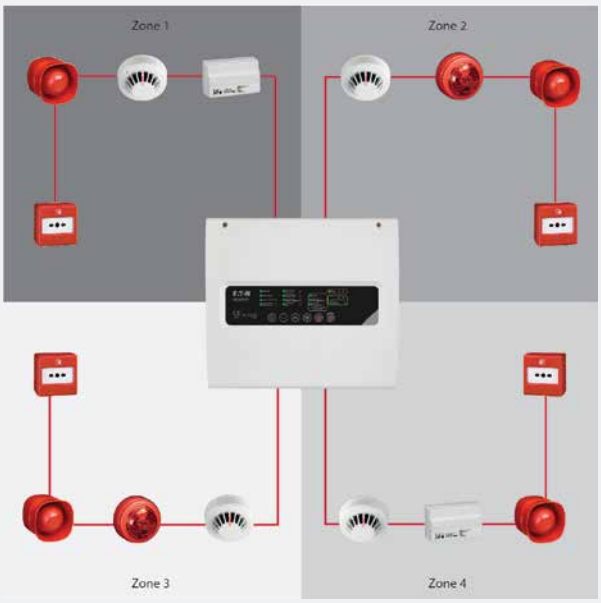
The simplicity of operation, ease of cabling and competitive pricing make this system suitable for a wide range of applications. In combination with our 5 in 1 flexible detector, this approach reduces both install and maintenance stock holdings and the labour and materials cost.
It also minimises the potential for wiring errors associated with traditional conventional 4 cable systems.

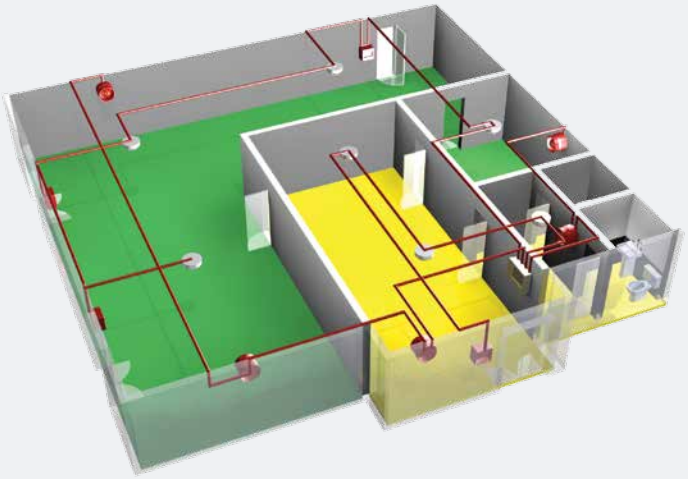
Typical architecture/layout: conventional and two-wire system

Conventional



Two-wire





The big picture

Parts/time/costs comparison: conventional vs. two-wire

Saves resources

Reduces cabling requirements by around **50%**

Saves money

Typically reduces costs by **£1200**

Saves time

Can reduce installation time by **48 hours**

Creates opportunity

More time = **more projects + more money**

The information above is based on a typical system installation project using a 4 wire conventional panel.

Close-up on the regulations

Making sure you're compliant from the start is key to a safe, successful and profitable fire installation.

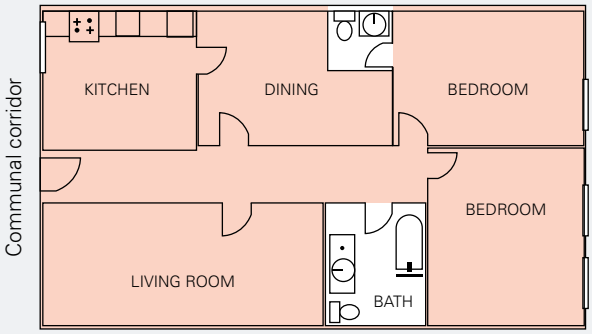
Here we review key points of the relevant codes of practice you need to take into account that cover the design, installation, commissioning and maintenance of fire detection and alarm systems in both non-domestic and domestic environments.

