

BS 8418:2010



BSI Standards Publication

Installation and remote monitoring of detector-activated CCTV systems – Code of practice

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ISBN 978 0 580 62853 5

ICS 13.310; 33.160.40

The following BSI references relate to the work on this standard:

Committee reference GW/1/10

Draft for comment 09/30181219 DC

Publication history

First edition, September 2003

Second (present) edition, July 2010

Amendments issued since publication

Date	Text affected
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Summary of pages

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Foreword

Publishing information

This British Standard is published by BSI and came into effect on 31 July 2010. It was prepared by Subcommittee GW/1/10, *Closed circuit television*, under the authority of Technical Committee GW/1, *Electronic security systems*. A list of organizations represented on this committee can be obtained on request to their secretary.

Supersession

The Technical Committee recognizes that suppliers of products and services within the scope of BS 8418 might require time to comply with the provisions of BS 8418:2010. For this reason, the provisions of BS 8418:2003+A1:2005 will remain effective for 12 months after the publication date of this British Standard.

This British Standard supersedes BS 8418:2003+A1:2005, which will be withdrawn on 31 July 2011.

Information about this document

This is a full revision of the standard, and introduces the following principal changes:

- a) the addition of a system design proposal;
- b) the addition of detector selection criteria;
- c) the addition of detector omission and detector isolation;
- d) updated changes to communication integrity to reflect advances in technology;
- e) the movement of Annex A regarding the setting procedure with a detector in the active state to Annex F;
- f) the addition of Annex A giving diagrams for positioning detectors;
- g) the addition of Annex B giving the factors affecting the design requirements for detectors;
- h) the addition of Annex C giving information regarding the types of technology used in detection equipment;
- i) the addition of Annex D regarding the illumination of the camera's field of view; and
- j) the addition of Annex E giving checklist criteria for the commissioning of a CCTV system.

At the time of publication, the Association of Chief Police Officers (ACPO) of England, Wales and Northern Ireland requires compliance with BS 8418 in their *ACPO Policy on Police Response to Security Systems* [1] for the issue of a Unique Reference Number (URN), which maximizes the possibility of a Level 1 police response.

Particular attention is also drawn to the Information Commissioner's *CCTV Code of Practice* [2].

Use of this document

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations.

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions in this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

In particular, attention is drawn to the following regulations:

- The Data Protection Act 1998 [3]
- The Clean Neighbourhoods and Environment Act 2005 [4]
- The Private Security Industry Act 2001 [5]

Introduction

CCTV systems installed and monitored in accordance with this code of practice are capable of obtaining a response to a confirmed incident from the police (or other responding authority).

When a detector senses an event, images are transmitted to, and displayed at, an RVRC and this is regarded as an alert. Prior to taking action, RVRC operators view these images for a period of time. Under normal circumstances an emergency response is only requested by the RVRC if there is positive evidence in these images of unauthorized access to the secure area and of actual criminal or other untoward activity, i.e. an incident. Emergency responses are agreed between owner and the RVRC.

The normal mode of operation for these CCTV systems is not to display images at an RVRC unless there has been an event at the secure area. However, if stated in the contractual terms and conditions between the owner and the RVRC, the RVRC operator may be permitted to view the secure area at other times. The owner may also be able to view the secure area remotely.

1 Scope

This British Standard gives recommendations for the design, installation, commissioning, operation and remote monitoring of detector-activated CCTV systems.

This standard is intended to provide recommendations to the following parties:

- a) installers and maintenance providers on best practice for the design, installation, commissioning and operation of detector-activated CCTV systems;

NOTE This includes the installation and maintenance engineers working for the installers and maintenance providers.

- b) remote video response centres (RVRCs) monitoring CCTV systems; and
- c) owners and users regarding the management of CCTV systems.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 5979, *Remote centres receiving signals from fire and security systems – Code of practice*

BS 7671, *Requirements for electrical installations – IEE wiring regulations – Seventeenth edition*

BS 7858, *Security screening of individuals employed in a security environment – Code of practice*

BS 7958:2009, *Closed-circuit television (CCTV) – Management and operation – Code of practice*

BS 8495, *Code of practice for digital CCTV recording systems for the purpose of image export to be used as evidence*

BS EN 50132-7, *Alarm systems – CCTV surveillance systems for use in security applications – Part 7: Application guidelines*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

3.1.1 activation

operation of a CCTV system triggered by an event resulting in the transmission of images to an RVRC

3.1.2 alert

activation where there is not positive evidence in images of unauthorized access to the secure area or of actual criminal activity

3.1.3 automatic timer

device that sets and/or unsets the CCTV system at pre-programmed times

3.1.4 CCTV control equipment

equipment for receiving, processing and initiating the onward transmission of data

3.1.5 CCTV system

system consisting of camera equipment and/or other image-capture devices, detector(s), monitoring and associated equipment for transmission and controlling purposes

NOTE This might be used for the surveillance of a defined secure area.

