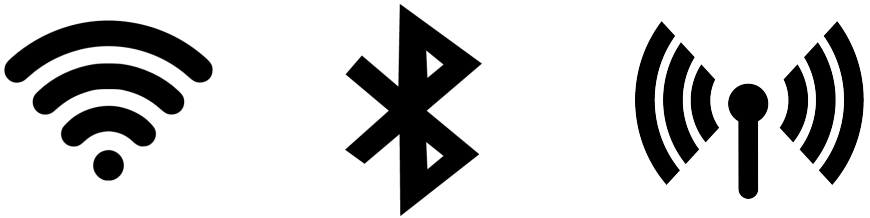
Fireco

Compliance Made Easy

Fire Industry Association
CPD Certified



Wireless hold open devices for Fire Doors

www.fireco.uk

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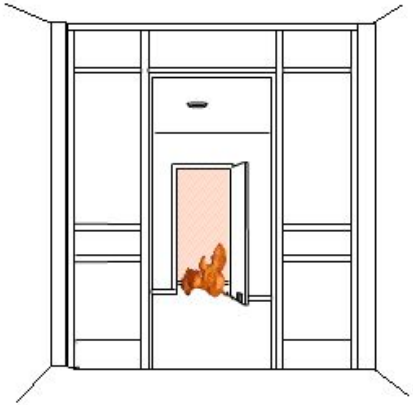
Who are Fireco?

- UK based professional fire door management experts
- Products tested to EN 1155 & EN 1634-1
- ISO9001 & ISO14001 accredited
- Specialists in eliminating door wedging and taming unruly fire doors
- Est. 1994 - specialising in wirefree technology for 30 years.
- Market leaders in wire free fire safety products
- Over 1 million Fireco products keeping buildings and people safe
- Radio frequency as well as acoustic devices
- A full range of certified fire door services
- All products manufactured at our East Sussex HQ (visitors welcome!)



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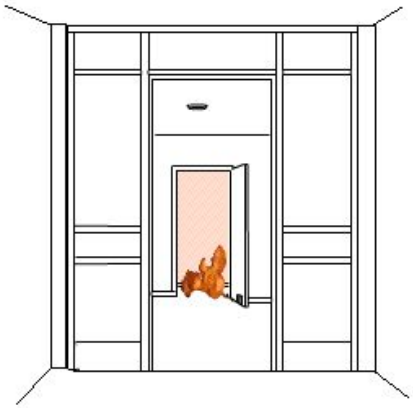
In this module, you will gain

- An understanding and appreciation of wireless hold-open devices
- Insights into relevant technology and how it's applied
- Requirements for wireless fire systems
- Considerations when choosing between hardwired and wire-free installations



We use wireless tech everyday . . . . .

- Emergency services communication
- Smart homes
- Locating/tracking
- GPS & Sat-nav
- File sharing
- Email
- Contactless payment
- Radio
- Smart Watches
- Pet feeders
- Mobile phones
- Online banking / apps
- Social media
- Telemetric data
- In-car bluetooth
- Other bluetooth devices
- WiFi
- Streaming services
- Wireless headphones / earbuds
- CCTV / Smart doorbells

Why do we hardwire?

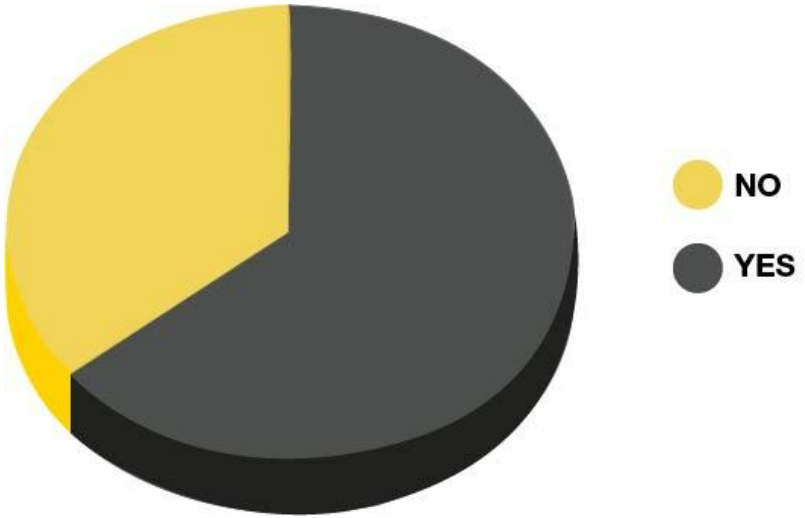
- Has been considered to be more reliable for critical installations
- ‘We always do it that way’
- Can advances in technology change this?