Domestic

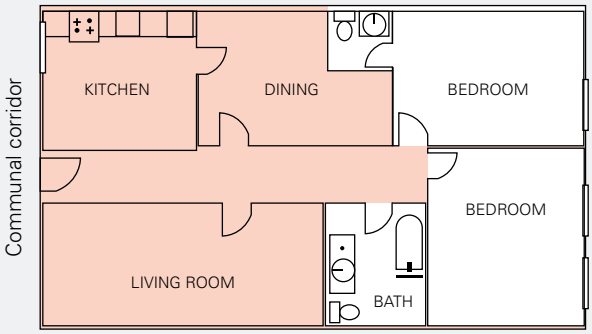
BS 5839-6:2013

There are three categories of domestic systems:

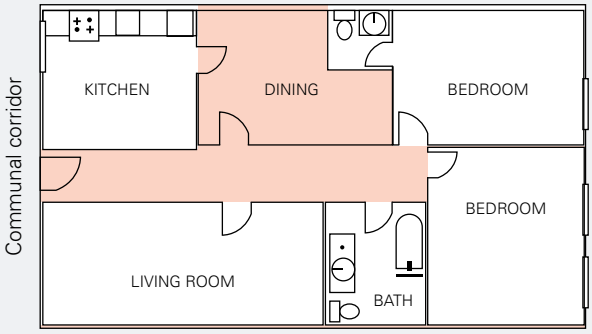
- **LD1:** Installed throughout the dwelling, incorporating detectors in all circulation spaces that form part of the escape routes from the dwelling, and in all rooms and areas in which fire might start, other than toilets, bathrooms and shower rooms.



- **LD2:** Incorporating detectors in all circulation spaces that form part of the escape routes from the premises, and in all rooms or areas that present a high risk of fire to occupants.



- **LD3:** Incorporating detectors in all circulation spaces that form part of the escape routes from the premises.



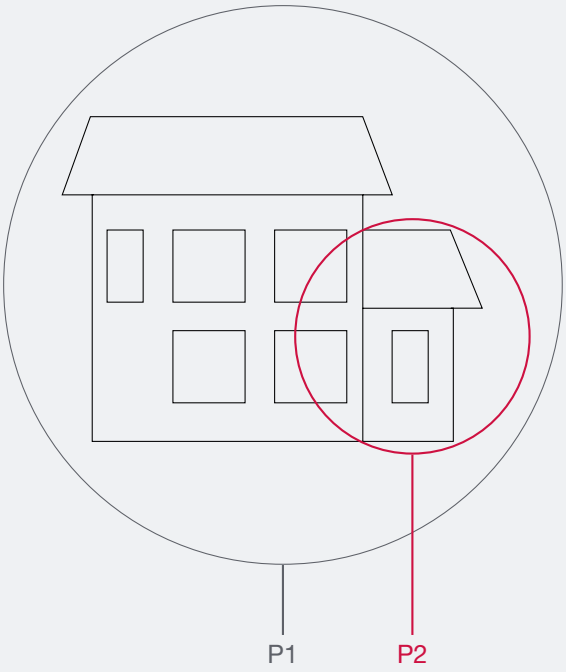
It's worth noting that an LD3-type system is intended to protect escape routes for those not directly involved in the fire and may not save the life of anyone in its immediate vicinity.

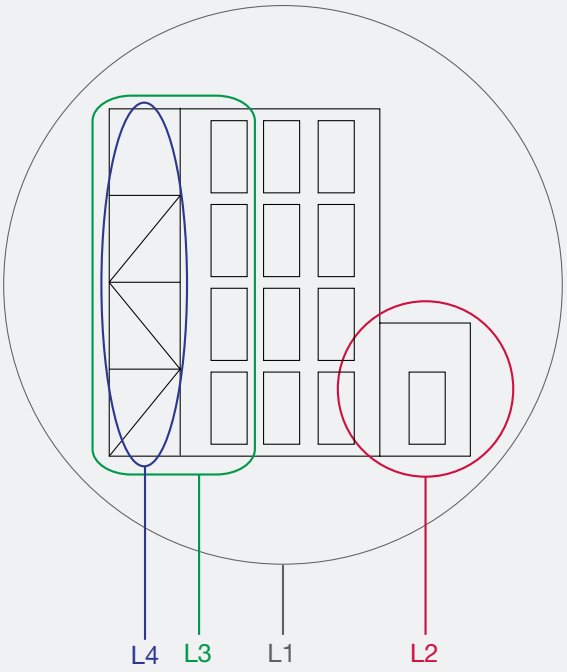
To specify a meaningful and effective alarm system you must specify its grade and category, e.g. 'Grade D, Category LD2'. You can buy the full BS 5839-6:2013 from the British Standards Institution (https://www.bsigroup.com/).