3.1.6 closed site

protected premises entirely surrounded by a securely constructed barrier when the CCTV system is in a set condition

NOTE This is to deter unauthorized access.

3.1.7 channel

individual input and output address on the receiver corresponding to an allocated detector

3.1.8 data

information in the form of images, sound and other associated, linked or processed information

NOTE This might include specific information regarding an individual.

3.1.9 detector

device that detects an event

3.1.10 digital key

portable device used for setting and/or unsetting a remotely monitored CCTV system

NOTE Formerly known as Portable ACE or ACE.

- 3.1.11 digital key reader**
fixed equipment that receives signals from a digital key to set and unset a CCTV system
- 3.1.12 event**
activity within a secure area
- 3.1.13 functional camera**
camera with the ability to offer a combination of pan and/or tilt and/or zoom facility
- 3.1.14 identification code**
part of a data message used to identify a transmitting RF communication device belonging to the CCTV system
- 3.1.15 incident**
activation where there is positive evidence in images of conditions requiring an emergency response and/or of actual criminal activity
- 3.1.16 initial activation**
first activation that occurs after the CCTV system has been set, or after a previous incident or alert has been closed down during the set period
- 3.1.17 installer**
party responsible for supplying and fitting the equipment for the CCTV system
- NOTE If specified within a contract, the installer may take all or some of the responsibilities of the owner.*
- 3.1.18 illumination**
light source that is visible to the camera lens
- 3.1.18.1 artificial illumination**
man-made light source that is visible to the camera lens
- 3.1.18.2 natural illumination**
sunlight that is visible to the camera lens
- 3.1.19 open site**
protected premises not entirely surrounded by a soundly constructed and secure barrier when the CCTV system is set
- 3.1.20 owner**
individual, company or organization designated as having overall responsibility for the formulation and implementation of the policies, purposes and control of a CCTV system
- 3.1.21 parked position**
position to which a functional camera automatically returns after a preset time or earlier on command
- 3.1.22 protected premises**
site address, agreed by contract, at which there are one or more secure areas
- 3.1.23 radio frequency (RF)**
frequency at which data is transmitted
- NOTE This is measured in MHz.*
- 3.1.24 receiver**
remotely located CCTV control equipment which can receive data from wireless and semi-wired detectors

3.1.25 recorded material

collected data that can be stored and retrieved at a later date

NOTE Such data may be recorded through any medium.

3.1.26 remote video response centre (RVRC)

continually manned remote centre capable of receiving multiple concurrent CCTV images from remote locations for the purpose of interacting with protected premises to provide security and related services

3.1.27 RVRC operator

person located at the RVRC who is specifically designated, trained and authorized to carry out monitoring of the CCTV system

3.1.28 secure area

area within the protected premises in which unauthorized access or attempted unauthorized access is intended to be detected

3.1.29 semi-wired detector

wireless detector with a wired power supply

3.1.30 set

state in which a CCTV system, or part thereof, automatically generates an activation in response to an event

3.1.31 unset

state in which a CCTV system, or part thereof, is prevented from generating an activation in response to an event

3.1.32 user

person authorized by the owner to operate the CCTV system on the protected premises

3.1.33 unwanted activation

avoidable alert

NOTE This can include activations caused by animals and/or vegetation.

3.1.34 wireless detector

non-wired detector having an integral power supply that communicates an activation to the receiver through an approved RF signal

3.2 Abbreviations

For the purposes of this British Standard, the following abbreviations apply.

BST	British Summer Time
CCTV	closed-circuit television
IR	infrared
ISDN	integrated services digital network
PIR	passive infrared
PSTN	public switched telephone network
RF	radio frequency
RVRC	remote video response centre
UPS	uninterruptible power supply
VMD	video motion detection

4 CCTV system design

4.1 CCTV system design proposal

4.1.1 The installer or maintenance provider of the CCTV system should agree a CCTV system design proposal with the owner.

