

BS EN 62676-4:2015



BSI Standards Publication

Video surveillance systems for use in security applications

Part 4: Application guidelines

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National foreword

This British Standard is the UK implementation of EN 62676-4:2015. It is identical to IEC 62676-4:2014. It supersedes BS 8495:2007 and BS IEC 62676-4:2014, which are withdrawn. It supersedes BS EN 50132-7:2012 which will be withdrawn on 13 April 2018.

National Annex NA gives recommendations on security grading application for Video Surveillance Systems (VSSs).

The UK participation in its preparation was entrusted by Technical Committee GW/1, Electronic security systems, to Subcommittee GW/1/10, Closed circuit television (CCTV).

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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

© The British Standards Institution 2015.
Published by BSI Standards Limited 2015

ISBN 978 0 580 89390 2

ICS 13.320

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2014.

Amendments/corrigenda issued since publication

Date	Text affected
31 July 2015	This corrigendum renumbers BS IEC 62676-4:2014 as BS EN 62676-4:2015. Also, Annex ZA and National Annex NA added

English Version

Video surveillance systems for use in security applications - Part
4: Application guidelines
(IEC 62676-4:2014)

Systèmes de vidéosurveillance destinés à être utilisés dans
les applications de sécurité - Partie 4: Directives
d'application
(IEC 62676-4:2014)

Videoüberwachungsanlagen für Sicherungsanwendungen -
Teil 4: Anwendungsregeln
(IEC 62676-4:2014)

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Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN 62676-4:2015) consists of the text of IEC 62676-4:2014 prepared by IEC/TC 79 "Alarm and electronic security systems".

The following dates are fixed:

- latest date by which the document has to be implemented (dop) 2016-04-13
at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-04-13

This document supersedes EN 50132-7:2012.

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The text of the International Standard IEC 62676-4:2014 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 62305 (series)	NOTE	Harmonized as EN 62305 (series).
IEC 62305-3	NOTE	Harmonized as EN 62305-3.
IEC 62305-4	NOTE	Harmonized as EN 62305-4.
ISO 22311:2012	NOTE	Harmonized as EN ISO 22311:2014.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62676-1-1	-	Video surveillance systems for use in security applications - Part 1-1: System requirements - General	EN 62676-1-1	-
IEC 62676-1-2	-	Video surveillance systems for use in security applications -- Part 1-2: Video transmission - General video transmission - requirements	EN 62676-1-2	-
IEC 62676-2-1	-	Video surveillance systems for use in security applications -- Part 2-1: Video transmission protocols - General requirements	EN 62676-2-1	-
IEC 62676-2-2	-	Video surveillance systems for use in security applications - Part 2-2: Video transmission protocols - IP interoperability implementation based on HTTP and REST services	EN 62676-2-2	-
IEC 62676-2-3	-	Video surveillance systems for use in security applications - Part 2-3: Video transmission protocols - IP interoperability implementation based on WEB services	EN 62676-2-3	-
IEC 62676-3	-	Video surveillance systems for use in security applications -- Part 3: Analog and digital video interfaces	EN 62676-3	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

VIDEO SURVEILLANCE SYSTEMS FOR USE IN SECURITY APPLICATIONS –

Part 4: Application guidelines

FOREWORD

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International Standard IEC 62676-4 has been prepared by IEC technical committee 79: Alarm and electronic security systems.

This standard is based on EN 50132-7 (2012).

The text of this standard is based on the following documents:

FDIS	Report on voting
79/455/FDIS	79/466/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 62676 series, under the general title *Video surveillance systems for use in security applications*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

The IEC Technical Committee 79 in charge of alarm and electronic security systems together with many governmental organisations, test houses and equipment manufacturers has defined a common framework for video surveillance transmission in order to achieve interoperability between products.

The IEC 62676 series of standards on video surveillance system is divided into 4 independent parts:

Part 1: System requirements

Part 2: Video transmission protocols

Part 3: Analog and digital video interfaces

Part 4: Application guidelines

Each part offers its own clauses for the scope, normative references, definitions and requirements.

The purpose of this part of IEC 62676 is to provide guidance on how to ensure that video surveillance systems (VSS), thus far referred to as closed circuit television (CCTV), meet their functional and performance requirements.