Kick the Wedge

The ‘Kick the Wedge’ survey was carried out by independent researchers

On ***announced*** inspections

64% of properties have wedged open fire doors



Why do people wedge fire doors?

- Ease of access
- Doors are too heavy
- Ventilation
- Help to reduce isolation
- Closed door policies
- Lack of awareness

Unless occupants are given safer means of holding open doors, they *will* find ways to wedge them open.

What types of device are available?

Acoustic or Radio? Hold-open or free-swing?

Wireless hold open devices commonly fall into two categories of actuation; Acoustic or Radio.

Acoustic devices:

- Triggered by acoustic signal from an alarm sounder, usually at 65 dbs.
- Some can be triggered by any ambient noise at that level, whilst others have better sound filtering technology.
- Some devices must be taught what your alarms sound like, however, this can be fiddly and time consuming.
- Suitable under BS 7273-4:2015 for some Standard (Cat-B) and all Indirect (Cat-C) installations.
- Battery life ranges from 6 months to 3 years depending on manufacturer and usage.
- Acoustic devices should fail safe on mechanical fault and power loss.
- Free-swing or retainer devices.

TM

Radio devices;

- Actuated by a hardwired radio transmitter
- Can be ‘wired’ into ‘FIRE’ and ‘FAULT’ contacts
- RF devices generally offer better battery life than acoustic

- RF systems can offer better levels of compliance, being suitable for Critical installations
- Some systems offer software integration for fault monitoring and additional functions
- Free-swing and fixed retainers are widely available

Radio devices;

- Catered for under Clause 16 of BS 7273-4;
    - Requires a site survey to demonstrate good signal level between transmitters and receivers and identify requirements for installation
    - Back-up power required unless a release warning of 10s or more local to the door is available (16.4)
- Unlike acoustic devices, radio systems are not available for ‘self-installation’
- Meet the requirements laid out in BS9991:2024

Free-swing or retainer?

- Free-swing devices give doors a full range of movement with none of the weight/resistance associated with fire doors. Upon recognition of an alarm condition, the devices built in closing mechanism engages.
- Ideal for bedroom doors and flat entry doors or where people struggle with heavy fire doors.

- Door retainers hold doors open in a fixed position, fitted to the top or bottom of the door.
- They are ideal for improving access and ventilation or to combat door wedging.
- Retainers should be tested once a week to avoid door warping.

Does this look familiar?

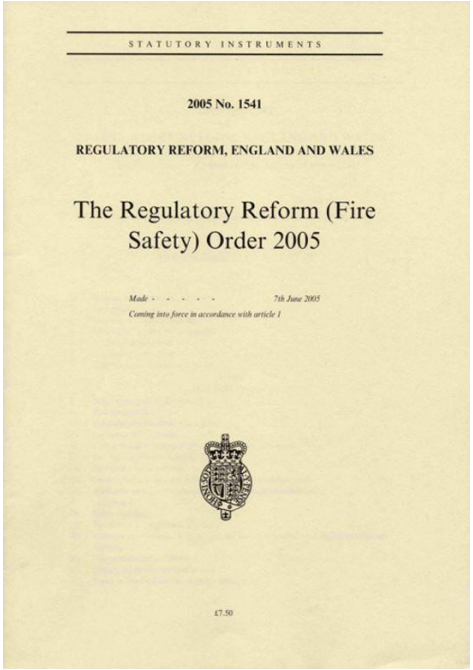
- More and more we see door closers being deliberately disengaged, predominantly in the care and social housing sectors.
- To a lesser extent, this is also something that many universities face in halls of residence.
- This is largely a response to people struggling with the weight of fire doors. Disengaging the closer eliminates the resistance that makes doors feel notoriously heavy.
- This is the kind of situation where a free-swing device may be more appropriate than a retainer.

Guidance & Legislation

What do regulations say about wireless devices?

