SLOVENSKI STANDARD
SIST EN 50132-7:1997

01-avgust-1997

Alarmni sistemi - Nadzorni sistemi CCTV za uporabo v aplikacijah varovanja - 7. del: Smernice za uporabo

Alarm systems - CCTV surveillance systems for use in security applications - Part 7: Application guidelines

Alarmanlagen - CCTV-Überwachungsanlagen für Sicherungsanwendungen - Teil 7: Anwendungsregeln

Systèmes d'alarme - Systèmes de surveillance CCTV à usage dans les applications de sécurité - Partie 7: Directives d'application

Ta slovenski standard je istoveten z: **EN 50132-7:1996**

ICS:

13.320	Alarmni in opozorilni sistemi	Alarm and warning systems
33.160.40	Video sistemi	Video systems

SIST EN 50132-7:1997 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50132-7

June 1996

ICS 13.320

Descriptors: Warning systems, safety devices, inspection devices, television systems, motion-pictures cameras, definition, performance evaluation, design, categories, installation, maintenance

English version

Alarm systems - CCTV surveillance systems for use in security applications Part 7: Application guidelines

Systèmes d'alarme - Systèmes de surveillance CCTV à usage dans les applications de sécurité Partie 7: Directives d'application

Alarmanlagen Video-Überwachungsanlagen für Sicherheitsanwendungen Teil 7: Anwendungsregeln

This European Standard was approved by CENELEC on 1995-11-28. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 79, Alarm systems.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50132-7 on 1995-11-28.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1996-11-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1996-11-01

EN 50132 will consist of the following parts, under the general title "Alarm systems - CCTV surveillance systems for use in security applications":

- Part 1 System requirements
- Part 2-1 Black and white cameras
- Part 2-2 Colour cameras
- Part 2-3 Lenses
- Part 2-4 Ancillary equipment
- Part 3 Local and main control unit
- Part 4-1 Black and white monitors
- Part 4-2 Colour monitors
- Part 4-3 Recording equipment
- Part 4-4 Hard copy equipment
- Part 4-5 Video motion detection equipment
- Part 5 Video transmission
- Part 6 (free)
- Part 7 Application guidelines

NOTE: Except for this part 7, all parts of the EN 50132 series are still under consideration.

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Introduction

The purpose of this standard is to provide guidance to ensure that closed circuit television (CCTV) system functions and their performance are fully met.

This standard will prove useful to those responsible for establishing operational requirements, writing specifications, selecting, installing, commissioning, using and maintaining a CCTV system.

Closed circuit television, in its simplest form, is a means of providing images from a television camera for viewing on a monitor via a private transmission system. There is no theoretical limit to the number of cameras and monitors which may be used in a CCTV installation but in practice this will be limited by the efficient combination of control and display equipment and the operator's ability to manage the system.

The successful operation of a CCTV system requires the active co-operation of the user in carrying out the recommended procedures.

1. Scope

This standard gives recommendations for the selection, planning and installation of closed circuit television systems comprising of camera(s) with monitor(s) and/or video recorder(s), switching, control and ancillary equipment for use in security applications.

The objectives of this standard are:

a) to provide a framework to assist customers, installers and users in establishing their requirements;

b) to assist specifiers and users in determining the appropriate equipment required for a given application;

c) to provide means of evaluating objectively the performance of an installed system.

2. Normative references

Related standards for systems and equipment using CCTV in security applications are:

CCIR report 624-4	Characteristics of television systems.
CCIR recommendation 567-3	Transmission performance of television circuits.

3. Definitions and abbreviations

3.1. Definitions

For the purpose of this standard, the following definitions apply:

3.1.1. **CCTV system:** A system consisting of camera equipment, monitoring and associated equipment for transmission and controlling purposes, which may be necessary for the surveillance of a defined security zone.

3.1.2. **CCTV surveillance installation:** An installation consisting of the hardware and software components of a CCTV system, fully installed and operational for monitoring a defined security zone.

3.1.3. **CCTV camera:** A unit containing an imaging device producing a video signal from an optical image.

3.1.4. **CCTV camera equipment:** A unit containing a CCTV camera plus appropriate lens and necessary ancillary equipment.