Guidance on categories

Note all designs will need to be produced in accordance with a risk assessment

BS 5839 Clause 5





AFD - Automatic Fire Detection

Property Protection Fire Systems

P AFD designed to primarily protect property categories:

P1 AFD installed throughout all areas

P2 AFD installed only in defined areas

Life Protection Fire Systems

L AFD designed to primarily protect human life categories:

L1 M plus AFD installed throughout all areas

L2 AFD installed in defined areas of higher risk of ignition, in addition to L3

L3 M plus AFD installed in escape routes and rooms opening into these routes

L4 M plus AFD installed in escape routes comprising circulation areas and space such as corridors and stairways

L5 A non-prescriptive system in which protected area(s) and/or the location of detectors is designed to satisfy a specific fire risk objective (other than that of L1 to L4)

M System designed to be operated manually (no AFD) with alarm devices (sounders/ VADs throughout)

Product standards

Why visual alarm devices (VADs) are important

The Eaton range of BiWire beacons is unique. That's because it's the only two-wire system that complies with the latest standard: EN54-23.

The EN standard has been in place since early 2014. It covers the use of visual alarm devices in fire detection and alarm systems in non-domestic premises. The standard ensures that the device emits sufficient light (0.4 lux) to attract the attention of anyone in a specific area. Any risk assessment should identify where a VAD is required. This will depend on factors such as where ambient sound pressure levels are high, if staff or visitors need ear protection, or where people with impaired hearing may be alone.

Fire Industry Association: VADs requirements summary

Getting the risk assessment right is critical. If it's thought to have been carried out insufficiently, the 'responsible person' can face an unlimited fine or up to two years in prison.

To help you meet the requirements, the Fire Industry Association (FIA) has issued a guidance document 'The application of visual alarm devices'. This states:

"…to avoid discriminating against disabled people, BS EN 54-23 compliant VADs MUST be installed in all sanitary accommodation (not just WCs) and all hotel bedrooms, student accommodation and similar properties, plus anywhere where people with impaired hearing are likely to be alone, such as isolated offices."

The document also stipulates:

"It is therefore recommended that unless specifically described in a risk assessment, VADs should be provided in the following situations:

Areas with high ambient noise as described in BS 5839-1 2013 clause 17.2 a) Toilet and other sanitary accommodation (Building Regulations ADB, clause 1.34; Building Regulations ADM, clauses 5.1 and 5.3 and BS 8300 clause 9.3.7.1)."

VAD or VID?

While VADs are subject to the above regulations, visual indicators (VIDs) are not assessed against the same standard. This means that their brightness, reliability and robustness are not guaranteed.

It's important, however, to know that although VIDs cannot be used to warn building occupants of a fire alarm condition, they may be used where additional notification is required and can be used where VADs are not a requirement.

By choosing an Eaton BiWire system, you remove any uncertainty over beacon compliance – protecting yourself and your client, as well as the building's occupants. You can find helpful guidance on installing VADs in BS 5839-1 and LPCB CoP0001.

For further information about installation and EN54-23, download our Fire Installer's pocket guide or contact your Eaton Account Manager who will be happy to talk through the options relating to your specific building.

Download guide now

Complementary Eaton products

Helping you make the most of the BiWire Flexi system

From detectors and sounders to our VAD-compliant base beacon, the Eaton range makes it easy to maximise the possibilities of BiWire Flexi.

Detectors

You can configure the BiWire 5 in 1 detector to five settings including three heat detector modes, optical only and a multi-sensor mode. This makes estimation and installation easier as you only need to purchase one device. Select different modes on site using dip switches.

Sounders

In all category LD systems the sound pressure level of fire alarm signals should be at least 85 dB (A) if measured at the doorway of each bedroom (with the door open). Each BiWire base sounder has a dB level of up to 90 dB (A) at 1M. This allows you to use a single wiring point for your detector and sounder and still comply with required sound levels.