Regulatory Reform (Fire Safety) Order 2005

- Written to replace and simplify around 70 pieces of legislation
- Offers guidance on taking reasonable precautions
- Laid out a new, risk assessed approach to fire safety
- Statutory in England and Wales
- Guidance documents published by the Department of Communities and Local Government (DCLC) based on different types of property



STATUTORY INSTRUMENTS

2005 No. 1541

REGULATORY REFORM, ENGLAND AND WALES

The Regulatory Reform (Fire Safety) Order 2005

Made - - - - 7th June 2005

Coming into force in accordance with article 1

£7.50

Regulatory Reform (Fire Safety) Order 2005

DCLG Guides - Automatic door hold open devices

“Such devices are particularly useful in situations where self closing doors on escape routes are used regularly by significant numbers of people or by people with impaired mobility who may have difficulty opening the doors”

Regulatory Reform (Fire Safety) Order 2005

DCLG Guides - Automatic door hold open devices

"automatic door hold open/release devices fitted to doors protecting escape routes should only be installed in conjunction with an automatic fire detection and warning system incorporating smoke detectors, that is designed to protect the escape routes in the building"

Regulatory Reform (Fire Safety) Order 2005

DCLG Guides - RE: Automatic door hold open devices

“ The automatic device should release, allowing it to close effectively when any of the following conditions occur

- *The detection of smoke/heat by an automatic detector*
- *The actuation of the fire detection and alarm system by manual means i.e. break glass*
- *Any failure of the fire detection and alarm system or*
- *Any electrical failure”*

Regulatory Reform (Fire Safety) Order 2005

DCLG Guides - Automatic door hold open devices

"Other devices, including self-contained devices which perform a similar function, that are not connected directly to a fire alarm system and are not therefore able to meet the above criteria are available and may be acceptable where a site specific risk assessment can show that they are appropriate."

Regulatory Reform (Fire Safety) Order 2005

DCLG Guides - Automatic door hold open devices

“A site specific risk assessment should be undertaken before any type of automatic door hold open/release device is installed.”

Building regulations

Approved document B - Section 1: Fire Detection and alarm systems

1.15

“Where any part of BS 7273 applies to the triggering of other systems, the recommendations of that part of BS 7273 should be followed”

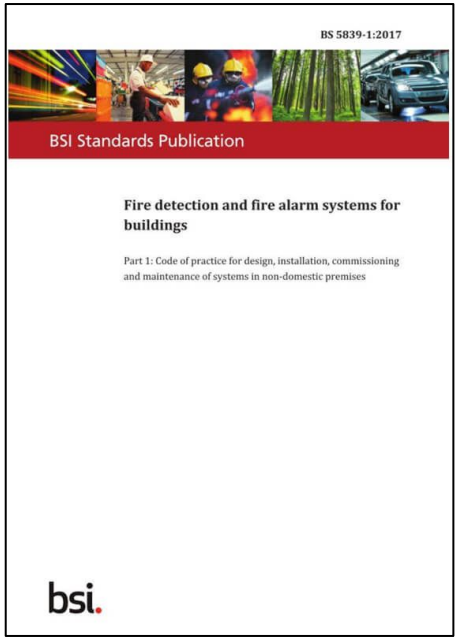
BS 9999:2017

This standard specifically calls for automatic hold open devices to prevent door wedging . . . .

"*where practicable, fire doors are in positions where they are not likely to be wedged or propped open. Where this is not practicable, fire doors should be provided with hold-open devices on an automatic release mechanism which can be returned to the closed position when required*."

BS 5839:1

- You would use this standard to design a fire alarm system
- Previously gave guidance on hold open devices
- Was deemed ‘too broad’ given the various types of device available
- Refers users back to BS 7273



“9.2 Recommendations

The following recommendations are applicable in the case of systems intended to actuate other fire protection systems or safety facilities (e.g. by triggering an automatic fire extinguishing system, closing fire-resisting doors, shutting down an air handling system or grounding lifts).

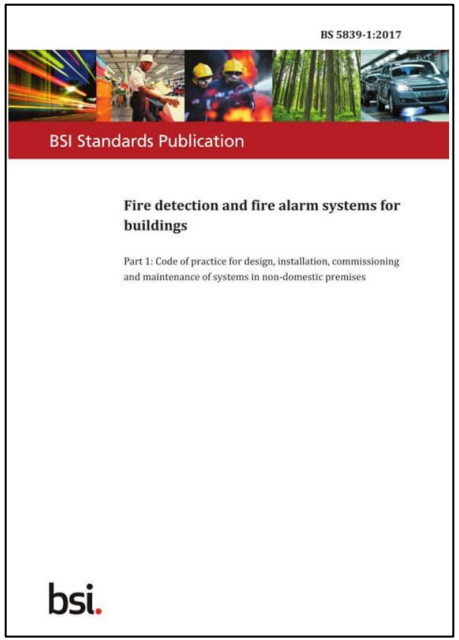
a) The system should conform to the recommendations of any applicable part of BS 7273.”

