WIRELESS FIRE SYSTEM

How to be compliant with door control legislation

New changes to legislation, with a focus on Fire Doors and Door Controllers. How to understand the requirements, what's needed and the best way to rapid compliance, using wireless technolgy solutions

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Changes to legislation, with a focus on Fire Doors and Door Controllers. How to understand the requirements, what's needed and the best way to achieve rapid compliance with the law.

Recent changes to UK fire legislation, in 2023, have seen an enhanced focus on strengthening fire safety measures. These are not just a legal commitment, but a moral and ethical responsibility to protect lives and property.

There were two major additions introduced. The first in January 2003 under Article 24 of the Regulatory Reform (Fire Safety) Order 2005 (Fire Safety Order). These are additional requirements for 'responsible persons' of mid and high-rise blocks of flats.

Principally, these responsibilities are a more rigorous approach to record keeping and accurate information, available to both the building user, as well as the Fire & Rescue services. Additionally, there is a requirement for more frequent checking and reporting of fire protection, and fire detection services and equipment.

It also specifically gave guidance for compliance around door control. An area that has been largely overlooked despite it being an essential element of fire safety and for successful evacuation of building users.

The British Standard BS:7273-4 Actuation of release mechanisms for doors was published on 30 June 2015, replacing the 2007 version, which is superseded. This standard gives clear and precise information on what is required, but sadly, the standard has not been fully embraced and utilised, as it should have been from its initial launch, nearly 20 years ago!

This new legislation really focuses on the need to have door control, and explicitly outlines its use as part of the buildings fire protection.

The second legislation update was added in October 2023.

Section 156 of the Building Safety Act 2022 (BSA) makes numerous amendments to the Regulatory Reform (Fire Safety) Order 2005 (FSO), to improve fire safety in all buildings regulated by the FSO. These improvements form Phase 3 of the Home Office's fire safety reform programme, building on Phase 1 (the Fire Safety Act 2021) and Phase 2 (the Fire Safety (England) Regulations 2022).

Phase 3 further reinforces fire safety in all FSO regulated premises by:-

- Improving co-operation and co-ordination between Responsible Persons.
- Increasing requirements in relation to the recording and sharing of fire safety information, and by creating a continual record throughout a building's lifespan.
- Making it easier for enforcement authorities to act against non-compliance.
- Ensuring residents have access to comprehensive and informative knowledge about fire safety in their building. This includes the fire detection system, and all its associated linked fire products, including door controllers.

To assist, the Government has published three guides for the following:-

- Small non-domestic premises
- Small blocks of flats and for
- Small sleeping accommodation

Both legislation changes are about enhancement of safety, and will see more enforcement to ensure compliance is undertaken swiftly, and is fully compliant, as well as meeting a Risk Assessment.

As with all changes to fire legislation, the primary action is to first implement and update the Risk Assessment, to understand what is required, as a minimum, to be compliant with the law. Then to further analyse what can be improved or added to maximise safety.

The challenges are often many, including cost, access to property where there are potentially many tenants and/or users, all with their own business and operational demands. It's then important to understand the latest technology innovations, and how these might integrate into existing systems and properties.

Focusing on door control, we have the legislative requirements of the 2023 update, and then we have BS:7273-4 design standards, all of which need to be fully complied to.

There is a Home Office guide document available for responsible persons which can be downloaded as a PDF, via their publishing service which assists with some clear and concise information on fire doors and their role.

An earlier mention of BS:7273-4, and the widespread misunderstanding and/or integration of the use of door controllers, means that this element of fire safety is one which needs rapid attention.

The FIA have published a really easy to understand interpretation of the standard making it easier to understand, along with the challenges of door control. They state specifically **"The problem with the application of BS 7273-4 is that it can be a very demanding standard that can be difficult to meet due to the different needs and requirements of different doors throughout the building. Which doors should be released? When? How do you make the fire alarm system communicate with the door release mechanism? How do you get the 'failsafe' to work? This can sometimes be made all the more complicated in bigger buildings with multiple storeys and a wide variety of doors"**.

The key to meeting both the British Standard and legislation can be broken down into three groupings.

1 Identify the fire doors and the category of the door closer needed. The categories are critical, standard and indirect and are based on the building, its use and who is using the building.
2 What type of door control is needed and what technology you might use.
3 What type of fire door – these are documents in the standard within Annex B

Once the Risk Assessment has confirmed what action is needed, using the 3 points above, this starts the process of procurement of suitable products which, are compliant as well as being commercially acceptable, with costs playing an important part. After all, if costs are prohibitive and budgets non-existent or limited, what is the course of action, as all, and any risks have to be addressed.

One of the fastest and cost-effective solutions is the EMS FireCell wireless door controller. A door controller that can be installed and commissioned, easily within an hour.

Is wireless acceptable? Are wireless door controllers suitable? Do they have the necessary compliance with standards? All these are valid questions, and by the end of this paper, you will hopefully understand the options you have to make your next decision.

Firstly, all wireless fire products must be certified to BS EN54-25: 2008 "Fire detection and fire alarm systems - Components using radio links" This is the demanding standard introduced some years ago, revolutionising and homogenising wireless based fire system development.

Following the publication of the EN54-25 standard, many manufacturers were unable to produce products that would comply. EMS has been at the forefront of wireless technology development, for nearly 60 years, and were the first manufacturer to launch a fully certified fire system, meeting and exceeding the rigorous stipulations of the standard.

