



# VADS TO BE HAD!

C-TEC's addressable visual alarm devices and sounders are here!

- ▶ Fully compatible with C-TEC's XFP & ZFP range of XP95/Discovery fire panels
- ▶ Independently certified to EN54 parts 23, 3 & 17 (as applicable)
- ▶ Designed & manufactured by C-TEC in the UK



*You're safe with C-TEC*

**INCLUDES A  
SIMPLE GUIDE  
TO CALCULATING  
VAD COVERAGE**



## Where are visual alarm devices (VADs) required?

In order to comply with the Equality Act, Building Regs and the recommendations of codes of practice such as BS5839-1, BS8300 and CoP0001, VADs are typically installed in:-

- ▶ Bedrooms/sleeping accommodation (in hotels, student accommodation, etc).
- ▶ Toilets (not just accessible WCs as the hard of hearing are just as likely to use standard WCs)
- ▶ Any other area where a deaf or hard of hearing person might be alone (stairwells and corridors are mentioned in CoP0001, isolated offices are referenced in BS8300)
- ▶ Areas where ambient noise levels exceed 90dBA or where people wear ear defenders
- ▶ Television, radio and recording studios
- ▶ Theatres and cinemas
- ▶ Operating theatres (to reduce disruption to surgical procedures)
- ▶ Areas where a gaseous extinguishing system is installed
- ▶ Areas where people are likely to use a personal music system
- ▶ Areas where visual alarm devices are used as part of a "staged" fire evacuation strategy

*Always refer to a building's risk assessment (required under the Regulatory Reform Order, Fire Safety) for guidance on where VADs are required as it may suggest the use of additional or alternative methods such as vibrating pagers or 'buddy' systems.*

## What is EN54-23?

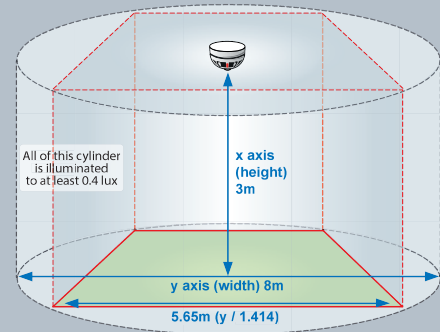
- ▶ EN54-23 is a mandatory standard called up by BS5839-1 that specifies the requirements, test methods and performance criteria for visual alarm devices (VADs) used in fire alarm systems. It defines a VAD as a light that flashes at 30-120 times a minute.
- ▶ To comply with the standard, a VAD must generate a minimum illumination level of 0.4 lux in specific test conditions. These tests are conducted in a complex manner that require the VAD to emit light at several hundred lumens.
- ▶ On completion of the tests, the VAD is given a 'W', 'C' or 'O' class rating. This rating can then be used to determine the VAD's actual coverage in real-life situations depending on ambient light, mounting position and viewing angle (as detailed, right).

## Calculating VAD coverage in six easy steps

### 1 Educate yourself on the rated coverage of C-TEC's Base & Compact VADs:-

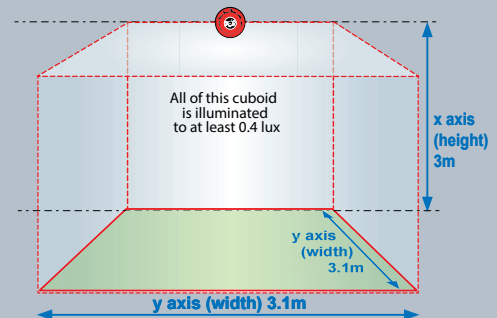
#### C-3-8 Base & Compact Ceiling VADs

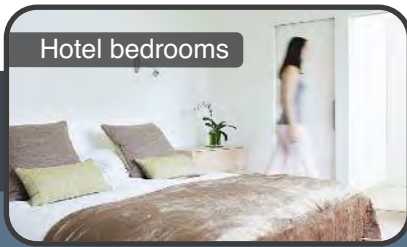
Certified as C-3-8 devices where:  
C = ceiling; 3 = 3m height and 8 = 8m width.  
Light output is cylindrical so width must be divided by 1.414 to determine square area coverage (i.e.  $8\text{m}/1.414 = 5.65\text{m}$ ).



