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Video surveillance systems for use in security applications - Part 4: Application guidelines

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CONTENTS

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Video surveillance systems for use in security applications - Part 4: Application guidelines

FOREWORD

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

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) implementing request for define a security concept (instead of just a risk analysis) (4.2);
b) selection of security grades (4.2.3);

c) complete redefinition of pixel densities (6.7) including new test charts (Annex C):
   – upgrade of previous MDORII system with 6 pixel densities (12,5 pixels/meter; 25 pixels/meter; 62,5 pixels/meter ; 125 pixels/meter; 250 pixels/meter; 1 000 pixels/meter) into new O2DCPVS system with 7 pixel densities (20 pixels/meter; 40 pixels/meter; 80 pixels/meter; 125 pixels/meter; 250 pixels/meter; 500 pixels/meter; 1 500 pixels/meter
d) operation of VSS (Clause 17);
e) security grading by size view (Annex D, Table D.2);
f) security grading by application (Annex D, Table D.3);
g) security grading by critical infrastructure (Annex D, Table D.4);
h) tables for number of frames depending on object speed (Annex D, Table D.5 and Table D.6);
i) general updates of tables in entire document.

The text of this International Standard is based on the following documents:

Draft	Report on voting
79/727/FDIS	79/732/RVD

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

The language used for the development of this International Standard is English

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

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

1 Scope

This part of IEC 62676 describes the planning, design, installation, testing, commissioning, and maintaining of video surveillance systems (VSS) comprising image capture device(s), interconnection(s) and image handling device(s), for use in security applications within private or public spaces.

The objectives of this document are to:

a) provide a framework to assist all interested parties 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 are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 62676-1-1:2013, *Video surveillance systems for use in security applications - Part 1-1: System requirements - General*

IEC 62676-1-2:2013, *Video surveillance systems for use in security applications - Part 1-2: System requirements - Performance requirements for video transmission*

IEC 62676-2 (all parts), *Video surveillance systems for use in security applications - Part 2-X: Video transmission protocols*

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

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

IEC 62820-2, *Building intercom systems - Part 2: Requirements for advanced security building intercom systems (ASBIS)*

IEC 62820-3-2, *Building intercom systems - Part 3-2: Application guidelines - Advanced security building intercom systems (ASBIS)*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

3.1.1
4K
UHD
standard for ultra high-definition television (UHDTV) defined by SMPTE 2036 to be with 3 840 pixels × 2 160 pixels at 25 fps or 30 fps

3.1.2
8K
UHD
standard for ultra high-definition television (UHDTV) defined by SMPTE 2036 to be with 7 680 pixels × 4 320 pixels at 25 fps or 30 fps

3.1.3
at-site visual check
activity to determine and assess the feasibility of implementing the safety concept per camera location to be monitored as well as checks of visible disturbances and defects at site on the monitoring tasks of a VSS that are not evaluated operationally and whether there are deviations from the function of the VSS required in the safety concept

Note 1 to entry: In particular for influences occurring outside of VSS system parts.

Note 2 to entry: The at-site visual check is the responsibility of the operator, who can, however, hand over the inspection to a competent person VSS or to a competent system engineer VSS.

3.1.4
camera housing
enclosure to provide both physical and environmental protection of the camera, lens and ancillary equipment

3.1.5
camera sensitivity
image capturing device capability to produce an image in certain light conditions

3.1.6
characterise
defined functional purpose of a VSS camera to enable characterisation of a target, e.g. person (type of person, gait and action can be characterised) and vehicles (vehicle brand can be characterised) with a pixel density of > 250 pixels/meter

3.1.7
competent person VSS
person who has been instructed by a competent system engineer VSS about the assigned tasks within the scope of the on-site check and the possible dangers and consequences of improper behaviour

Note 1 to entry: This includes the necessary knowledge for the assessment of the object requirements, with regard to the type of danger and the required function of the VSS, the influence of the use as well as the limits of use and the instruction about the security concept of the video surveillance system, about existing requirements as well as legal requirements or requirements of the operator from safety aspects as personal and property protection measures or to avoid personal injury.