BS 5839:1

Fire Alarm Categories

M is for Manual

- Very basic
- Reliant on manual operation
- No automatic fire detection (AFD) required
- Not suitable alone for hold open devices
- Additional automatic detectors may be required



BS 5839:1

Fire Alarm Categories

L is for Life Protection

- L1 = Maximum life protection
- L2 = Additional life protection
- L3 = Standard life protection

No additional AFD requirements for these categories
BS 5839-1 takes precedence

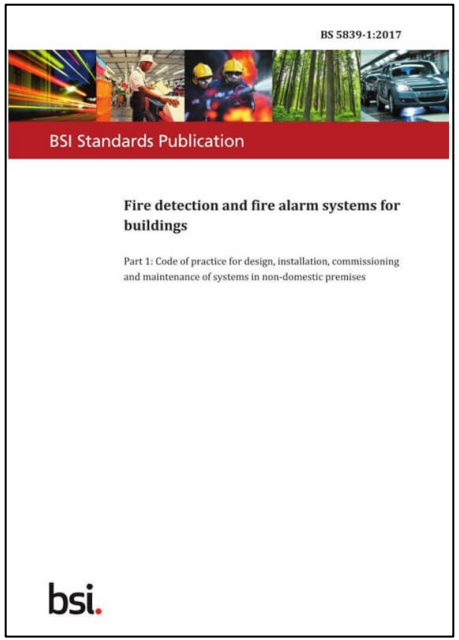
L4 = Modest life protection

- Additional detectors in escape routes
- Detectors on both sides of subdividing doors

L5 = Localised fire protection

- ‘Tailor made’ solutions
- Designed to mitigate a specific risk

BS 7273-4 Clause 12, takes precedence



BS 5839:3 1988

- Specification for automatic release mechanisms for *certain* protection equipment
- Usually applied to Automatic Door Release Mechanisms (ADRM), normally referred to as electromagnetic hold open devices
- Does not apply to plunger devices or free swing products

"1 Scope

This standard does not cover ….

d) release mechanisms incorporated into closing or opening mechanisms;
e) release mechanisms which utilize friction between the mechanism and a fixed surface to prevent the door closing, e.g. plunger type devices"

HTM05-02

- Health technical memorandum 05-02 - Firecode
- Specific to healthcare estates
- Helps meet Statutory requirements of Building regs
- Appendix C for doors and door sets
- Self closing devices should comply with BS EN 1154 or BS EN 1634
- Door release mechanisms should conform to BS 5839-3 and BS 7273-4
- Recognises the importance of failsafe mechanism and closing doors at night

- automatic door releases must be

Door closers

Generally all fire doors should be fitted with an automatic self-closing device complying with BS EN 1154 or BS EN 1634-1, with the following exceptions:

- fire doors to patients' bedrooms in facilities providing in-patient mental health services;
- fire doors to bedrooms in in-patient accommodation for people with learning disabilities; and
- fire doors which are kept locked shut.

effectively;

– the doors close effectively onto their frames.

Please note: the installation and operation of electro-magnetic hold open/swing free door closers should also satisfy similar criteria.

BS 9991:2024

- Care homes, extra- care & sheltered schemes, blocks of flats, student/staff accommodation, HMO’s
- Includes **residential care homes** for the first time and introduces **Personal Emergency Evacuation Plans (PEEPs)** for individuals with mobility challenges.
- Updated to ensure consistency with the **Building Safety Act 2022** and the **Fire Safety (England) Regulations 2022**, which have tightened requirements for residential structures.

BS 9991:2024

Clause 30 - Door openings

30.1.5.2 Hold open devices
If a hold open device is to be used on a fire door, it should;

- Release on relevant signals from fire alarm CIE
- Release on power loss and mechanical failure
- Manual Release

Defers technical control of door-release mechanisms to **BS 7273-4**, the recognised code of practice for actuating fire protection measures.

BS 9991:2024

Common misconceptions;

Doors MUST release on a fault signal

Doors MUST release within 25 seconds

BS 7273-4:2015 + A2:2023

- First published in 2007, updated in 2015 and, more recently, 2023
- Updated to be simplified and straightforward.
- Encourages a risk assessed basis for specification of hardware
- Previous guidance in BS 5839 too generic for the different hardware available.