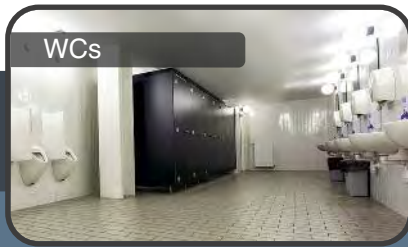
#### W-3-3.1 Compact Wall VADs

Certified as W-3-3.1 devices where:  
W = wall, 3 = 3m height and 3.1 = 3.1m width.  
Light output is cuboid so no additional width calculation is required.

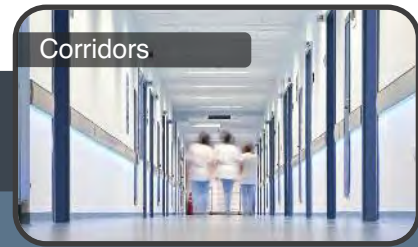




Hotel bedrooms



WCs

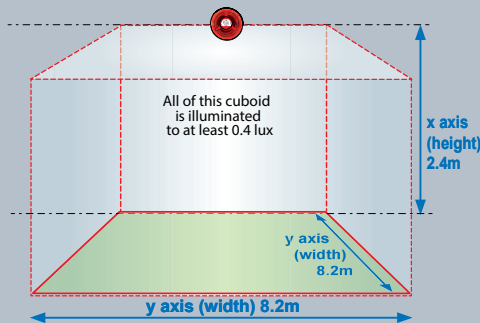


Corridors

**2 Educate yourself on the rated coverage of C-TEC's Hi-Output Wall VADs:-**

**W-2.4-8.2 Hi-Output Wall VADs**

Certified as W-2.4-8.2 devices where:  
 W = wall, 2.4 = 2.4m height and 8.2 = 8.2m width.  
 Light output is cuboid so no additional width calculation is required.



**3 Determine the ambient light level:-**

Ambient light can significantly increase or decrease a VAD's coverage. Use a BS667 compliant lux meter in the area to be covered or refer to the architect's drawings. The table below, provided for guidance only, shows the approximate lux levels for areas where VADs are typically required.

Ambient light (lux)	Example area
>100	
101 to 200	
201 to 300	WC
301 to 400	Corridor
401 to 500	Bedroom
501 to 600	Office
601 to 700	cinema

**4 Decide whether the viewing angle is direct or indirect:-**

Consider how the room will be occupied and used.

Direct viewing (line of sight) is preferable but not always possible. For example, in a room where someone is looking down at a workstation, the required viewing angle is likely to be indirect.

**5 Apply multiplication factors based on ambient light, viewing angle and mounting position:-**

The following table details the multiplication factors that should be applied to a VAD's rated coverage.

Ambient light Level (lux)	Ceiling mount direct view	Ceiling mount indirect view	Wall mount direct view	Wall mount indirect view
>100	2.8	1.3	5.2	1.8
101 to 200	2.4	1.2	4.4	1.7
201 to 300	1.9	1.0	3.2	1.4
301 to 400	1.4	0.8	2.3	1.2
401 to 500	1.1	0.6	1.8	1.0
501 to 600	0.9	0.5	1.3	0.9
601 to 700	0.7	0.4	1.0	0.7
701 to 800	0.5	0.3	0.7	0.6

Example: if ambient light is 250 lux and the viewing angle is direct, the coverage of a C-3-8 ceiling VAD can be multiplied by 1.9, increasing its cylindrical coverage from 8m to 15.2m (or 10.7m square).

**6 Position the required number of VADs in the area requiring coverage.**

For further details/advice refer to our product listings overleaf and our 'hints & tips' section on pages 6 and 7.



