





**TURVARAKENDUSTES KASUTATAVAD  
VIDEOVALVESÜSTEEMID. OSA 3: ANALOOG- JA  
DIGITAALVIDEOLIIDISED**

**Video surveillance systems for use in security  
applications - Part 3: Analog and digital video interfaces  
(IEC 62676-3:2013)**

**EESTI STANDARDI EESSÕNA****NATIONAL FOREWORD**

See Eesti standard EVS-EN 62676-3:2015 sisaldab Euroopa standardi EN 62676-3:2015 ingliskeelset teksti ja selle paranduse AC:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 62676-3:2015 consists of the English text of the European standard EN 62676-3:2015 and its corrigendum AC:2018.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.  Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 23.01.2015.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.  Date of Availability of the European standard is 23.01.2015.
Parandusega AC lisatud või muudetud teksti algus ja lõpp on tekstis ära märgitud märgenditega   .  Selles standardis on rahvusvahelise standardi ühismuudatused tähistatud püstkriipsuga teksti välimisel veerisel.  Standard on kättesaadav Eesti Standardikeskusest.	The start and finish of text introduced or altered by amendment AC is indicated in the text by symbols   .  Common modifications have been incorporated into this international standard and changes have been marked by a vertical line on the outer row of the page.  The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 13.320

**Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele**

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega: Koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

**The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation**

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

English Version

Video surveillance systems for use in security applications -  
Part 3: Analog and digital video interfaces  
(IEC 62676-3:2013)

Systèmes de vidéosurveillance destinés à être utilisés  
dans les applications de sécurité -  
Partie 3: Interfaces vidéo analogiques et vidéo numériques  
(IEC 62676-3:2013)

Videoüberwachungsanlagen für Sicherungsanwendungen -  
Teil 3: Analoge und digitale Videoschnittstellen  
(IEC 62676-3:2013)

This European Standard was approved by CENELEC on 2015-01-05. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

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

## Foreword

This document (EN 62676-3:2015) consists of the text of IEC 62676-3:2013 prepared by IEC/TC 79 "Alarm and electronic security systems".

AC This document supersedes EN 50132-5-3:2012. AC

The following dates are fixed:

- latest date by which the document has to be implemented (dop) 2016-01-05  
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) 2018-01-05

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

## Endorsement notice

The text of the International Standard IEC 62676-3:2013 was approved by CENELEC as a European Standard without any modification.

This document is a preview generated by EVS

## CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references .....	8
3 Terms, definitions and abbreviations .....	8
3.1 Terms and definitions .....	8
3.2 Abbreviations .....	12
4 General information .....	13
4.1 General principles .....	13
4.2 Physical interfaces .....	14
4.2.1 General .....	14
4.2.2 Camera signal interface.....	14
4.2.3 Display equipment video interface .....	15
4.2.4 Video processing and control equipment interface .....	16
4.2.5 Video/audio encoder/decoder interface.....	16
4.2.6 Fiber optical transmission equipment interface .....	17
4.2.7 Wireless transmission equipment interface .....	17
4.2.8 Alarm equipment interface .....	17
4.3 Software interfaces for network access layer .....	17
5 Electrical interfaces .....	17
5.1 General.....	17
5.2 Analog video signal interface.....	18
5.2.1 Composite video.....	18
5.2.2 Y/C video.....	18
5.2.3 YPbPr analog component video .....	18
5.2.4 RGB analog component video .....	18
5.3 Digital video signal interface.....	20
5.3.1 HDMI.....	20
5.3.2 DVI.....	20
5.3.3 DisplayPort (DP).....	20
5.3.4 SDI video.....	21
5.4 Control signal interface.....	21
5.4.1 RS-232.....	21
5.4.2 RS-485.....	21
6 Detailed analog (composite) video signal transmission requirements .....	21
6.1 General.....	21
6.2 Video input and output .....	21
6.2.1 Source and load impedance .....	21
6.2.2 Return loss .....	21
6.2.3 Input and output signal levels .....	21
6.2.4 Input signal frequency .....	22
6.2.5 Input and output DC voltage .....	22
6.3 Insertion gain .....	22
6.4 Signal to noise ratio.....	22
6.5 Interference.....	22
6.6 Luminance non-linearity .....	23

6.7	Chrominance to luminance gain inequality .....	23
6.8	Chrominance to luminance delay inequality .....	23
6.9	Differential gain .....	23
6.10	Differential phase .....	23
7	Analog video signal transmission test conditions .....	23
7.1	General .....	23
7.2	Test equipment .....	23
7.2.1	General .....	23
7.2.2	Test equipment .....	23
7.2.3	Test signals .....	23
7.2.4	Equipment set-up .....	24
7.3	Laboratory conditions .....	24
8	Analog video signal transmission performance tests .....	24
8.1	Input and output signal levels .....	24
8.1.1	Principle .....	24
8.1.2	Preparation of the test .....	24
8.1.3	Test procedure .....	24
8.1.4	Criterion for compliance .....	24
8.2	Insertion gain .....	25
8.2.1	Principle .....	25
8.2.2	Preparation of the test .....	25
8.2.3	Test procedure .....	25
8.2.4	Criterion for compliance .....	25
8.3	Input and output impedance .....	25
8.3.1	Principle .....	25
8.3.2	Preparation of the test .....	25
8.3.3	Test procedure .....	25
8.3.4	Criterion for compliance .....	26
8.4	DC voltage at the output .....	26
8.4.1	Principle .....	26
8.4.2	Preparation of the test .....	26
8.4.3	Test procedure .....	27
8.4.4	Criterion for compliance .....	27
8.5	Chrominance to luminance gain and delay inequality .....	27
8.5.1	Principle .....	27
8.5.2	Preparation of the test .....	27
8.5.3	Test procedure .....	27
8.5.4	Criterion for compliance .....	27
8.6	Signal to noise ratio .....	27
8.6.1	Principle .....	27
8.6.2	Preparation of the test .....	27
8.6.3	Test procedure .....	28
8.6.4	Criterion for compliance .....	28
8.7	Interference .....	28
8.7.1	Principle .....	28
8.7.2	Preparation of the test .....	28
8.7.3	Test procedure .....	28
8.7.4	Criterion for compliance .....	28