3.1.5. **camera housing:** An enclosure to provide physical and/or environmental protection of the camera, lens and ancillary equipment.

3.1.6. **composite video signal (CVS):** The video output signal of a black and white (b/w) camera comprising the picture component (video), black reference (blanking) and the synchronisation components (synchronisation).

3.1.7. **composite colour video signal (CCVS):** The video output signal of a colour camera comprising the burst and colour information (colour) the picture luminance component (video), black reference (blanking) and the synchronisation components (synchronisation).

3.1.8. **external synchronisation:** A method of feeding reference timing signals to all connected devices to ensure that their video output signals are synchronous.

3.1.9. **camera sensitivity:** Imaging device illumination necessary to produce a defined composite (colour) video signal amplitude with a defined signal to noise ratio.

3.1.10. **imaging device illumination:** The level of illumination (illuminance) at the photosensitive surface of the imaging device.

3.1.11. **imaging device:** A device that converts an optical image into an electrical signal.

3.1.12. **image sensor size:** The size of the light sensitive surface of the imaging device.

NOTE: The value is expressed in inches and refers to the diameter of the glass tube from which the camera tubes are constructed.

Some examples of sizes are:

- 1-inch for 12,8 x 9,6 mm (16 mm diagonal)
- 2/3-inch for 8,8 x 6,6 mm (11 mm diagonal)
- 1/2-inch for 6,4 x 4,8 mm (8 mm diagonal)
- 1/3-inch for 4,8 x 3,6 mm (6 mm diagonal)

3.1.13. **scene illumination:** The level of illumination (illuminance) on the area to be kept under surveillance.

3.1.14. **scene reflectance:** The proportion of the scene illumination reflected by that scene.

3.1.15. **electronic shutter:** An arrangement in the camera changing its sensitivity by electronically controlling its exposure time.

3.1.16. **electronic iris:** An automatic electronic shutter which varies the camera sensitivity in relation to the varying light conditions in order to maintain the video output signal within defined limits.

3.1.17. **lens:** An optical device for projecting an image of a desired scene onto the photo sensitive surface of the imaging device.

3.1.18. **focal length (f):** A property of a lens, expressed in mm, giving the angle of view for a given sensor size.

3.1.19. **zoom lens:** A lens with adjustable focal length, in which the image of the scene remains in focus as the focal length is changed.

3.1.20. **aperture number of the Lens (F):** The index of the theoretical light gathering power of the lens, expressed as the ratio of the effective diameter of the lens (entrance pupil) to the focal length.

3.1.21. **transmission number of lens (T):** The index of the actual light gathering power of the lens.

3.1.22. **ramping:** A characteristic of some zoom lenses whereby the effective aperture of the lens decreases as the focal length is increased.

3.1.23. **iris:** A variable aperture mechanism which regulates the amount of light passing through the lens onto the imaging device of the CCTV camera.

3.1.24. **CCTV control unit:** Equipment for controlling and monitoring the required operational functions of the CCTV system.

3.1.25. **video matrix:** A unit for connecting several input video signals to several outputs.

3.1.26. **video switcher:** A unit for switching a number of video input signals to one or more outputs manually or automatically or on receipt of an external signal.

3.1.27. **pan and tilt unit:** A motorised unit permitting the vertical and horizontal positioning of the camera equipment.

3.1.28. **preset shot:** A function in pan and tilt units and/or zoom lenses, which allows automatic return to one or more predetermined positions.

3.1.29. **character generator:** A device for generating alpha numeric characters and/or symbols and adding them into the image.

3.1.30. **time/date generator:** A device for generating time and date and adding them into the image.

3.1.31. **video equalising amplifier:** Equipment for correcting gain and frequency related distortions in the video signal.

3.1.32. **slow scan transmission:** The transmission of a series of non-real time images or part images, by means of analogue or digital signals over limited bandwidth transmission media.

3.1.33. **(video) monitor:** A device for converting video signals into pictures on a display screen.

3.1.34. **picture storage:** The storing of video images.

3.1.35. **time lapse recording:** The periodical recording of video signals at pre-defined intervals.