4.1.2 The CCTV system design proposal should include detailed written and visual documentation including:

- a) diagram(s) showing the:
 - 1) position of all cameras, detectors and their fields of view;
NOTE See Annex A for diagrams for positioning detectors.
 - 2) extent of the secure area;
 - 3) designated location of parked vehicles and other movable objects or materials that could compromise the effectiveness of the CCTV system;
NOTE These are identified during the initial survey.
 - 4) actual dimensions on drawings not drawn to scale.
- b) type, location, mounting height and brief technical specification of cameras and lenses;
- c) type, location, mounting height, direction, range and brief technical specification of detectors;
NOTE This should include information regarding dormant periods after activation.
- d) identity of functional camera presets which are associated with detectors and the identity of the detectors with which they are associated;
- e) identity of fixed cameras associated with detectors and the identity of detectors;
- f) type and locations of audio devices;
- g) data transmission paths used by the CCTV system, with details of the party(ies) responsible for their implementation and their continuing provision and maintenance;
- h) artificial illumination provided, with details of the party(ies) responsible for its implementation;
- i) location and brief technical specification of components such as controls, power supplies and storage devices; and
- j) services for which the owner is responsible with details of the user responsibilities for correct operation of the CCTV system.

4.1.3 When creating a CCTV system design proposal, the factors affecting design requirements given in Annex B should be taken into consideration.

4.2 Detector positioning and configuration

4.2.1 General

Except in cases where it would be inappropriate to have a camera covering the detection area created by the detectors, the detection area should fall within the field of view of the CCTV camera(s) so

that activations only occur in areas within the field of view of the associated cameras in the CCTV system (for diagrams regarding the positioning of detectors, see Annex A).

NOTE Examples of cases where it would be considered inappropriate to have a camera covering a detection area are where a movement detector is installed inside public toilets with the associated camera(s) covering any possible entry/exit points, or where a movement detector is installed inside a private dwelling with any associated camera(s) covering any possible entry/exit points.

Where detectors include outputs for transmitting information about the status of the detector to the CCTV control equipment, agreement should be made between the RVRC and the owner regarding the expected response at the RVRC [see 8.1h)].

4.2.2 Detector position

4.2.2.1 The secure area should be divided into multiple detection zones with detectors positioned so that events within the secure area result in activations.

NOTE It is important to consider the on-site related factors given in Annex B as these can influence the position and correct use of detectors.

4.2.2.2 Where a detector faces a boundary, it should be positioned so that movement outside the secure area is not detected (see Figure A.2 and Figure A.3).

NOTE 1 Consideration should be given to positioning detector(s) facing away from the boundary.

NOTE 2 It is advisable to use dual technology or a second device to limit unwanted alarms in cases where boundaries adjoin roads, playgrounds and public footpaths.

4.2.2.3 Detectors should be positioned in such a way that when looking horizontally across an area in an east-west plane they are not adversely affected by the rising or setting of the sun. Setting up secondary detectors oriented in a different position and pairing them with primary detectors should be considered.

4.2.3 Detector selection and configuration

4.2.3.1 Detectors utilizing technology that meets the operational requirements of the CCTV system specified by the owner and minimizes unwanted activations whilst detecting events should be selected.

NOTE See Annex C for types of technology used in detection equipment. See Annex A for examples of movement detector positioning.

4.2.3.2 Where detector technology incorporates a dormant period after activation, measures should be put in place to prevent this from compromising the security of the CCTV system. This dormant period should be clearly referred to in the design proposal [see 4.1.2c)].

NOTE Such measures might include a procedure being put in place for an RVRC operator to continue viewing specified cameras until the dormant period is over.

4.2.3.3 Detectors should be selected that are capable of covering the detection range required for the purpose of the CCTV system.

4.2.3.4 Detectors should be adjustable in both the vertical and horizontal axis. Detectors should be mounted at a height relative to their range.

4.2.3.5 When configuring detectors, manufacturer's recommendations should be followed to prevent their incorrect operation.

4.2.3.6 Multiple detectors should not be connected to a single input unless individually identified by the CCTV control equipment, e.g. detectors identified by individual IP addresses.