BS 7273-4:2015 + A2:2023

Clause 4 - Categories of actuation

Critical Category (Formally Category A) – Hard wired devices linked directly to fire alarm. This system is intended for high risk doors.

Standard Category (Formally Category B) – This system is intended for normal risk doors and includes acoustically actuated devices.

Indirect Category (Formally Category C) – This system is intended for low risk doors.

BS 7273-4:2015 + A2:2023

Clause 7 - Methods of actuation

Release mechanisms should respond (i.e release the door) to the following;

- Signal from the fire alarm system (manual call point or AFD)
- Fault signals from the fire alarm CIE
- Electrical power failures

Clause 8.1 General

8.1.1 states that any AFD on which release mechanisms depend on for the acuations should conform to BS 5839-1 or BS 5839-6 as appropriate.

BS 7273-4:2015 + A2:2023

What's right for your building?

- RRFSO guides suggest a risk assessed approach
- Risk assessment can be married with the guidance in 7273-4 to find the most appropriate solutions

In the absence of a risk assessment, Annex B, table B1 offers detail on what level of compliance might be required

Clause 4.1.4 - *“If the designer is not informed as to the category of actuation required, the designer should select the category of actuation from Annex B and should make clear, to the purchaser or their agent, the category of actuation that the designer proposes.”*

Considerations

What to look for in a wireless hold open device

AFD (Automatic Fire & Detection)

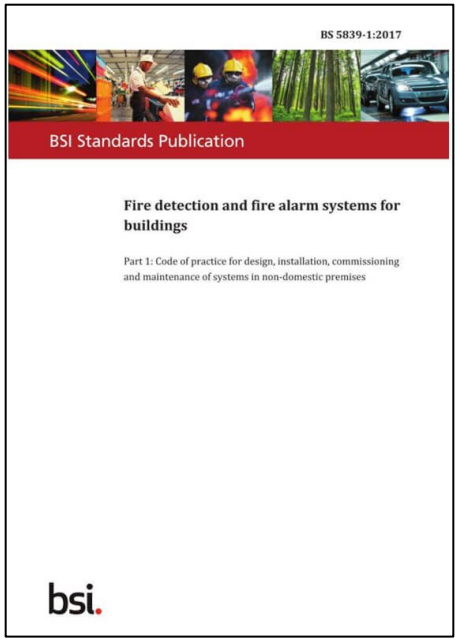
BS 7273-4 Clause 12

Conformity to BS 5839-1 minimizes risk of false alarms

The clause requires;

- buildings with hold-open devices use a BS 5839-1 fire alarm, minimum Cat M
- ‘Some’ AFD for electronically held open fire doors
- fire detection that confirms to BS 5839-6 for domestic premises

L1, L2, L3 systems provide sufficient AFD
L4 systems may require additional detection
L5 systems for ‘tailor made’ solutions
Use guidance in Clause 12 to identify where additional detectors need to be fitted



Commissioning

BS 7273-4 Clause 3.6 defines commissioning as the process of determining that the system is adequately installed to the standard and appropriate requirements.

BS 7273-4 Clause 20 - Commissioning (general considerations)

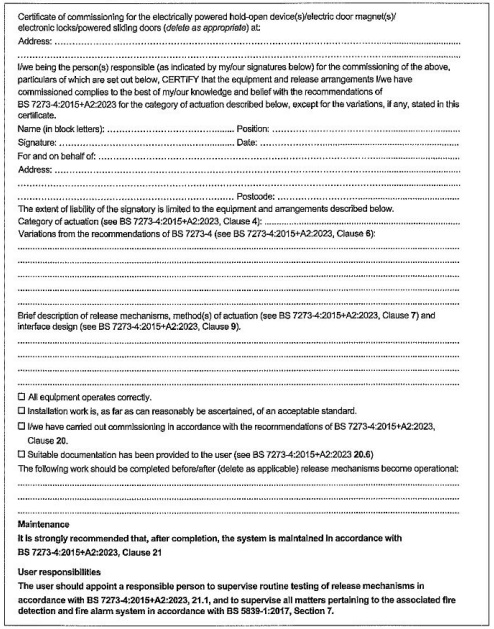
See also;

BS 7273-4 Clause 15.4 (acoustically actuated systems)

- Check sound pressure levels from FD&A at each devices
- Level should be adequate to release each mechanism when other doors are closed
- Acoustic devices sound sensitivity could be adjusted

BS 7273-4 Clause 15.4 (Radio actuated systems)

- Check radio signal level at each release mechanism
- Levels should be adequate to release each mechanism when other doors are closed.
- Could also be identified as part of a pre-installation site-survey



Certificate of commissioning for the electrically powered hold-open device(s)/electric door magnet(s)/ electronic locks/powered sliding doors (*delete as appropriate*) at:

Address: .....