3.1.36. **event recording:** The event controlled recording or storing of image signals for a pre-determined time.

3.1.37. **time multiplex recording:** A method of recording several video signals on one video channel by time multiplexing the frames of these video signals.

3.1.38. **video printer:** Equipment for converting a video signal into an image on paper.

3.2. Abbreviations

3.2.1. **CCIR:** Comité Consultatif International des Radiocommunication (International Radio Consultative Committee).

3.2.2. **CCTV:** Closed circuit television.

3.2.3. **EMC**: Electro-magnetic compatibility.

4. General considerations

A CCTV system is the combination of camera equipment, lighting, signal transmission, monitors, etc. selected and installed to meet the customer's security surveillance requirements.

The recommended procedure for designing the CCTV system is as follows:

a) develop the operational requirement.

b) design the system.

c) agree on the specification.

d) install and commission the system.

e) hand over the system to the customer.

f) maintenance.

5. Operational requirement

Persons without appropriate knowledge and expertise may have to become involved in the interpretation of specifications for CCTV security systems and one approach to this is to write an operational requirement for subsequent development into a full technical specification by a suitably qualified person.

5.1. Purpose of the operational requirement

The operational requirement is a key document for system designers. It states clearly what the customer expects the functions of the system to do. The development process encourages clear thinking about what, where, when and by whom and in particular the why of the system. It is produced by managers, operators and in particular those who use information from pictures gathered by the system. The later stages of development should involve those with the necessary skills to convert statements into a technical specification and test procedures. At appropriate stages checks need to be made to ensure that the proposed implementation will meet the operational requirement. Without an operational requirement and a matching test procedure there is no guarantee that the system will meet its required purpose.

5.2. Contents of the operational requirement

The operational requirement should:

a) define the level of security required (threat assessment);

b) define the area/volume to be covered by the system (coverage);

c) explain the purpose of covering each area/volume (function);

d) decide the method for obtaining information from pictures (manual or automatic);

e) define the tasks to be performed as a result of seeing each picture (outputs);

f) define the response time expected from each part of the system (response time);

g) decide the range of conditions under which the system and its components are expected to function (environment);

h) decide where and when the tasks will be performed and by whom (control);

i) decide on the worst case number of simultaneous events to which the system needs to respond (workload);

j) decide on the training requirements (training);

k) list any other special factors not covered by the above.

NOTE: It may be that the operational requirement cannot be met with current technology. In this case the operational requirement should be amended to allow for this and the customer asked to agree that coverage/facilities might be restricted in areas of contention.

6. System operational criteria

The system operational criteria involve determination of:

a) the operational procedures.

b) the alarm response.

c) the system response times.

6.1. Determining operational procedures

The principal task of the operator is to analyse the content of the displayed pictures and take any necessary actions.

Maximum use should be made of automatic functions in order to free the operator for essential tasks.

6.1.1. Automation of the following functions should be considered:

a) video switching,
b) selection of camera preposition,
c) monitoring equipment;
d) lighting control;
e) picture storage;

6.1.2. Some of the above functions might be controlled from:

a) alarm conditions;
b) external trigger;
c) timed events;
d) manual intervention.

6.2. Alarm response

The signalling of an alarm condition to the CCTV system normally has priority over other inputs. However, irrespective of the degree of automation, the operator should be able to take manual control of the system after alarm.

Automation of picture selection should take the following into consideration:

a) specifying those view(s) to be selected in each area where an alarm condition occurs;

b) allocation of the monitors that display the pictures from those cameras. On screen display of the camera identification from a character generator and/or a mimic diagram of the installation can be useful;

c) presentation of alarm pictures on designated monitors;
d) handling of simultaneous alarm conditions;
e) what pictures are to be stored.

6.3. System response times

The following response times should be kept to a minimum:

a) the time elapsing from the generation of an alarm signal and its signalling to the CCTV system;
b) control centre switching on receipt of alarm;
c) camera positioning if pre-set functions on the zoom lens and pan and tilt unit are used.
d) monitoring equipment start up time or change from time lapse mode to normal mode if a time lapse recorder is used.
e) operators response time if intervention is required.