**BF456A/CX/W**  
C-3-8 Base VAD c/w 96dB(A) Sounder

- Certified to EN54-23, 3 & 17
- Twin LEDs provide C-3-8 light distribution
- Ideal for mounting under fire detectors
- Impressive 96dB(A) sound output @ 1m
- 14mA alarm current (VAD lit, sounder on max)
- 550uA quiescent
- 112mmØ, 46mm deep (base only)
- IP21C (Type A) rated
- LPCB certified 10mA VAD only variant also available (order code BF460A/CX/W)



**BF431A/CX/W**  
96dB(A) Base Sounder

- Certified to EN54-3 & 17
- Ideal for mounting under fire detectors
- Impressive 96dB(A) sound output @ 1m
- 5mA alarm current (Sounder on max)
- 7 selectable volume levels
- Up to 15 selectable tone pairs
- 550uA quiescent
- 112mmØ, 46mm deep (base only)
- IP21C (Type A) rated



**BF433A/CX/SR**  
Hi-Output W-2.4-8.2 Wall VAD  
c/w 103dB(A) Sounder (shallow)

- Certified to EN54-23, 3 & 17
- W-2.4-8.2 light distribution (wall mounted)
- Powerful 103dB(A) sound output @ 1m
- 14mA alarm current (VAD lit, sounder on max)
- 550uA quiescent
- 108mmØ, 99mm deep
- IP21C (Type A) rated



**BF430A/CX/SR**  
Hi-Output 103dB(A)  
Wall Sounder (shallow)

- Certified to EN54-3 & 17
- Powerful 103dB(A) sound output @ 1m
- 5mA alarm current (Sounder on max)
- 7 selectable volume levels
- Up to 15 selectable tone pairs
- 550uA quiescent
- 108mmØ, 99mm deep
- IP21C (Type A) rated



**BF433A/CX/DR**  
Hi-Output W-2.4-8.2 Wall VAD  
c/w 103dB(A) Sounder (deep)

- Certified to EN54-23, 3 & 17
- W-2.4-8.2 light distribution (wall mounted)
- Powerful 103dB(A) sound output @ 1m
- 14mA alarm current (VAD lit, sounder on max)
- 550uA quiescent
- 114mmØ, 132mm deep
- IP33C (Type B) rated, suitable for outdoors
- IP65 variant (BF433A/CX/DR/65) also available



**BF430A/CX/DR**  
Hi-Output 103dB(A)  
Wall Sounder (deep)

- Certified to EN54-3 & 17
- 103dB(A) sound output @ 1m
- 5mA alarm current (Sounder on max)
- 7 selectable volume levels
- Up to 15 selectable tone pairs
- 550uA quiescent
- 114mmØ, 132mm deep
- IP33C (Type B) rated, suitable for outdoors





**BF451A/CX/SW**  
Compact C-3-8 Ceiling VAD  
c/w 91dB(A) Sounder

- Certified to EN54-23, 3 & 17
- C-3-8 light distribution (ceiling mounted)
- Impressive 91dB(A) sound output @ 1m
- 14mA alarm current (VAD lit, sounder on max)
- 550uA quiescent
- 102mmØ, 63mm deep
- IP21C (Type A) rated
- Intertek certified 10mA VAD only variant also available (order code BF458A/CX/W)



Intertek

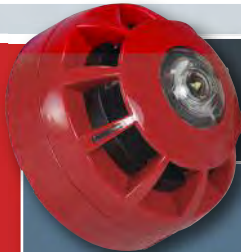


**BF450A/CX/SW**  
Compact 91dB(A)  
Ceiling Sounder

- Certified to EN54-3 & 17
- Impressive 91dB(A) sound output @ 1m
- 5mA alarm current (Sounder on max)
- 7 selectable volume levels
- Up to 15 selectable tone pairs
- 550uA quiescent
- 102mmØ, 58mm deep
- IP21C (Type A) rated



Intertek

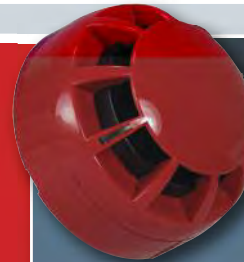


**BF451A/CX/SR**  
Compact W-3-3.1 Wall VAD  
c/w 91dB(A) Sounder

- Certified to EN54-23, 3 & 17
- W-3-3.1 light distribution (wall mounted)
- Impressive 91dB(A) sound output @ 1m
- 14mA alarm current (VAD lit, sounder on max)
- 550uA quiescent
- 102mmØ, 63mm deep
- IP21C (Type A) rated
- Intertek certified 10mA VAD only variant also available (order code BF458A/CX/R)