NOTE This is particularly relevant when a functional camera is directed to multiple preset locations dependent on the detector or an area where an event is taking place. In these circumstances it is important that the detector indicates independently at the RVRC, otherwise there is no method of determining that two incidents might have occurred in short succession.

4.2.4 Wireless and semi-wired detectors

Where wireless or semi-wired detectors are used, the following functions should be provided:

- a) an indication for low battery voltage;
- b) an indication for loss of wireless signal;
- c) an indication at the protected premises of individual detectors in the fault conditions **4.2.4a)** and **4.2.4b)** with the identification of the individual detector;
- d) an indication for a failed communication link via an output signal (one per channel) sent by the receiver;
- e) a unique identification code assigned to a dedicated channel on the receiver identifying transmission devices belonging to the CCTV system; and
- f) a communication protocol, secure from unintentional or intentional data substitution. This should include 10 000 000 or more variations of identification codes, randomly generated by the CCTV system.

The indications referred to in **4.2.4a)** and **4.2.4b)** should be reported in the set condition to the RVRC.

NOTE It is not necessary to indicate individual detector faults at the RVRC.

4.3 Camera positioning and configuration

4.3.1 General

4.3.1.1 Camera positioning and configuration of the CCTV system should conform to BS EN 50132-7.

4.3.1.2 The cameras should be positioned so that the areas of coverage of detectors can be viewed (see **4.2.1**).

4.3.1.3 For the purposes of verifying an event, e.g. detecting an intruder, the field of view should be set to a 1.6 m high target filling a minimum of 10% of picture height. If intruder recognition is a main objective of the CCTV system, then image sizes set to a 1.6 m high target filling a minimum of 50% of picture height should be considered.

4.3.1.4 The entry/exit route to the secure area should either be viewed by a fixed camera or a functional camera with its parked position viewing the entry/exit route.

4.3.1.5 Where functional cameras are the sole means of viewing the field of detection, they should be treated as multi-position fixed cameras through defined presets, rather than treated as infinitely

variable devices. The area to be viewed by each camera in its defined preset positions should be clearly identified. Any camera views or items within the camera views that need to be carefully monitored should be specified by the owner and particular checks to those made. If a camera is required to survey a large area, the area should be divided into a series of discrete adjacent zones, each corresponding to a stored defined preset position. It should not be possible for an intruder travelling at 2 m/s to pass out of the field of detection before the camera can be moved to view the area.

NOTE It is important to check that at each of its defined preset positions the zoom setting still conforms to (4.3.1.2).

4.3.1.6 Where functional cameras using preset positions in association with alarm devices are deployed, access to alter such preset positions should be restricted to the installer and/or the Remote Video Response Centre. Adjustable preset positions may be utilized but only where there are no associated alarm devices.

4.3.1.7 Wherever possible, cameras should not overlook public areas.

NOTE Attention is drawn to the Data Protection Act [3].

4.3.1.8 Installed CCTV control equipment should be fit for purpose and able to withstand prevailing environmental conditions.

NOTE Further information can be found in BS EN 50130-5.

4.3.1.9 Cameras should be uniquely identified using a name/label which is displayed with or within the camera view at the RVRC and which corresponds to the name/label shown on the protected premises plan [see 9.1 and 11.1c)] for the relevant camera view.

4.3.1.10 The functionality of cameras should be checked on configuration to ensure that they are able to focus both during the day and at night.

4.3.2 Illumination

4.3.2.1 Intended fields of view of the cameras throughout the protected premises should be illuminated (see Annex D). When natural illumination is inadequate for CCTV images to be recognized at the RVRC, artificial illumination should be provided.

4.3.2.2 As a minimum, CCTV system detection areas should be illuminated to allow the RVRC to identify the cause of the activation.

4.3.2.3 Camera fields of view should be illuminated so that it is possible for an RVRC operator to verify the presence or absence of a human form approximately 1.6 m high occupying not less than 10% of picture height during day and night conditions (see 4.3.1.3) upon display of an image at the RVRC.

NOTE This applies to all displayed images, including pre-alarm.

4.3.2.4 Artificial illumination that is provided should be maintained in accordance with the manufacturer's recommendations.

4.3.2.5 Artificial illumination failures or illumination problems should be reported to the owner by the RVRC operator within 24 h of their discovery (see 9.3.2).