Guidance on the application of primary visual alarm devices and supplementary indicating devices

FIA Guidance for the Fire Protection Industry

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Guidance on the application of visual alarm and visual indicating devices	
Issue 1	30/01/2015

Contents

Introduction

This FIA guidance document is intended to support the FIA FAQ brief on the same subject but gives more detailed information. It aims at explaining typical applications for auxiliary indicators used as supplementary indicating devices.

Background

Since January 2014 visual alarm devices (VAD) used for warning building occupants of a fire emergency must comply with the requirements of BS EN 54-23 and suppliers/manufacturers of such devices must fulfil the requirements of the CPR when placing such devices on the EU market.

This has led to some confusion regarding the use of sounder beacon devices where the beacon element does not comply with BS EN 54-23. The use of such devices is acceptable while understanding that the beacon element must be regarded as a supplementary alarm indication and is not expected to provide a primary alarm warning signal for alerting/evacuating the occupants of the building. The manufacturer/supplier of this type of device should declare, clearly, to which EN 54 standard the sounder and/or beacon part of the device is tested and certified.

The requirements of any FD&A system should come from the determinations of a fire risk assessment and the emergency evacuation procedures. If this risk assessment does not identify the need for a BS EN 54-23 compliant VAD, then non-compliant indicating devices of combined sounder beacon, or visual indicating devices such as those commonly used by the industry prior to the introduction of BS EN 54-23 can provide useful supplementary indication that may increase the awareness of people to an event.

BS EN 54-23, Standard for fire emergency visual signal

BS EN 54-23 was published in the UK in 2010 and became mandatory on 1st January 2014 as a harmonized standard under the CPR.

The standard was drafted and published under the heading of *fire alarm device* and its scope makes it clear that VAD are intended to “signal a visual warning of a fire between the fire detection and fire alarm system and the occupants of a building” in order to enable such person(s) to take appropriate measures. Such measure may include, for example, the evacuation of the premises which they currently occupy. In this respect, BS EN 54-23 is similar to BS EN 54-3 for audible alarm devices.

The Standard makes it clear also, 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. This does not mean that such devices are not permitted when their

use is considered advantageous or, for that matter, that, if they are used, that they should comply with BS EN 54-23.

So, in addition to visual alarm devices for warning of a fire emergency, which must comply with BS EN 54-23, there is clearly a need for different types of visual devices not complying with the standard which are able to provide supplementary indication or information to the building occupants.

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' for manufacturer specified performance. For categories 'C' and 'W', the mounting requirements are well defined in BS EN 54-23, and the coverage volume is unambiguously specified following third-party testing by notified bodies. In the UK, the Loss Prevention Code of Practice CoP 0001 jointly developed by BRE and the FIA, gives guidance based on categories 'C' and 'W'. The recommendations given in this code gives system designer, commissioning and maintenance engineers a suitable tool to implement effective VAD systems.

The special case of EN 54-23 'O' category VAD

However, the correct application of Category 'O' VAD relies purely on the application/installation data supplied by the manufacturers. The lack of such data, or incomplete data, is likely to result in inadequate performance of the installed system.

Therefore, it is important that manufacturers/suppliers make available to end users of FD&A systems and fire professionals involved in the design, installation, service and maintenance of FD&A systems detailed information clearly stating:
i) the mounting position of the device;
ii) any specific requirement for mounting the device in a particular orientation, and how this orientation can be identified on the device;
iii) any restrictions on the minimum and maximum allowable mounted height;
iv) the volumetric shape, throughout which at least 0,4 lux can be achieved at any points 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 approved 'O' category VAD request from manufacturers or suppliers that they supply the information listed above before engaging in the work.

Installation codes

In a specific installation, if the risk assessment shows that a visual alarm devices is required as part of the means of ensuring the effective warning of occupants, then it must comply with BS EN 54-23.

BS 5839-1:2013, clause 17 *Visual alarm signals* comments that their use is principally in areas with high ambient sound levels, where hearing protection is likely to be worn and 17.2 of that standard gives recommendations for installing BS EN 54-23 compliant VAD in these cases. This is the only prescriptive recommendation in BS 5839-1 for VAD.

BS 5839-1:2013, also recommends that reference should be made to the joint BRE/FIA code of practice, CoP 0001 when designing installations using BS EN 54-23 compliant devices.

For people with impaired hearing BS 5839-1:2013, clause 18.1 gives several solutions which include fixed, moveable and mobile equipment. These may be BS EN 54-23 compliant VAD but may also be tactile devices.

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

- There are applications such as beacons on the outside of buildings to attract Fire and Rescue Services which are not required to be BS EN 54-23 compliant.
- A similar situation as the one described above applies to 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 specific 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".
- Retro-fitting sounder beacon bases to an existing site for a new extension should be consistent with the existing installation and may use the same type of non-compliant sounder beacon bases already fitted. However, there should be a review of the fire risk assessment to make sure that people with hearing impairment are adequately covered in building, including the new extension.
- Non-BS EN 54-23 compliant visual indicators may have a useful application in some installations as a general purpose auxiliary device; they may not be regarded as a VAD but they will increase people's awareness of an emergency situation by providing additional information –examples of such a supplementary visual indication include:
    - a remote detector indicator, typically outside the room where the detector is mounted (such supplementary indicators may be grouped in a small indicator panel, typically at an access point to a defined area);
    - the use of visual signals can help to distinguish between first and second stage alarms in gas extinguishing systems;
    - the use of coded visual signals where the meaning of the signal is understood only by trained staff.

Conclusion

If the risk assessment shows that visual devices are required to effectively signal the presence of a fire condition to the occupants of a building, then VAD compliant with BS EN 54-23 should be used. If the risk assessment shows that visual alarm devices are not required for this purpose, then it is acceptable to install devices that do not comply with BS EN 54-23. In order to establish a distinction between **visual alarm devices** which comply with BS EN 54-23 (**VAD**) and which are used to warn occupants of a fire, it is recommended that non-BS EN 23 compliant devices should be referred to as **visual indicating devices**, or **VID**.

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

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 6: Code of practice the design, installation, commissioning and maintenance of voice alarm systems

CoP 0001 Issue 1, Code of Practice for visual alarm devices used for fire warning