Intertek



**BF450A/CX/SR**  
Compact 91dB(A)  
Wall Sounder

- Certified to EN54-3 & 17
- Impressive 91dB(A) sound output @ 1m
- 5mA alarm current (Sounder on max)
- 7 selectable volume levels
- Up to 15 selectable tone pairs
- 550uA quiescent
- 102mmØ, 58mm deep
- IP21C (Type A) rated



Intertek

**ALSO AVAILABLE**



VOICE SOUNDER VARIANTS OF ALL  
OF THE DEVICES ON THIS PAGE  
CONTACT OUR SALES DESK FOR DETAILS

**COMING SOON**



A RANGE OF 'O' CLASS BASE SOUNDER  
VADS SPECIFICALLY DESIGNED FOR  
USE IN LONG CORRIDORS



*You're safe with C-TEC*

# Hints & Tips

## GENERAL SITING ADVICE

Wall mounting VADs are effective for a wide range of applications, particularly where there are high ambient light levels. They should always be mounted at least 2.4m from the floor.

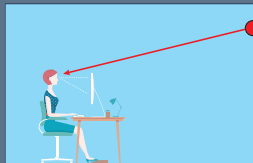


Base or ceiling mounting VADs are generally more practical to install in large open areas or where wall mounting is difficult. As their light output is cylindrical they can be mounted at any height below their rated coverage.

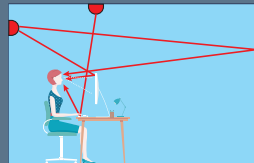
'Open Class' VADs (VADs that do not fall into EN54-23's ceiling or wall categories) provide compliant coverage over an area specified by the manufacturer. Always check the coverage of these devices with the manufacturer to ensure they are suitable for the application.

## DIRECT OR INDIRECT?

Where possible, systems should be designed so everyone in the area requiring coverage has a clear and direct view of a VAD (Direct Viewing). Where this is not possible, VADs should be positioned so the required level of illumination is provided on all adjacent surfaces (Indirect Viewing). For indirect viewing, it is important that all reflective surfaces fall within the VAD's coverage distance.



Direct viewing example  
(line of sight)



Indirect viewing example  
(dependent on surface reflection)

For the avoidance of doubt, in any area where a VAD is required, occupants should be able to view its light at the required lux level either directly or reflected from an adjacent surface or surfaces.

## AMBIENT LIGHT

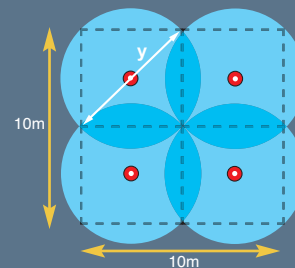
Ambient light (artificial and natural light combined) has a significant impact on VAD visibility (refer to the multiplication factor table on page 3 for details). CoP0001 says the highest expected ambient light should always be considered. However, for rooms bathed in bright sunlight it might be better to consider controlling lighting levels using blinds or curtains. When ambient light is above 800 lux, CoP0001 recommends a lighting specialist is consulted with regard to the design of the system.



A BS677 lux meter - an essential tool for system designers

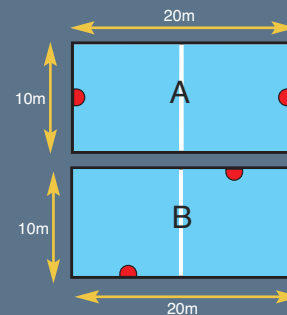
## MULTIPLE DEVICES

Larger rooms can be covered by more than one VAD provided coverage is consistent throughout.



Left, an example of how four C-3-8 ceiling VADs can be used to cover an area 10m x 10m when ambient light is 280 lux and the viewing angle is indirect.

(If the ambient light was 180 lux the same devices could be used to cover an area 13m x 13m based on a multiplication factor of 1.2 - see page 3 for details).



Left, two examples (A and B) of how two W-2.4-8.2 wall VADs can be used to cover an area 20m x 10m when ambient light is 550 lux and the viewing angle is indirect. (This is based on a multiplication factor of 1.3 - see page 3 for details).