8.8	Luminance non-linearity .....	28
8.8.1	Principle .....	28
8.8.2	Preparation of the test .....	28
8.8.3	Test procedure .....	28
8.8.4	Criterion for compliance.....	29
8.9	Differential gain .....	29
8.9.1	Principle .....	29
8.9.2	Preparation of the test .....	29
8.9.3	Test procedure .....	29
8.9.4	Criterion for compliance.....	29
8.10	Differential phase .....	29
8.10.1	Principle .....	29
8.10.2	Preparation of the test .....	29
8.10.3	Test procedure .....	29
8.10.4	Criterion for compliance.....	29
8.11	Documentation .....	29
Annex A (normative)	Test patterns.....	31
Annex B (normative)	Chrominance to luminance gain and delay charts.....	34
Annex ZA (normative)	Normative references to international publications with their corresponding European publications .....	36
Bibliography	.....	37
Figure 1	– Interface hierarchy of analog and digital video device .....	13
Figure 2	– Connection scheme of VSS devices .....	14
Figure 3	– Impedance measuring circuit.....	26
Figure A.1	– Signal A.....	31
Figure A.2	– Signal B.....	31
Figure A.3	– Signal C.....	32
Figure A.4	– Signal D1.....	32
Figure A.5	– Signal D2.....	33
Figure A.6	– Signal E.....	33
Figure B.1	– Chrominance to luminance amplitude and delay errors .....	34
Figure B.2	– The Rosman nomogram .....	35
Table 1	– Summary of display monitor timings – Standards and guidelines.....	19



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## VIDEO SURVEILLANCE SYSTEMS FOR USE IN SECURITY APPLICATIONS –

### Part 3: Analog and digital video interfaces

#### FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62676-3 has been prepared by technical committee 79: Alarm and electronic security systems.

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

FDIS	Report on voting
79/417/FDIS	79/429/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 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.

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.

This document is a preview generated by EVS

## INTRODUCTION

The IEC Technical Committee 79 in charge of alarm and electronic security systems together with many governmental organizations, 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 systems is divided into four 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 on scope, references, definitions and requirements.

This IEC Standard Part 3 of IEC 62676 specifies physical, electrical interface and software specifications of analog and digital video interfaces in Video Surveillance Systems (VSS), so far called Closed Circuit Television (CCTV).

For analog video interfaces, analog video signal such as Composite Video is still the most commonly used interface among Video Surveillance Systems equipment. Though broadcast television industry has adopted composite video standards (e.g. NTSC, PAL), they have not been consistently applied for Video Surveillance Systems applications and it is important to standardize the interface to ensure interoperability between Video Surveillance Systems.

Also, as broadcast is moving towards digital, there are many possibilities to improve the performance with these new Video Interfaces compared to conventional Analog Video Interface, and thus it is important to standardize those new Analog Video interface and also Digital Video Interface to ensure interoperability among Video Surveillance Systems using these new interfaces.

For digital video interface, IEC 62676-1-2, IEC 62676-2-1, IEC 62676-2-2 and IEC 62676-2-3 focus on video transmission and compressed IP video transmissions by specifying internet (IP) and higher layers. IEC 62676-3 completes the communication layer specification by describing uncompressed digital video and two lowest layer protocols such as physical and network access.

## VIDEO SURVEILLANCE SYSTEMS FOR USE IN SECURITY APPLICATIONS –

### Part 3: Analog and digital video interfaces

#### 1 Scope

This Part of IEC 62676 specifies physical, electrical and software interface (non-IP) specifications of analog and digital video interface in video surveillance systems (so far called CCTV) applications. Video interfaces are used both for connection and transmission of surveillance video, audio and control signals. Through video interfaces, video surveillance systems can be put together by connecting various components such as image capturing devices, image handling devices, etc. This International Standard ensures interoperability among various video surveillance components.

This International Standard applies strictly to Video Surveillance Systems. This standard is based on broadcast television standards and other standards, and it defines the minimum requirements for analog and digital video interfaces to meet VSS's requirements, interoperability and de facto practice.

#### 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 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 62315-1:2003, *DTV profiles for uncompressed digital video interfaces – Part 1: General*

VESA Industry Standards & Guidelines for Computer Display Monitor Timing (DMT) Version 1 Revision 11

VESA Video Signal Standard (VSIS) Version 1, Rev. 2

#### 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 analog

a form of information that is represented by a continuous and smoothly varying amplitude or frequency changes over a certain range

###### 3.1.2 analog bandwidth

the difference between the upper and lower frequencies in a contiguous set of frequencies

Note 1 to entry: It is expressed in cycles per second, or Hertz (Hz).