This part of IEC 62676 will prove useful to those responsible for establishing operational requirements, writing specifications, selecting, installing, commissioning, using and maintaining a VSS.

VSS, in its simplest form, is a means of providing images from security cameras and recorders for viewing on a display via a transmission system. There is no theoretical limit to the number of cameras and displays which may be used in a VSS installation but in practice 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 VSS requires the active co-operation of the user in carrying out the recommended procedures.

Due to the wide range of VSS applications, for example security, safety, public safety, transportation, etc. only the minimum requirements are covered in this part of IEC 62676.

VIDEO SURVEILLANCE SYSTEMS FOR USE IN SECURITY APPLICATIONS –

Part 4: Application guidelines

1 Scope

This part of IEC 62676 gives recommendations and requirements for the selection, planning, installation, commissioning, maintaining and testing video surveillance systems (VSS) comprising of image capture device(s), interconnection(s) and image handling device(s), for use in security applications.

The objectives of this part of IEC 62676 are to:

- a) provide a framework to assist customers, installers and users in establishing their requirements,
- b) assist specifiers and users in determining the appropriate equipment required for a given application,
- c) provide means of evaluating objectively the performance of the VSS.

2 Normative references

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

IEC 62676-1-1, *Video surveillance systems for use in security applications – Part 1-1: System requirements – General*

IEC 62676-1-2, *Video surveillance systems for use in security applications – Part 1-2: System requirements – Performance requirements for video transmission*

IEC 62676-2-1, *Video surveillance systems for use in security applications – Part 2-1: Video transmission protocols – General requirements*

IEC 62676-2-2, *Video surveillance systems for use in security applications – Part 2-2: Video transmission protocols – IP interoperability implementation based on HTTP and REST services*

IEC 62676-2-3, *Video surveillance systems for use in security applications – Part 2-3: Video transmission protocols – IP interoperability implementation based on Web services*

IEC 62676-3, *Video surveillance systems for use in security applications – Part 3: Analog and digital video interfaces*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

3.1.1

camera housing

enclosure to provide physical and/or environmental protection of the camera, lens and ancillary equipment

3.1.2

camera sensitivity

image capturing device capability to produce an image in certain light conditions

3.1.3

VSS surveillance installation

installation consisting of the hardware and software components of a VSS, fully installed and operational for monitoring a defined security zone

3.1.4

VSS camera

unit containing an imaging device producing a video signal from an optical image

3.1.5

VSS camera equipment

unit containing a VSS camera plus appropriate lens and necessary ancillary equipment

3.1.6

VSS control unit

equipment for controlling and monitoring the required operational functions of the VSS

3.1.7

VSS technician

qualified person who is trained and competent in the installation, maintenance, servicing and fault-finding of VSSs

3.1.8

VSS

system consisting of camera equipment, monitoring and associated equipment for transmission and controlling purposes, which may be necessary for the surveillance of a protected area

3.1.9

corrective maintenance

emergency servicing of a system, or part thereof, carried out in response to the development of a fault

3.1.10

corrective maintenance report

document that details the requirement for normal or emergency corrective maintenance and indicates the corrective action taken, as required by IEC 62676-4 or other applicable technical standards

Note 1 to entry: The report may be an electronic document.

3.1.11

company

organization providing design, installation or maintenance of the VSS system

3.1.12

detect

defined functional purpose of a camera to enable the operator to reliably and easily determine whether or not any target, such as a person, is present.

3.1.13

electronic iris

automatic electronic shutter which changes the camera sensitivity in relation to the varying light conditions in order to maintain the video output signal within defined limits

3.1.14

electronic shutter

arrangement in the camera changing its sensitivity by electronically controlling its exposure time

3.1.15

event recording

event controlled recording or storing of image signals for a pre-determined time

Note 1 to entry: refers to video recording not to system log of events.

3.1.16

external synchronisation

method of feeding reference timing signals to all connected devices to ensure that their video output signals are synchronous

3.1.17

focal length

f

measurement of the converging power of a lens, normally expressed in mm, which can be used to determine the angle of view for a given sensor size

3.1.18

geo data

digital information assigning a certain spatial location to the earth's surface

3.1.19

identify

defined functional purpose of a camera to enable identification of an individual beyond reasonable doubt

3.1.20

inspect

defined functional purpose of a camera to enable the operator to obtain information from objects

Note 1 to entry: An example object may include text or a logo on clothing.

