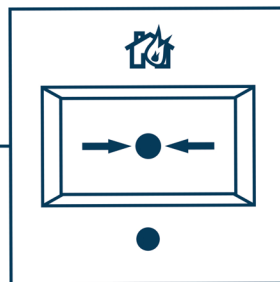


Guidance Note



Fire Industry Association



FIA Guidance on the application of primary visual alarm devices (VAD) and supplementary visual indication devices (VID)

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INTRODUCTION

This FIA guidance document is intended to explain when a BS EN 54-23 visual alarm device (VAD) should be installed and when a non-certified beacon, referred to as a visual indicating device (VID), may be installed.

VADs and VIDs may be stand-alone devices, or may be incorporated in other devices such as sounders and smoke detectors.

WHAT IS THE DIFFERENCE BETWEEN A VAD AND A VID?

VADs are tested and certified to comply with the requirements of BS EN 54-23. The tests ensure that a minimum level of light output is produced in all the required directions. It also ensures that the device performs over a defined voltage range, and that it is robust and reliable enough to work when needed. Independent auditing of the factory production control process also ensures that VADs continue to be reliable and meet the requirements of BS EN 54-23.

If a visual fire alarm signal is required, such as where ambient sound pressure levels are high, where ear protection is worn or where people with impaired hearing may be alone, VADs must be installed. Guidance on the installation of VADs is provided in BS 5839-1 and LPCB CoP0001¹.

VIDs are not assessed against any standard and so their brightness, reliability and robustness is not guaranteed.

VIDs must not be used to warn building occupants of a fire alarm condition. They may be used as supplementary indicators, such as remote indication of detector activation, indication at a nursing station and externally, to direct the fire and rescue service to where a fire alarm has originated.

The manufacturer or supplier of VADs and VIDs must declare clearly, which EN 54 standard(s) apply and for VADs, the category to which the device has been tested and certified.

¹ Loss Prevention Code of Practice 0001, jointly developed by the BRE and the FIA.

WHEN ARE VADS REQUIRED?

The requirements for fire detection and alarm systems in relation to VADs are described in the following documents:

Building regulations Approved Document B2 (ADB), Fire Safety.

Building regulations Approved Document M2 (ADM), Access to and use of buildings.

BS 5839-1: 2013, Fire detection and fire alarm systems for buildings.

BS 8300 2009, Design of buildings and their approaches to meet the needs of disabled people.

The determinations of a fire risk assessment and emergency evacuation procedures.

NOTE 1. Fire alarm installers are often asked to bid for work, based on a specification designed by others, and it is very unusual for details of a fire risk assessment or evacuation strategy to be made available. The specification normally only refers to BS 5839-1 and to a set of plans indicating device locations. As many designers are not fully aware of when VADs are required, they may not be included. However, the installer has a duty of care to point out any such deficiencies and so will be at a disadvantage when competing against a less well-informed party. This FIA guidance is intended to avoid confusion and to ensure a level playing field.

The sources make it clear, that 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.

Where a specification calls for visual devices, it should be assumed that all devices are BS EN 54-23 VADs unless specifically indicated to the contrary in the specification.

NOTE 2. When a designer specifies BS 5839-1 as the installation standard, then it is not necessary to state that every device/CIE should be compliant to any specific EN 54 standard. This requirement to be compliant and certified to the relevant section of EN 54 is dictated in BS 5839-1 clause 11.2, and in the Construction Products Regulation (CPR). If a specific device is not required to be to BS EN 54 then the designer would have explained this in the specification and marked the devices as such.

WHEN MAY VIDS BE USED?

In the BS installation codes that deal with the evacuation of buildings or dwellings in the event of fire, eg BS 5839 part 1, part 6 or part 8, there is no intention to prohibit the use of non-compliant visual indicators. These may assist as auxiliary indicators that are not intended as the primary means of alarm warning.

For example:

Beacons on the outside of buildings to direct fire and rescue services that are not required to be BS EN 54-23 compliant.

Beacons outside buildings to attract local fire wardens or patrols. However, the illumination of these devices must be carefully chosen to be sufficient in each case.

In a hospital or a nursing home, a visual alarm indication at a nurse station or staff alarm, may not need to be BS EN 54-23 compliant; these are often reinforced by a low output audible indicator or 'buzzer'.