Note 2 to entry: The task requires competences for independent planning and processing of the requirements from the at-site visual check as well as in-depth general knowledge and specialist theoretical knowledge in order to be able to assess to what extent environmental or object changes can influence the effectiveness of a video surveillance system. The recognition of possible interactions from other requirements as well as the development of alternative actions is necessary. Detected deviations shall be securely justified, responsibly communicated and, if necessary, retracted if no other problem solutions can be found.

3.1.8
competent system engineer VSS
person who, on the basis of professional technical training, knowledge and experience as well as knowledge of the relevant standards, regulations and directives, is able to assess the work to be carried out and recognise possible hazards

Note 1 to entry: A competent system engineer VSS can be employed by either an installation company/system integrator company, project planning company or at owner or at user of the VSS.

Note 2 to entry: For the field of video surveillance systems, training from the spectrum of electrical engineering in the field of communications, information, microprocessor, measurement and control or general electrical engineering is required, and experience in the respective other fields as well as system knowledge of video security technology shall be demonstrated. Qualification of competence for VSS knowledge can be proven by training certificates of e.g., local security associations or vendors of VSS.

Note 3 to entry: Several years of activity in the relevant fields of work can also be used to assess the professional training.

Note 4 to entry: The activity requires the ability to independently plan and process comprehensive technical tasks in a complex, specialised, changing environment. Integrated technical knowledge and in-depth theoretical knowledge of the subject shall be available. The scope and limits of the possible applications of a video surveillance system shall be known. A very broad spectrum of specialised cognitive and practical skills is required. Work processes are to be planned in a comprehensive manner and assessed with comprehensive consideration of handling alternatives and interactions with neighbouring areas. The competence to guide others and to support them with well-founded learning guidance shall be given. Interdisciplinary complex issues shall be presented in a structured, target-oriented and addressee-related manner. Own and externally set learning and working goals shall be reflected upon, evaluated, pursued in a self-directed manner and answered.

3.1.9
constant bit rate
bit rate of a camera stream kept constant regardless of the image quality or movement in the scene

3.1.10
corrective maintenance
maintenance carried out after failure detection to restore a VSS to a condition in which it can perform its required function

Note 1 to entry: Corrective maintenance corresponds to repair and serves as a corrective measure after a failure has been detected.

3.1.11
discern
defined functional purpose of a VSS camera to enable discerning of a target, e.g. objects and their movements with a pixel density of > 80 pixels/meter

3.1.12
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

3.1.13
electronic shutter
arrangement in the camera changing its sensitivity by electronically controlling its exposure time

3.1.14
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.

3.1.15
external synchronisation
method of feeding reference timing signals to all connected devices to ensure that their video output signals are synchronous

3.1.16
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

3.1.17
geo data
digital information assigning a certain spatial location to the earth's surface

3.1.18
High Definition
HD
contemporary television standard with 1 920 pixels × 1 080 pixels, interlaced (1 080i) or progressive (1 080p), as defined by SMPTE 274, and with 1 280 pixels × 720 pixels, progressive (720p), as defined by SMPTE 296

3.1.19
imaging device
device that converts an optical image into an electrical signal

3.1.20
imaging device illumination
level of illumination at the photosensitive surface of the imaging device

3.1.21
improvement
additions or changes to a VSS that improve the reliability or functional safety of a VSS during operation without changing its original function

Note 1 to entry: An improvement shall be carried out by a competent system engineer VSS and shall be documented in the operating logbook VSS. An improvement can be, for example, a firmware or software update.

3.1.22
inspection (part of preventive maintenance)
testing for conformity of the relevant characteristics of a VSS by measurement, observation and testing

Note 1 to entry: The checking of all system parts for technical functionality of the VSS is done according to general manufacturer-independent criteria.

Note 2 to entry: An inspection shall be carried out by a competent system engineer VSS and shall be documented in the operating logbook VSS.

3.1.23
instructed person
person who has been instructed in the tasks required for the operation of a VSS by a competent system engineer VSS and is capable of independently operating the VSS

Note 1 to entry: These tasks include the implementation or initiation of protective measures and other measures to avert danger in the event of shutdown or malfunction of plant components as well as the initiation of fault rectification or maintenance in the event of impairments.