.....

I/we being the person(s) responsible (as indicated by my/our signatures below) for the commissioning of the above, particulars of which are set out below, CERTIFY that the equipment and release arrangements I/we have commissioned complies to the best of my/our knowledge and belief with the recommendations of BS 7273-4:2015+A2:2023 for the category of actuation described below, except for the variations, if any, stated in this certificate.

Name (in block letters): ..... Position: .....

Signature: ..... Date: .....

For and on behalf of: .....

Address: .....

.....

..... Postcode: .....

The extent of liability of the signatory is limited to the equipment and arrangements described below.

Category of actuation (see BS 7273-4:2015+A2:2023, Clause 4): .....

Variations from the recommendations of BS 7273-4 (see BS 7273-4:2015+A2:2023, Clause 5):

.....

.....

.....

.....

Brief description of release mechanisms, method(s) of actuation (see BS 7273-4:2015+A2:2023, Clause 7) and interface design (see BS 7273-4:2015+A2:2023, Clause 9).

.....

.....

.....

.....

☐ All equipment operates correctly.

☐ Installation work is, as far as can reasonably be ascertained, of an acceptable standard.

☐ I/we have carried out commissioning in accordance with the recommendations of BS 7273-4:2015+A2:2023, Clause 20.

☐ Suitable documentation has been provided to the user (see BS 7273-4:2015+A2:2023 20.6)

The following work should be completed before/after (delete as applicable) release mechanisms become operational:

.....

.....

.....

Maintenance

It is strongly recommended that, after completion, the system is maintained in accordance with BS 7273-4:2015+A2:2023, Clause 21

User responsibilities

The user should appoint a responsible person to supervise routine testing of release mechanisms in accordance with BS 7273-4:2015+A2:2023, 21.1, and to supervise all matters pertaining to the associated fire detection and fire alarm system in accordance with BS 5839-1:2017, Section 7.

Maintenance

BS 7273-4:2015(+A2:2023)

“Clause 3.25 maintenance
Work of inspection and repair necessary in order to maintain the efficient operation of the measures to which this standard relates”

Routine Maintenance -

- Weekly testing alongside fire alarm tests
- Alarms should sound long enough to actuate devices
- Defects logged

Maintenance

Inspection & Servicing;

- Intervals not exceeding 6 months by a competent person
- Inspect log book
- Battery checks
- Sounders

Annual / 12 Monthly checks;

- Test manual release controls
- Replace all batteries
- Visual checks
- Could be carried out alongside annual door inspections

Further Help

- IoT & Cloud Services / Speak to incumbent contractor/supplier /Seek assistance from manufacturer

Variations

“While a particular category of actuation might be desirable, the category of actuation might not be technically achievable or reasonably practicable in existing buildings” - BS 7273-4 Clause 4, Commentary

- ‘Critical’ Requires devices to fail safe on a ‘fault’ signal from CIE
- Can only be achieved if relevant FD&A present
- Many social housing environments do not have this level of detection
- A variation would be appropriate in this instance to deal with other risks

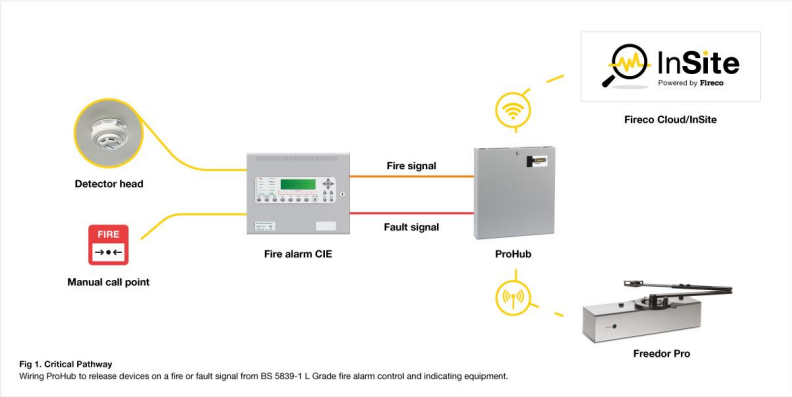


Fig 1. Critical Pathway
Wiring ProHub to release devices on a fire or fault signal from BS 5839-1 L Grade fire alarm control and indicating equipment.