3.1.21

imaging device

device that converts an optical image into an electrical signal

3.1.22

imaging device illumination

level of illumination (luminance) at the photosensitive surface of the imaging device

3.1.23

iris

variable aperture mechanism which regulates the amount of light passing through the lens onto the imaging device of the VSS camera

3.1.24

Kell factor

subjective number of lines of resolution that can be visually perceived in a video display system, expressed as a percentage of the total number of lines of resolution

3.1.25

lens

optical device for projecting an image of a desired scene onto the photo sensitive surface of the imaging device

3.1.26

monitor

defined functional purpose of a camera to enable viewing of the number, direction and speed of movement of people across a wide area, providing their presence is known to the operator

3.1.27

NTSC

NTSC resolution

standard-definition video mode referring in digital applications to 486 lines or 720×486 pixels

3.1.28

image presentation device

device for converting video signals into pictures on a display screen

3.1.29

observe

defined functional purpose of a camera enabling characteristic details of an individual, such as distinctive clothing to be seen, whilst allowing a view of activity surrounding an incident

3.1.30

pan and tilt unit

motorised unit permitting the horizontal and vertical positioning of the camera equipment

3.1.31

PAL

PAL resolution

standard-definition video mode referring in digital applications to 576 lines or 720×576 pixels

3.1.32

pan, tilt, zoom

PTZ

function of a camera permitting the horizontal, vertical positioning of the camera together with the angle of view

3.1.33

picture storage

storing of fixed or video images

3.1.34

preventive maintenance

routine servicing of a system, carried out on a scheduled basis

3.1.35

preventative maintenance report

document which records the preventive maintenance carried out in accordance with IEC 62676-4 or other applicable technical standard

Note 1 to entry: The report may be an electronic document.

3.1.36

recognise

defined functional purpose of a camera to enable the operator to obtain recognition of an individual

3.1.37

risk assessment

systematic process to determine the impact of the consequences of hazards and threats relative to their probability

Note 1 to entry: The result of the analysis provides the basis for risk evaluation within a risk management process.

3.1.38

risk management

culture, processes and structures that are directed towards the effective management of potential opportunities and adverse effects

3.1.39

risk management process

systematic application of management policies, procedures and practices to the tasks of establishing the context, identifying, analysing, evaluating, treating, monitoring and communicating risk

3.1.40

scene illumination

level of illumination (luminance) on the area to be kept under surveillance

3.1.41

site plan

pictorial representation of the protected area showing the location and intended views of the VSS cameras

3.1.42

system design proposal

specification of the system design including location factors, site plan, field of view, detector range and coverage and control room design

3.1.43

time lapse recording

periodic recording of video images at pre-defined intervals

3.1.44

video signal

video channel being transmitted, streaming or not streaming, analog or digital

3.1.45

video signal amplitude

magnitude of the video signal

3.1.46

zoom lens

lens with adjustable focal length and therefore an adjustable angle of view

3.2 Abbreviations

For the purposes of this document, the following abbreviations apply.

ASB	anti-social behaviour
BNC	Bayonet Neill-Concelman (connector)
CCIR	Consultative Committee on International Radio
CCTV	closed circuit television
DVR	digital video recorder
EMC	electro-magnetic compatibility
CRT	cathode ray tube
FAT	factory acceptance testing
FPS	frames per second
Gbps	gigabits per second
HD	high definition
NVR	network video recorder
LCD	liquid crystal display
IP	internet protocol
IPD	image presentation device
Mbps	megabit per second
MPEG	motion picture experts group
OR	operational requirement
PTZ	pan tilt zoom
REST	REpresentational State Transfer (webservice)
RTSP	real time stream control protocol
SXGA	Super eXtended Graphics Adapter
TCP/IP	transmission control protocol/internet protocol
VRN	vehicle registration number
UAT	user acceptance testing
UDP	user datagram protocol
UPS	uninterruptible power supply
UTC	universal time coordinated
UV	ultra violet
VCA	video content analysis
VMS	video management system
VMD	video motion detection
WORM	write once read many
VSS	video surveillance system

4 General considerations

4.1 General considerations

A VSS is the combination of image capture devices, lighting, interconnections, image handling devices, etc. selected and installed to meet the customer's security surveillance requirements.