VAD-compliant base beacon

To warn a hearing impaired person, a visual alarm device should be provided which complies with EN54-23 VADS. Our system has a fully compliant VAD base as a two-wire device, again removing the need for extra cabling back to the panel.

For further information on system products, visit our website http://www.eaton.com/gb/

The Eaton offer

Our installation, commissioning and aftersales services

Install and fault finding

The BiWire Flexi system is easier to install, with fewer cables delivering a significant time saving. A handy fault-finding feature helps you locate problems relating to both open circuit wiring or removed detectors. The installation manual also shows how to put the panel into 'self-test mode' so that all detectors flash amber to indicate there is power to the devices and that they're properly clipped in.

Commissioning

At Eaton we offer a chargeable commissioning service to give you piece of mind that the fire alarm system has been installed correctly and is fully operational.

Service and maintenance

Choose the Flexi system and make maintenance easy. Simply keep an 8-zone Flexi panel and some 5-in-1 detectors in your van and you can easily replace a faulty conventional or two-wire system by slotting out the PCB and sliding the new one in. One detector means you don't have to carry five different types – and our FXN520 common base is both conventional and two-wire system compatible.

Case study

BiWire Flexi: Making 40+ houses of multiple occupation safer plus saving time and money

Background

Karbon Homes was looking to improve the quality and reliability of the fire detection systems in 40+ HMO tenanted buildings. Having approached ABCA Systems – a trusted, BAFE-accredited fire installation company, a full review of the current provision was undertaken, and a plan was drawn up to upgrade and extend current systems.

Phillip Miller, Managing Director of ABCA Systems, confirmed his confidence in choosing Eaton's BiWire Flexi solution when he said: "We've used Eaton fire systems for a number of years and their new Flexi panel fitted the bill for this project perfectly. It enabled us to quote on budget and win the job."

Challenge

Heightened awareness of fire safety issues post-Grenfell had sharpened the focus on the need to ensure safe, fully compliant fire alarm systems. Existing conventional systems currently installed in the properties, however, only provided coverage to the landlord area and used bells. Minimising disruption to the existing building fabric and to the lives of tenants were top priorities given that the buildings were fully occupied and already had some conventional fire provision which the client wished to retain.

Solution

To meet the budget, Eaton proposed an upgraded system using BiWire Flexi panels to keep installation and equipment costs to a minimum. The approach meant that some of the existing fire alarm and detection equipment could be retained. It also enabled the system to be extended into the flats in a way that reduced cabling and installation time. Installing sounders on the detection cabling further reduced the cabling needed and ensured a consistent aesthetic throughout the buildings.

Results

All initial installations were successfully completed on time and on budget and contracts for a further 10 buildings have since been awarded to the installation company by Karbon Homes. Eaton's fire products are now protecting the safety of residents and tenants in 40+ houses.

Product specifications:

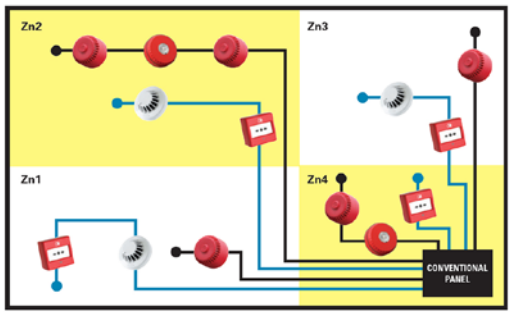
Conventional and BiWire Flexi systems

8-zone conventional panel

Eaton's 8-zone conventional fire system panel features a straightforward, intuitive interface that makes programming and maintenance simple without sacrificing system capabilities.

Approved to EN54-2&4, it offers a comprehensive set of functionalities housed in a modern, robust and discreet enclosure. Its appearance and performance makes the panel well-suited for life safety notification in a wide variety of small to medium-sized buildings, particularly schools, warehouses, retail stores and offices. Adding an isolator barrier gives the panel additional flexibility to monitor standard or intrinsically safe conventional zone circuits, making it suitable for industrial applications.