EN54-25 gives detailed requirements, test methods and performance criteria for components used in fire alarms systems, installed in and around buildings, which use radio frequency links (RF links) to communicate. It also provides requirements for the evaluation of conformity of the components to the requirements of this European Standard.

The overarching defining statement, that is the guarantee of performance of certified wireless fire products, taken from the standard is:-

"The aim of part25 is to define additional requirements to other parts of EN 54 and tests that allow radio fire detection systems and components complying with them to be as efficient and stable as wired fire detection systems and components complying with the current requirements of cable-based systems in the EN 54 standards".

Effectively, this makes demands on manufacturers and developers, like EMS, that any wireless fire products or systems are as good, or better than a cable-based fire product or system!

With reliability and effectiveness no longer an issue on certified wireless fire, what about the EMS WDC door controller itself?

With EN54-25 certification, the door controller also needs to be EN third party approved as a door controller, the actual product specification. The EMS WDC has this certification, BS EN1155:1997. Incorporating Amendment No. 1 and Corrigendum Nos. 1, 2 and 3. In terms of compliance to BS:7273-4 the WDC is certified Part 4: Actuation of release mechanisms for doors. (Category B).

The controller is fully integrated into the host fire system and operates, releasing the door only when the fire panel/system is in a fire situation. If used to enhance an EMS FireCell wireless system, it is fully addressable by location. Each door controller can be programmed to release every door globally, across a site, or individually, if a "cause and effect" programme is needed.

Each door controller is programmed much like any other FireCell wireless fire device on the system. Full detailed installation guide.

If you have an existing system using XP95 protocol, the EMS Fusion gateway can be added to the loop cabling, which will then support up to 31 WDC door controllers (or any other wireless device – more later – subject to loop address availability on the panel/system).

The WDC requires no mains power, no relays or cable, and is simply attached to the relevant door using 4 screws (supplied along with mounting template). Once commissioned into the fire system, it is powered for up to 5 years, with 2 x internal C Alkaline (Panasonic LR14AD Powerline /Varta 4014 Industrial to maintain certified compliance) at a cost of just a couple of pounds, per controller.

As was mentioned earlier, for almost any system with XP95 protocol, the EMS Fusion gateway can be installed onto the loop cable, and typically you may be able to add up to three per loop. This depends on the panel manufacturers' specification (each Fusion gateway takes typically 17mA) and the loop address capacity cannot be exceeded.

Once installed, EMS Fusion will support up to 31 wireless fire devices of any mix, including sounders and visual alarm devices (VAD's) usually associated with high power requirements. For the purposes of this paper, we refer to door controllers and thus it's possible to add a Fusion gateway and 31 door controllers – subject to previous guidance.

This ability to add EMS WDC door controllers equates to a fast solution. It is possible to install the Fusion gateway and numerous door controllers in less than day. This equates to a huge reduction in costs.

A "traditionally" wired door controller could, in some circumstances, cost many hundreds, even thousands of pounds, and take considerable time to wire back to the fire panel; along with the relevant relays and battery backups needed for full compliance.

Even with the higher cost of the wireless products, it's possible to significantly reduce and manage costs to meet budgets, and more importantly get protection in place to meet legislation.

What if you do not have a FireCell wireless fire system, or an XP95 protocol-based fire system? It is now possible to add EMS WDC controllers to almost any fire system, conventional or addressable, from virtually any manufacturer, regardless of protocol!

The EMS wireless zone monitor (WZM) is a gateway that is installed onto a fire system in a number of ways, depending on the system. Typically, this connects into a propriety interface from the specific manufacturer, to allow installation onto an addressable system. If it's a conventional fire system, there are a number of ways to connect, suffice to say it's a relatively easy method of connectivity. The EMS technical support team are of course, on hand to discuss and advise.

The WZM supports a number of wireless fire devices (depending on the version chosen). It can be either 16 or 30, and again, these can be of any variant including sounders etc. just like the Fusion gateway.

The main difference however, is how the gateway communicates with the fire panel. It is unable to "speak" the managed protocol, so information at the panel goes to a zone which, includes all the wireless devices on the gateway. It's fully addressable at the WZM, but the information communicated via the loop or zone cabling, is restricted by the host protocol. What does this mean? Well, a dedicated zone will need to be allocated for each WZM, and any activation or fault, will be indicated by that zone. This may not be ideal for detection and manual call points, unless they are a single zone and/or you need individual address details of the device in fire. For notification devices, or door controllers, this is an ideal solution. The device will operate in a fire situation, to meet the system cause and effect parameters, releasing doors or activating devices. The one big advantage however, is the ability to expand the fire system capacity, as only the gateway, and the host interface will need addressing. All the wireless devices are added as a zone, and take no address slots from the control panel, along with no power from the loop.

This effectively means you are able to expand and extend a system quickly, and at low cost. In this example around door controllers, you can add as many as you need based on the amount of WZM gateways to you add (and available zones on control panel). This allows you to be compliant, without the additional cost of added cable, possible addition of loop cards, or even a new panel, with its uprated standby batteries.

Essentially, you can comply very quickly, at a cost, that will be substantially lower than opting for "standalone" door controllers.

In closing, the only additional task you need to consider is a wireless site survey to confirm the door controller locations, and compliant EN54-25 signal levels. Usually this is nothing more than a quick check, and this is a FREE service from EMS.

Wireless was once seen as a niche solution, but wireless fire systems are fast becoming the default choice for many building types, because of its speed and low impact on building fabric and building users.

For more information on the types of building, and industry sectors utilising wireless fire technology, please view or download the comprehensive EMS case study publication with diverse examples for your review.

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