The recommended procedure for implementing a VSS is detailed in the following subclauses 4.2 to 4.8.

4.2 Risk assessment

4.2.1 General

Prior to VSS design, and to help understand its purpose, a threat assessment and risk analysis should be performed. The threats and hazards to the premises should be identified and assessed for their likelihood and impact. These represent the risk to the premises or organization.

A risk assessment should be carried out and the VSS should be designed to mitigate the assessed risks. VSS designs should be made in accordance with this standard.

NOTE ISO 31000:2009 describes the principles for the carrying out of a risk assessment.

There is no single model design for a VSS. The design should be based on the individual location and premises, the threats and content in these locations, and the anticipated threats or damage.

Examples of issues to be considered are included below:

- a) cost of loss:
 - 1) what is the value for example financial, intellectual, etc. of the contents at the location?
 - 2) what is the effect of disruption to activities at the location?
- b) location:
 - 1) what is the quality and extent of any existing physical security?
 - 2) is the location situated in a high crime risk area?
 - 3) are there adverse environmental conditions?
- c) occupancy:
 - 1) is the location unoccupied for extended periods?
 - 2) are there security guards?
 - 3) do the public have access to the location?
- d) theft, robbery and threat history:
 - 1) is there a history of thefts, robberies or threats at the location?
 - 2) and if so, what was the method of attack for any previous threat?

Results from this assessment are used to help to inform decisions about what type of VSS to specify and install.

4.2.2 Selection of security grades

The results of the risk assessment (see 4.2.1) should be used to determine the requirements of the VSS and its components. Where appropriate a security grade should be assigned to the components, sub-systems and functions of the VSS. The identified security grade requirements should be specified in the operational requirement (OR) and agreed by the customer and system designer.

The system shall be given an overall grade for which the grade dependent requirements of this standard shall apply. When identified by the OR, or system design proposal, the functions of the VSS may use a different grade but this shall be applied consistently throughout the system. This shall be recorded in the OR or system design proposal.

Depending on the level of risk, the security grade needs to be defined for the following VSS functions:

- a) common interconnections
- b) storage
- c) archiving and backup
- d) alarm related information
- e) system logs
- f) backup and restore of system data
- g) repetitive failure notification
- h) image handling device PSU monitoring
- i) image buffer holding time
- j) essential function device failure notification time
- k) monitoring of interconnections
- l) tamper detection
- m) authorisation code requirements
- n) time synchronisation
- o) data authentication
- p) export/copy authentication
- q) data labelling
- r) data (manipulation) protection

Individual functions of the VSS may be specified at different security grades: for example, a system generally specified at grade 1 with grade 4 storage including fail-safe image storage.

Any additional functions which are required above the security level may be defined individually in the OR.

4.3 Developing the operational requirements

The OR document shall be produced. This is a formal written statement of need, justifications and purpose of the proposed VSS. The installer should assess and determine whether production of the OR is to be completed before or after the site survey. See 5.2 for more details.

4.4 Site survey

Once a location has been chosen for a VSS installation a site survey should be undertaken. This is to familiarise the system designer with the specifics of the intended site, such as access constraints, siting of key components (cameras, controls, power supplies, etc.) and environmental factors including illumination in day and night mode (see Clause 6 for more details).

This should be completed by visiting the location to assess its suitability, and to note any issues for the system design phase.

If the location where the VSS is to be installed has not yet been constructed then the site survey may be carried out after a preliminary design has been created.

4.5 System design including site plan

Once the site survey and OR is completed the VSS can be designed and a system design proposal and specification needs to be prepared. The design shall take into account the various requirements and location factors identified in the previous stages. At this stage a site plan should be drawn up, including locations for the various key components such as cameras (including field of view), detectors (including range and coverage), control rooms, power supplies, interconnections, etc. See Clause 6 for more details.

4.6 Developing the test plan

Having designed the VSS, a test plan shall be produced to allow any installed system to be suitably proven. This test plan should include all the critical aspects of the VSS, such as image quality, system interconnectivity, coverage, camera view, etc. The purpose is to ensure that the system can be measured against its OR, and proved to be fit for its intended purpose. See Clause 13 for more information and 6.11.2 for tamper protection testing.