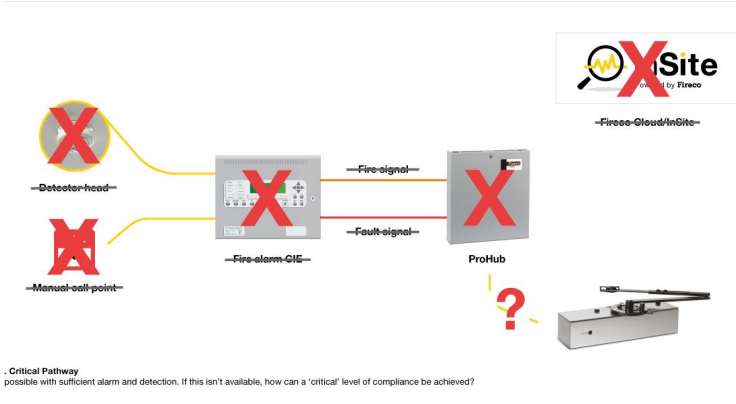
Variations

BS 7273-4:2015+A2:2023, Clause 6

Variations should be;

- risk assessed
- noted clearly in specification OR clearly noted during installation
- detailed on Commissioning Certificate
- Agreement from all relevant parties

Variartions are not a “get out of jail free” card!



Has the device been tested?

EN1155 Electrically Powered Hold Open Devices for Swing Doors;

- Looks at mechanical reliability.
- Does it release when the power goes within a specified time?
- Can it hold the weight of the door?
- Can it repeat the open-set-close cycle 50,000 times?

Product classification:

3	5	3	1*	1	0

*when installed on EI30 classified wood doors

Has the device been tested?

EN1634-1 Fire resistance tests for doors, shutters and openable windows

- Nominates the fire resistance strength of door the product can safely operate
- 30 minutes FR, 60 minutes FR, 90 minutes FR etc
- Products are screwed to the right fire resistance class of door and placed over a furnace.
- The test is designed to time when the fire door breaches. If the door fails to meet its nominated fire resistant time, the product has negatively affected the performance and therefore failed the test.

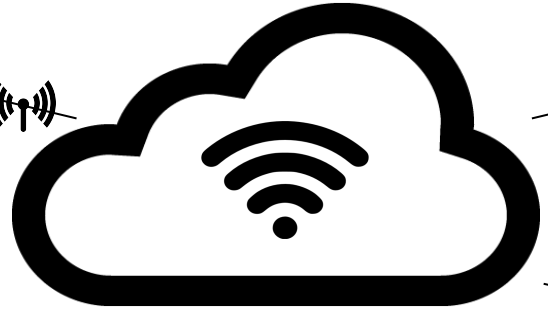
Has the device been tested as part of a doorset?

EN1634-1 Fire resistance tests for doors, shutters and openable windows

- All component parts (e.g spyholes, letterboxes, overhead closers) are installed as a complete doorset to a specific manufacturers fire door
- Primary Test Evidence assures the responsible person that the components of the doorset will not damage the integrity of the door
- Ministry of Housing, Communities & Local Government Advice Note 16;
  “Landlords or building owners should reference the manufacturers test evidence/certification and documentation for existing or proposed fire doorsets”
  “Small differences in detail (such as glazing apertures, intumescent strips, door frames and ironmongery etc.) may significantly affect the rating.”

  “Flat entrance fire doors should have test evidence demonstrating they meet the performance requirements in the Building Regulations guidance for fire resistance and smoke control from both sides.”

How can the cloud help?