## WHITE versus RED LIGHT



C-TEC's VADs emit white light. Although EN54-23 allows the use of red light, CoP0001 states that red flashing light is more likely to cause a seizure in people suffering from photosensitive epilepsy. Do not mix white and red VADs as signal colour must be consistent across a site. Care should be taken to ensure other warning signals (i.e. forklift truck in operation) are a different colour again.

## TINTED EYE PROTECTION

In areas where tinted eye protection is worn, VADs need to be bright enough to overcome this. Welders' masks do not need to be taken into account as they are typically only used for short periods.



## INDOOR OR OUTDOOR USE

EN54-23 categorises VADs as Type A (indoor, rated at IP21C) or Type B (outdoor, rated at IP33C).

Most of C-TEC's devices are rated as Type A (indoor) apart from our Hi-Output deep-based wall variants which are rated as IP33C (outdoor). C-TEC also manufacture an IP65 wall sounder & VAD.



A 'Type A'  
Ceiling VAD



A 'Type B'  
Wall VAD

## BEDROOMS

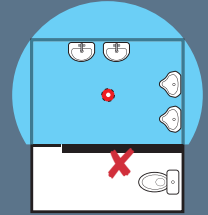
VADs are not required to wake sleeping people: they are intended to signal an alarm to people who are already awake. Options such as vibrating pillow pads are available for waking the hearing impaired.

## CINEMAS & LECTURE THEATRES

In areas where people face a specific direction (cinemas, lecture theatres, training rooms, etc), widespread coverage may not be necessary and one or more 'line of sight' VADs may be sufficient.

## WCs & WASHROOMS

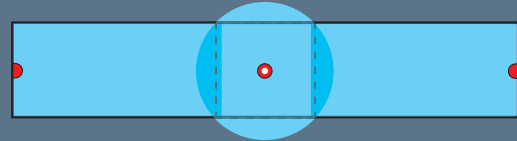
Consider obstructions such as furniture or partitions that may block VAD coverage. Areas to watch out for include cubicles in WCs. Placing a VAD above the communal wash basins, for example, may not be sufficient to cover the cubicle(s).



WC cubicle not covered due to partitioned wall

## CORRIDORS & STAIRWELLS

Depending on size, placing a directly viewed wall VAD at each end of a corridor may be sufficient. If the corridor is very long, additional ceiling or wall VADs can be used to increase coverage where required (remember to consider the location of fire doors). Note that other VAD permutations may be appropriate depending on the application.



Although the top of stairwells (across each landing, refuge points, etc.) typically require coverage, in most instances, the stairs themselves do not.

## 'VIDs'

The term 'VID' (Visual Indication Device) relates to a beacon that does not comply with EN54-23. VIDs are not fire alarm devices but can be used to supplement sounders or as indicators for trained members of staff. They should not be used as a substitute for EN54-23 VADs.

The information on these pages is provided for guidance only. It is not intended to replace standards such as BS 5839-1 2013 (Fire detection and fire alarm systems for buildings), CoP0001 Issue 1 (LPCB/FIA Code of Practice for Visual Alarm Devices) and/or other pertinent legislative documentation, nor should it be used as a basis for overriding a building's risk assessment. E&OE.

# Key features

## AVAILABILITY

All models in stock and available to purchase TODAY

## PRICE

C-TEC's VAD prices are similar to our existing non-certified VIDs (no need to change your buying habits)

## CURRENT CONSUMPTION

14mA max. alarm current (VAD lit, sounder on max.) means multiple Sounder/VADs can be connected to a loop (even lower current on our sounder and VAD-only models)

## RANGE

All variants available with an optional sounder (most other makes of VAD have no sounder option)

## ADDRESSES

C-TEC's VAD and sounder combinations require just one address (using a separate sounder and VAD would require two)

## BRITISH-BUILT

All models designed and manufactured by C-TEC in the UK



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Web: [www.c-tec.co.uk](http://www.c-tec.co.uk)

## CONTACT YOUR SUPPLIER FOR DETAILS

E&OE. Approved Document No. DML0538200 Rev 3. C-TEC reserves the right to alter product specifications at its discretion and without prior notice. No responsibility can be accepted by the manufacturer or distributors of an instruction or guidance note or for the compliance of the system as a whole. C-TEC's VAD approval certificates can be viewed at [www.c-tec.co.uk](http://www.c-tec.co.uk)

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