4.7 Installation, commission and hand over

The risk assessment, OR and system design (including a site plan) should all be used to help facilitate the VSS installation.

Having completed the installation, commissioning tests as specified in the test plan should be completed according to the OR.

Once this has been successfully completed the system can be formally handed from the installer to the owner. See Clause 15 for more details.

4.8 Documenting the system

Documentation should be completed supporting the design, installing and commissioning phases of the VSS. These should be collated and held by the owner as the system references. The risk assessment, OR, testing plan, site survey, system design and site plan (see Clauses 14 and 16) should be included, along with the following documents:

- testing results, as built plans/drawings, data interface descriptions;
- training, manuals, support documentation, etc.;
- maintenance plan including routine inspection cleaning, etc. (see Clause 17 for more details).

5 Operational requirements specifications

5.1 General

The purpose of the VSS installation shall be summarized in a document called "Operational Requirements". Further information can be found in the *CCTV operational requirements manual* (see Bibliography).

5.2 Purpose of the operational requirements

The operational requirements clearly state what the customer expects the functions of the system to do. If there is an agreement between the system designer and the customer, the OR could be defined within the system design proposal and specification. If so, this should be clearly stated within the document. The development/design process encourages clear thinking about who will use the VSS, where and when it will be used and, in particular, the purpose of the VSS. It is produced by VSS owners, operators and anyone who intends to use information from the VSS. The later stages of development of the OR shall involve those with the necessary skills to convert statements into a technical specification and test procedures.

At appropriate stages checks shall be made to ensure that the proposed implementation will meet the OR. Without an OR and a matching test procedure there is no practical methodology to assess whether the system can meet its required purpose.

5.3 Content of the operational requirements

5.3.1 General

The operational requirements shall consist of the following parts detailed in 5.3.2 to 5.3.16.

5.3.2 Basic objective/functionalities

The following basic functions shall be covered:

- Intended purpose(s) of the system (e.g. site monitoring, detection and/or monitoring and/or recording of attacks against individual and property, thefts, robberies or damage).
- Risk assessment, which informs the selection of the required security grade of the system according to IEC 62676-1-1.

5.3.3 Definition of surveillance limitations

The following limitations shall be covered:

- limitations imposed by legislation, city rules or similar orders;
- limitations such as privacy areas required by the customer or by the proximity of neighbours.

5.3.4 Definition of the site(s) under surveillance

Buildings, internal, external or separate areas, etc. which are covered by the VSS.

5.3.5 Definition of activity to be captured

The following activity definitions shall be covered:

- the intended targets of the system in each part of the site (e.g. unauthorized persons within an area bounded by a perimeter fence; vehicles entering the access driveway, etc.);
- the expected speed of the intended target;
- the intended observation category of the targets from the perspective of the operator (e.g. detection, recognition or identification of a person);
- whether external detection is required.

5.3.6 System/picture performance

The following performance parameters shall be covered:

- the key performance characteristics of the system and its displayed images (e.g. timescale for operator to view persons and track their movements throughout the scene);
- the degree of image detail required for the purpose which is to be observed in each of the live, recorded and exported views (i.e. it may be desirable or appropriate for a different resolution to be used in the live view than in the recorded view);
- definition of any image analysis functionality, together with expected accuracy and whether this is to be achieved by the operator or automatically by the system.

5.3.7 Period of operation

The following operation parameters shall be covered:

- definition of the operating hours for the system (e.g. daily between 21:00 and 08:00 and all day on Sundays and public holidays).

5.3.8 Conditions at the location

Definition of environmental conditions, which will apply and/or vary during the monitoring period and are significant in terms of system design (e.g. illumination of the site, potential obstacles in camera view, maximum and minimum temperatures, on-board).

5.3.9 Resilience

Definition of the ability of the system to continue operating despite the existence of adverse circumstances (e.g. ability to continue operating during sudden or unexpected loss of power for a significant or defined length of time, absence of single interconnection paths, whether all or parts of the system have the same requirement).

5.3.10 Monitoring and image storage

The following storage parameters shall be covered:

- definition of where, and by whom, the system shall be monitored and operated;
- definition of what is to be recorded (e.g. all images for 10 min before and after an event; all camera views at all times);
- definition of the retention period for recordings and circumstances in which this will change (e.g. all recorded images to be kept for, and erased after, 28 days except where they relate to a criminal event);
- definition of additional (remote) sites where the images shall be available;
- definition of procedures to be followed when extracting, storing and handling images and data from the system.

