

Information Paper

Visual alarm devices for fire

An introduction to BS EN 54-23:2010

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The product standard for visual alarm devices (VADs), BS EN 54-23^[1], was published in 2010 and the pending deadline for compliance with the requirements of the Construction Products Directive (CPD) of March 2013 is fast approaching. There is a lot of concern and confusion in the marketplace about how to design devices that comply with the standard. This Information Paper provides interpretations of the standard and guidance on how, together with Loss Prevention Code of Practice CoP 0001^[2] for VADs used for fire warning, devices can be optimised and specified for use in the service environment. This publication is intended for manufacturers of VADs, specifiers and installers of these devices.

Introduction

The purpose of a VAD is to visually alert people within a building that there is a fire emergency. The primary means of giving warning of fire in a building is an audible alarm signal (from a bell or electronic sounder) or a verbal message (from a voice alarm system). However, in many buildings the audible message needs to be supplemented by a visual alarm signal, eg as a means of giving warning to deaf and hard-of-hearing people, in areas of high ambient noise, in operating theatres or in broadcasting studios.

BS EN 54-23 categorises VADs in terms of ceiling, wall and open-class devices; these categories define a volume within which a minimum light level is required to warn those in the vicinity of the device. All categories are intended to illuminate a space such that, at the boundaries, a minimum illumination of 0.4 lux is met. There is no doubt that this requirement will demand a greater performance from VADs when compared with beacons and strobes currently on the market, for which there is no existing British or European standard. It will also result in increases in the demand of the loop supply current from a fire alarm control panel. However, this can be reduced by designing devices specifically for certain applications and optimising the performance accordingly.



Figure 1: Red and white xenon VADs
(Courtesy of Cooper MEDC)

The coverage volume test from BS EN 54-23 is used to measure the light output from VADs at a selection of evenly distributed points representative of the volume that they are intended to cover. Limitations in terms of distances for coverage are dependent on the specific directions and angles and indicate the points at which the minimum light level is achieved. As the distances are dependent on the measured effective luminous intensity, it is important to consider how this is calculated and how variables such as pulse type, duration and shape contribute to the effective luminous intensity.

Variables that affect the luminous intensity

Pulse profiles

BS EN 54-23 permits the VAD to emit only white or red light. There are currently three types of VAD technology available on the market: rotating beacons; light-emitting diode (LED) beacons; and xenon strobes (Figure 1).