Note 2 to entry: The tasks presuppose the competences to independently fulfil technical requirements in a still manageable field of activity, as well as extended general knowledge and extended expert knowledge with regards to the function of VSS and the organizational measures associated with their operation. Furthermore, it is necessary to always keep the level of knowledge about VSS up to date through independent and responsible learning.

3.1.24
iris
variable aperture mechanism which regulates the amount of light passing through the lens onto the imaging device of the VSS camera

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
maintenance
combination of all technical and administrative measures during the life cycle of a VSS that serves to maintain or restore it to a functional state so that it can fulfil the required function

Note 1 to entry: Maintenance includes the preventive measures of inspection and service checks as well as the corrective measures of repair and improvement. Maintenance is usually carried out on site; certain maintenance measures can also take place as "remote maintenance" by means of remote access with the consent of the operator. Remote maintenance shall be documented in the operating logbook VSS. Maintenance measures shall be carried out by a competent system engineer VSS.

3.1.27
maintenance company
company, who employs competent system engineer VSS that can carry out all maintenance measures, at-site visual checks as well as system extensions and modifications and that has a 24/7 on-call service, the necessary spare parts and the required equipment

3.1.28
National Television Systems Committee
NTSC
US standardisation for analogue television

3.1.29
NTSC resolution
US standard resolution for analogue television produced by a 525 interlaced scanning system at 29,97 TV frames per second

Note 1 to entry: When digitised, using the ITU-R BT601 recommendation, the NTSC analogue video signal is converted to 720 × 480 pixels at 30 TV frames per second.

3.1.30
ONVIF
Open Network Video Interface Forum
open industry forum that provides and promotes standardized interfaces for effective interoperability of IP-based physical security products

3.1.31
operating logbook VSS
logbook handed to the operator by the competent system engineer VSS, in which all activities on the VSS will be continuously recorded during the entire lifecycle of the VSS

Note 1 to entry: This includes, among other things, all briefings, the handover of the VSS, all operating events such as malfunctions, hazard alarms and false alarms as well as their causes, all maintenance carried out (preventive: inspections and service checks as well as corrective: repair) and all modifications and improvements to the VSS.

Note 2 to entry: In the operating logbook VSS, the competent system engineer VSS shall refer to the required at-site visual checks and maintenance as well as to the operator's obligation to keep the logbook. The operating logbook VSS shall be kept by the operator or by an instructed person.

3.1.32
operational requirements
OR
formal written statement of need, justifications and purpose of the proposed VSS

3.1.33
operator
person responsible for the operation of the VSS and for the effectiveness of the VSS as well as for scheduled, fault-free functioning during the lifecycle of the VSS

Note 1 to entry: The operator is responsible for regular at-site visual check and maintenance of the VSS. The term operator is used because the owner of the building/property does not have to be the user of the VSS at the same time

3.1.34
outline
defined functional purpose of a camera to enable outlining of a target, e.g. objects and their movements with a pixel density of > 40 pixels/meter

3.1.35
overview
defined functional purpose of a camera to enable overview of a target, e.g. objects and their movements with a pixel density of > 20 pixels/meter

3.1.36
PAL
Phase Alternating Line
European based standardisation for analogue television

3.1.37
PAL resolution
European standard resolution for analogue television produced by a 625 interlaced scanning system at 25 TV frames per second

Note 1 to entry: When digitised, using the ITU-R BT601 recommendation, the PAL analogue video signal is represented with 720 pixels × 576 pixels at 25 TV frames per second

3.1.38
pan and tilt unit
motorised unit permitting the horizontal and vertical positioning of the camera equipment

3.1.39
pan, tilt, zoom
PTZ
function of a camera control permitting the horizontal, vertical positioning of the camera together with the variation of the focal length of the lens

3.1.40
perceive
defined functional purpose of a camera to enable perceiving of a target, e.g. objects and their movements with a pixel density of > 125 pixels/meter

3.1.41
picture storage
storing of still or video images