5.3.11 Exporting images

The following export parameters shall be covered:

- definition of how images will be exported for short sequences (e.g. a 10 min clip to be exported to WORM media; individual image snapshots exported to USB/IP storage device);
- definition of how images will be exported for long sequences (e.g. network download for full system archive);
- definition of required compatibility of exported media (e.g. sequences should be re-playable without the need for any software/codec/hardware that is not considered part of a standard desktop operating system).

5.3.12 Routine actions

Definition of actions that are required as a matter of normal routine (e.g. the monitoring service shall carry out routine video patrols at 2 h intervals throughout the monitoring period).

5.3.13 Operational response

The following response actions shall be covered:

- definition of the person responsible for the response (e.g. key holder, guarding service and/or police);
- definition of the type of response needed for each potential event (e.g. when a trespasser is observed the local law enforcement agency is contacted);
- definition of target times for each response (e.g. security personnel to attend scene within 3 min of event detection).

5.3.14 Operator workload

The following operator parameters shall be covered:

- definition of the number of display screens an operator is expected to monitor;
- definition of the number of alarm events the operator is expected to manage;
- definition of the number of live cameras the operator is expected to manage.

5.3.15 Training

Definition of required training for each role involved in the management and operation of the system.

5.3.16 Expansions

The following system expansions shall be covered:

- definition of any planned future extensions of the system, indicating any compatibility requirements;
- definition of method used to connect with other systems.

5.3.17 List of any other special factors not covered by the above

NOTE If the operational requirement (OR) cannot be met with current technology or resources it will be noted in the system design document.

5.4 System operational criteria

5.4.1 General

The system's operational criteria involve the determination of:

- the operational procedures;
- the alarm response;
- the system response times.

5.4.2 Automation

The VSS shall be designed to enable the operator to analyse the content of the displayed images and take all necessary actions as defined by the OR.

Automatic processing can assist operators allowing them to concentrate on essential tasks.

Automation of the following functions shall be considered:

- video image switching;
- pre-position of image capture devices;
- equipment monitoring, health check and recording process;
- video content analysis;
- lighting control;
- image storage.

Some of the above functions can be controlled from:

- alarm conditions,
- externally triggered events,
- time related events,

- operator manual activations.

5.4.3 Alarm response

The signalling indication of an alarm condition to the VSS shall have priority over other events.

It should be defined in the OR whether or not the operator shall be able to take manual control of the system, following an alarm condition, regardless of the degree of automation.

Automation of image selection shall consider the following requirements:

- specification for the selection of the significant images/sequences in each area where an alarm condition occurs;
- allocation of displays to view the significant images/sequences from the selected image capture devices; on-screen displays with image source identification or animated diagrams of the system can be useful;
- presentation of alarm images on designated displays;
- handling of simultaneous alarm conditions;
- selection of image storage criteria.

5.4.4 System response times

The following response times shall be kept to an acceptable and specified minimum:

- time elapsing between the generation of an alarm condition and it being indicated on the VSS presentation device;
- switching time for the control centre to acknowledge receipt of an alarm;
- image capture device pre-positioning if functions like zoom and/or pan and tilt are specified;
- display equipment start up time or change from time lapse mode to normal mode if a time lapse recording is specified;
- change from continuous to alarm recording mode;
- operator's response time if required.

In order to minimise response times, image capture devices, displays, recording devices, etc. shall be continuously powered and idle, and the system shall not generate more information than the operator can effectively manage.

The expected responses to the operator's actions should be defined in the OR.

If the performance is low, due to a high alarm rate or high image flow, the graphic displays shall still appear "normal" and the system shall be able to allocate more resources to keep a proper response to the operator's actions.

Acceptable system response times should be defined in the OR based on the viewing task and operational response, as shown in Table 1, for example:

- a system response shall always appear within 0 s to 0,2 s;
- a system response is considered delayed if the time is higher than 0,2 s;
- a system response is considered unacceptable if the response time to the operator's action is longer than 2 s.

EXAMPLE PTZ Control for tracking targets.