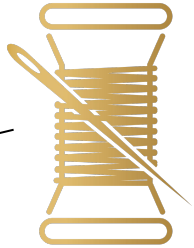
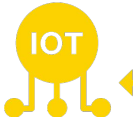
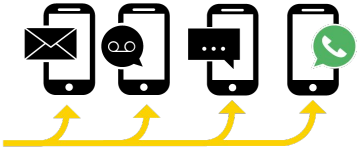


Image	Product	Name	Serial No	State	Radio up	Radio down	Power
	Dorgard Pro	Ground Floor - Reception LH door	4F9-H3J		-36dBm CH1	-35dBm CH1	2.42V
	Dorgard Pro	Ground Floor - Reception RH door	S7Z-HZW		-46dBm CH1	-46dBm CH1	2.84V

	Repeater	Flat 37 (Repeater 16)	1256825	COMMS ERROR	-79dBm CH3	-81dBm	

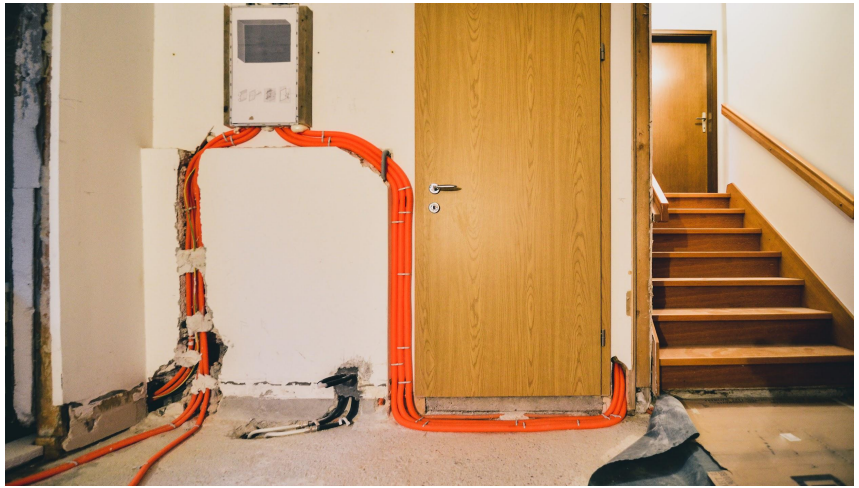
ENTER Lockdown





Who should use wireless?

- Anyone who's fed up of drilling?
- Cost sensitive installations
- Listed buildings
- Areas with high levels of asbestos
- Urgent remedial works/quick turnaround
- Schools, Colleges, Higher Education
- Hospitals
- Public buildings
- Care homes



Really... anyone that feels that wireless products are suitable and safe for their premises.

Fireco

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Case Study - Blackpool Council & Revoe Learning Acadamy

- Doors were being wedged to improve ventilation
- Customer identified that a more compliant hold-open system was required
- Specifically wanted a system which could be fitted quickly and conveniently at a reasonable cost
- 30+ DorgardPro devices with InSite installed

"The Pro system provides a cost-effective solution to holding fire doors open without the need for physical wiring. The system so far is proving to be very reliable and the remote web-based interface provides further control with a live report on the door status, battery condition and signal strength. Overall I'm impressed with the Pro System and will certainly consider using it again for future projects." - Pete Murray, MIET Electrical Engineer on behalf of Blackpool Council

Fireco

Compliance Made Easy

Case Study - Portsmouth Hospitals NHST

- Doors onto wards needed to be held open for monitoring and observation
- Bins were being used in place of hold open devices
- Issue was flagged by local fire authority
- Hardwired options too expensive and disruptive
- Dorgard Pro was used to mitigate the risk of bins not being removed by staff in an emergency

"We bought the wireless system at a significantly lower cost than some of the hardwired solutions we looked at and have them over 10 wards. The fire service were happy. They have been there over a year already and are absolutely brilliant. " - Rob Burns, Fire Safety Officer

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Case Study - Southampton City Council

- Replacement and renovation works with all flat entrance doors replaced
- Positive air pressure prevented doors from closing fully into the jamb
- Acoustic devices not suitable for corridor doors
- Hardwired solutions too expensive and invasive
- ProHub integrated with sprinkler system CIE to hold open corridor doors and normalize air pressure

"Hard wired devices simply weren't an option for us, as it would of meant undoing a majority of the fire stopping and compartmentation, and would have pushed the budget for the project over the edge. We opted instead for Dorgard Pro as it was far easier to install and could be integrated with our sprinkler system." - Neville Tomblin, Fire Safety Manager

Summary

- Hardwiring is no longer the only method of achieving the highest level of compliance
- Wide range of devices available
- BS 7273-4 2015 allows the use of acoustic devices on Standard and Indirect fire doors
- Compliance as a Critical Installation can be achieved with RF actuated devices, providing devices will fail safe on a fault indication from the CIE
- Wireless devices can be used by anyone who feels they are safe and suitable for their premises.