Retrofitting of sounder beacon bases to an existing site for a small extension, may be consistent with the existing installation and may use the same type of non-compliant sounder beacon bases already fitted. However, if more than six devices are needed, BAFE guidance is that all devices should meet the current standards and therefore BS EN 54-23 compliant VADs should be installed.

BS EN 54-23, FIRE ALARM DEVICES – VISUAL ALARM DEVICES

BS EN 54-23 was published in the UK in 2010 and became mandatory on 1 January 2014, as a harmonised standard under the Construction Products Regulation.

The scope makes it clear that VADs are intended to 'signal a visual warning of a fire between the fire detection and fire alarm system and the occupants of a building' to enable such person(s) to take appropriate measures. Such measures may include for example, the evacuation of the premises that they currently occupy. In this respect, BS EN 54-23 is similar to BS EN 54-3 for audible alarm devices.

The Standard also makes it clear that it does not apply to visual indicators, for example those on detectors (or remote detector indicators) or those on the control and indicating equipment, which would generally be designed to give a lesser illumination than the 0.4 lm/m^2 (0.4 Lux) required for BS EN 54-23 compliant devices.

So, in addition to VADs for warning of a fire emergency, which must comply with BS EN 54-23, it may be useful to have VIDs to provide supplementary indication or information to the building occupants, for example at a nurses' station.

When selecting a VAD for a specific application, it is important that consideration is given to its mounting requirements, as well as to the illumination coverage volume needed to provide an effective warning to occupants.

BS EN 54-23 defines three different categories of VAD: Category 'C' for ceiling mounted devices, Category 'W' for wall mounted devices and Category 'O' (open) for manufacturer specified performance. For categories 'C' and 'W', the mounting requirements are well defined and the coverage volume is unambiguously specified following third party testing by notified bodies. In the UK, the Loss Prevention Code of Practice 0001, jointly developed by BRE and the FIA, gives guidance based on categories 'C' and 'W'. The recommendations provided in this code gives system designers, commissioning and maintenance engineers, a suitable tool to implement effective VAD systems.

BS EN 54-23 'O' CATEGORY VADS

The correct application of Category 'O' VADs relies on the data supplied by the manufacturer. The lack of such data or incomplete data, is likely to result in inadequate performance of the installed system. These devices are intended for situations where ceiling mounted ('C' category) and wall-mounted ('W' category) devices would be inappropriate or inefficient. A typical application would be in corridors that require oblong or elliptical coverage.

Therefore, it is important that manufacturers or suppliers make available, detailed information clearly stating:

The mounting position of the device.

Any specific requirement for mounting the device in a particular orientation, and how this orientation can be identified on the device.

Any restrictions on the minimum and maximum allowable mounted height.

The volumetric shape, throughout which at least 0.4 lux can be achieved at any point on its envelop, its dimensions and how it is related to the device.

It is also important that those involved in designing, commissioning or maintaining systems based on certified 'O' category VADs, insist that manufacturers or suppliers provide this data, to ensure that they give adequate coverage for use as alarm devices before engaging in the work.

DOCUMENTS REQUIRING BS EN 54-23 COMPLIANT VADS

Approved Document M2 2015

Building regulations ADM clause 4.17 says that sleeping accommodation, where provided for a significant number of people, eg hotels, motels and student accommodation, should aim to be convenient for all. It states that that sleeping accommodation will satisfy Requirement M1, if all bedrooms have a visual fire alarm signal, in addition to the requirements of ADB.

NOTE 3. It is not expected that a VAD will wake a sleeping person, so additional warning device(s), such as vibrating pads, may be needed for this purpose. However, there are no standards for such devices, therefore the FIA cannot offer clear guidance at this time.

Building regulations ADM clause 5.1 states: In principle, suitable sanitary accommodation should be available to everybody, including sanitary accommodation designed for wheelchair users, ambulant disabled people, people of either sex with babies and small children or people encumbered by luggage.

Building regulations ADM clause 5.3 states that a number of issues need to be considered in connection with all forms of sanitary accommodation, and 5.4g says that sanitary accommodation will satisfy Requirement M1 or M3, if any fire alarm emits a visual and audible signal to warn occupants with hearing or visual impairments.

Approved Document B2 A2 2013

Building regulations ADB General introduction states (excerpts):

Inclusive design

Clause 0.19 of the fire safety aspects of the Building Regulation are made for securing reasonable standards of health and safety of persons in and about buildings. This is intended to include all people, including people with disabilities.