Conventional fire alarm system



Features and benefits

- Zones switchable between standard conventional and intrinsically safe zones (using isolator barrier).
- One-man test facility.
- Class change input.
- Interlink relay functionality for connecting two panels together.
- Supports an expansion card for fire routing equipment.
- Fire protection equipment and fire relays per zone.
- Modern and discreet enclosure.
- Simple system testing by a single fire alarm technician.
- Interlink relay allows for greater system flexibility.

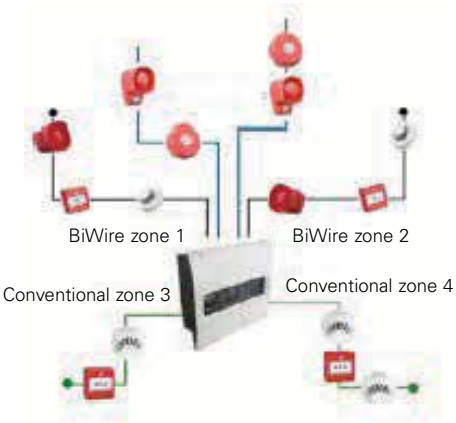
BiWire Flexi panel

Eaton's BiWire Flexi combines two technologies to provide a truly versatile and valuable fire safety solution. It means that you can benefit from the entire range of innovative two-wire and market-leading conventional products.

You can configure it for either two-wire devices or conventional devices to work on a particular zone. This gives you the flexibility to benefit from the timesaving advantages of a two-wire system, as well as the ability to use a wide range of conventional devices should you need them.

BiWire Flexi's versatility relieves decision-making pressures when specifying a fire system making it the perfect solution for electrical installers and distributors. You can wire it to meet the requirements of the application and it's also perfectly suited to extending an existing fire system. The Flexi panel shares the same straightforward, intuitive interface as the BiWire Ultra and 8-zone conventional panels – a proven solution for simple programming and maintenance.

BiWire Flexi fire alarm system



Features and benefits

- Configure zone wiring to work as a conventional or two-wire system.
- Available in 2, 4 and 8-zone variants.
- Allows connection of an existing conventional system to a BiWire system.
- Compatible with two-wire and conventional EN 54-23 certified visual alarm devices (VADs).
- Reduces stock-holding and enables the fire system to adapt to customer or application demands.
- Very simple to install in a wide variety of applications.
- Save time, money and effort when undertaking system extensions and upgrades.
- Complies with all latest regulations.

Which panel should I choose?

4-wire systems

These use a cable for each detection zone and a cable for each sounder circuit. Usually found in older installations and worked on during upgrades or extensions.

2-wire systems

These can run the detection zone and sounder circuit on a single cable. Used in new installations.

System extensions

Want to keep the existing detection and sounders but need to make your bid competitive?

Solution: Reuse the wiring and devices but fit the extension with a BiWire solution.

Panel replacement

Need to replace an old 4-wire system but would like more functionality and a clear upgrade path for future system extensions?

Solution: Reuse the wiring and devices and fit a Flexi panel set to 4-wire operation.

New build

Have a job to tender but need to be more competitive than other bidders?

Solution: Achieve considerable savings in cable costs and installation time using a Flexi panel set to BiWire operation.

Notes

Loss Prevention Certification Board (https://www.redbooklive.com/) & Fire Industry Association (https://www.fia.uk.com/):

- CoP 0001 Code of Practice for visual alarm devices used for fire warning

The British Standards Institution (https://www.bsigroup.com/)

- BS5839-1 Fire detection and fire alarm systems for buildings
- BS8300 Design of an accessible and inclusive built environment. Buildings.
- BS9999 Fire safety in the design, management and use of buildings
- BS EN54-23 Fire detection and fire alarm systems. Fire alarm devices. Visual alarm devices

This booklet is not intended to be a comprehensive guide to all aspects of fire alarm design but rather a very useful source of background information.
Whilst every care has been taken to ensure that the contents of this document are correct at the time of publication, it should never be used as any form of substitution for the BS 5839 standard or CoP 0001 themselves. Eaton shall be under no liability whatsoever in respect to such contents.
It should be noted that there may be specific additional requirements dependent upon local authority building regulations and/or fire authority.

Please use this guide in conjunction with a current issue of BS 5839, CoP 0001 and other relevant CoPs or standards.

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