People, regardless of disability, age or gender, should be able to gain access to buildings and use their facilities, both as visitors and as people who live and work in them.

It is not appropriate, except in exceptional circumstances, to presume that certain groups of people will be excluded from a building because of its use.

Clause 1.34 states that a suitable method of warning (eg a visual and audible fire alarm signal), should be provided in buildings where it is anticipated that one or more persons with impaired hearing may be *in relative isolation* (eg hotel bedrooms and sanitary accommodation, and where there is no other suitable method of warning the occupants).

BS 8300 A1 2010

Clause 9.3.7.1 states: A fire alarm should be visible as well as audible to all users.

NOTE 1. This is particularly important for blind and partially sighted people and people who are deaf and hard of hearing.

And

In areas where people are likely to be in relative isolation (eg toilets, bathrooms and isolated offices) or in noisy environments, alarm/alerting systems for people who are deaf and hard of hearing, such as flashing beacons and vibrating devices, should be installed.

BS 5839-1:2013

Clause 17 gives recommendations for the siting, distribution, colour and intensity of VADs, while clause 18 concentrates on provision for alerting people with impaired hearing.

There are several ways to alert the hearing impaired apart from VADs, such as paging systems and vibrating pillow pads. However, ADB and ADM simply say that 'the requirement will be satisfied if VADs etc are provided'. 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)

Toilets² 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).

Sleeping accommodation (Building regulations ADM clause 4.17)

Areas where persons with impaired hearing are likely to be on their own, eg plant rooms, individual cellular offices and so on, although Building Regulations ADB states that pagers are more appropriate.

For people with impaired hearing, BS 5839-1:2013 clause 18 gives several solutions that include fixed, moveable and mobile equipment. These may be BS EN 54-23 compliant VADs, but may also be radio pagers or tactile devices.

² It is necessary to ensure that anyone in relative isolation will be able to see if a VAD operates. This may mean that the use of VADs for closed toilet cubicles needs to be considered. For instance, if occupants are likely to be in relative isolation for a prolonged period of time. However, semi-open cubicles may receive sufficient light from one or more VADs located in the common area.

CONCLUSION

BS EN 54-23 compliant VADs should be installed in all sanitary accommodation (not just WCs) and all sleeping accommodation, student accommodation and similar properties, plus anywhere where people with impaired hearing are likely to be alone, such as isolated offices (although pagers may be more appropriate), plant rooms and so on.

Also, if a risk assessment shows that further visual devices are required as alarm devices, VADs compliant with BS EN 54-23 must be used.

Where a risk assessment shows that visual alarm devices are not required for this purpose, it is acceptable to install devices that do not comply with BS EN 54-23.

Where a specification includes the requirement for visual devices, but gives no indication as to type, then BS EN 54-23 compliant devices should be used.

Where a risk assessment does not identify the conformance requirements of any device on a fire alarm system, devices compliant with the relevant part of EN 54 should be used where required by the specification throughout the building.

STANDARDS AND REFERENCES

BS EN 54-3:2014, Fire detection and fire alarm systems – Part 3 Fire alarm devices – Sounders.

BS EN 54-23:2010, Fire detection and fire alarm systems – Part 23 Fire alarm devices – Visual alarm devices.

Building Regulations Approved Document M 2010 including 2013 amendments.

Building Regulations Approved Document B 2007 including 2013 amendments.

BS 8300 2009 Design of buildings and their approaches to meet the needs of disabled people.

BS 5839-1:2013, Fire detection and fire alarm systems for building – Part 1: Code of practice for the design, installation, commissioning and maintenance of systems in non-domestic premises.

BS 5839-6:2013, Fire detection and fire alarm systems for building – Part 6: Code of practice the design, installation, commissioning and maintenance of systems in domestic premises.

BS 5839-8:2013, Fire detection and fire alarm systems for building – Part 8: Code of practice the design, installation, commissioning and maintenance of voice alarm systems.

LPCB CoP 0001, Code of Practice for visual alarm devices used for fire warning.

DISCLAIMER

The information set out in this document is believed to be correct in the light of information currently available but it is not guaranteed and neither the Fire Industry Association nor its officers can accept any responsibility in respect of the contents or any events arising from use of the information contained within this document.



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