

Audio, video and multimedia systems and equipment -  
Digital television accessibility - Functional  
specifications

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

|                                                                                                                     |                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| See Eesti standard EVS-EN 62944:2017 sisaldab Euroopa standardi EN 62944:2017 ingliskeelset teksti.                 | This Estonian standard EVS-EN 62944:2017 consists of the English text of the European standard EN 62944:2017.                      |
| Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas                                                   | This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation. |
| Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 16.06.2017. | Date of Availability of the European standard is 16.06.2017.                                                                       |
| Standard on kättesaadav Eesti Standardikeskusest.                                                                   | 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 11.180.99, 33.160.01, 35.240.95

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)

ICS 11.180.99; 33.160.01; 35.240.95

English Version

**Audio, video and multimedia systems and equipment - Digital  
television accessibility - Functional specifications  
(IEC 62944:2016)**

Systèmes et équipements audio, vidéo et multimédia -  
Accessibilité à la télévision numérique - Spécifications  
fonctionnelles  
(IEC 62944:2016)

Barrierefreiheit des digitalen Fernsehens - Funktionale  
Festlegungen  
(IEC 62944:2016)

This European Standard was approved by CENELEC on 2017-01-20. 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, Serbia, 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**

## European foreword

The text of document 100/2640/CDV, future edition 1 of IEC 62944, prepared by Technical Area 16 “Active assisted living (AAL), accessibility and user interfaces” of IEC/TC 100 “Audio, video and multimedia systems and equipment” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62944:2017.

The following dates are fixed:

- latest date by which the document has to be (dop) 2017-12-16  
implemented at national level by  
publication of an identical national  
standard or by endorsement
- latest date by which the national (dow) 2020-06-16  
standards conflicting with the  
document have to be withdrawn

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

## Endorsement notice

The text of the International Standard IEC 62944:2016 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 60118-4:2014 | NOTE | Harmonized as EN 60118-4:2015.  |
| ISO 7731:2003    | NOTE | Harmonized as EN ISO 7731:2008. |

## 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](http://www.cenelec.eu).

| <u>Publication</u> | <u>Year</u> | <u>Title</u>                                                                                     | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|--------------------------------------------------------------------------------------------------|--------------|-------------|
| IEC 62731          | 2013        | Text-to-speech for television - General requirements                                             | EN 62731     | 2013        |
| ISO 7001           | 2007        | Graphical symbols_ - Public information symbols                                                  | -            | -           |
| ISO 24500          | 2010        | Ergonomics_ - Accessible design_ - Auditory signals for consumer products                        | EN ISO 24500 | 2010        |
| ISO 24501          | 2010        | Ergonomics - Accessible design - Sound pressure levels of auditory signals for consumer products | EN ISO 24501 | 2010        |
| ISO 24503          | 2011        | Ergonomics - Accessible design - Tactile dots and bars on consumer products                      | EN ISO 24503 | 2011        |

## CONTENTS

|                                                                     |    |
|---------------------------------------------------------------------|----|
| FOREWORD .....                                                      | 5  |
| 1 Scope .....                                                       | 7  |
| 2 Normative references .....                                        | 7  |
| 3 Terms, definitions and abbreviated terms .....                    | 7  |
| 3.1 Terms and definitions .....                                     | 7  |
| 3.2 Abbreviated terms .....                                         | 9  |
| 4 General .....                                                     | 10 |
| 4.1 Overview .....                                                  | 10 |
| 4.2 Objective .....                                                 | 10 |
| 4.3 Summary .....                                                   | 10 |
| 4.4 Principles .....                                                | 11 |
| 4.5 Considerations .....                                            | 11 |
| 5 Accessibility related to auditory perception .....                | 11 |
| 5.1 Overview .....                                                  | 11 |
| 5.2 Essential functions .....                                       | 11 |
| 5.2.1 List of functions .....                                       | 11 |
| 5.2.2 Closed captioning .....                                       | 12 |
| 5.2.3 Subtitles .....                                               | 12 |
| 5.2.4 (Open) Sign language .....                                    | 12 |
| 5.3 Additional functions .....                                      | 13 |
| 6 Accessibility related to visual perception .....                  | 13 |
| 6.1 Overview .....                                                  | 13 |
| 6.2 Essential functions .....                                       | 13 |
| 6.2.1 List of functions .....                                       | 13 |
| 6.2.2 Audio description .....                                       | 14 |
| 6.2.3 Spoken subtitles .....                                        | 14 |
| 6.3 Additional functions .....                                      | 14 |
| 6.4 Solutions for users with little or no visual perception .....   | 14 |
| 6.4.1 Physical buttons and keys .....                               | 14 |
| 6.4.2 Assistive speech .....                                        | 16 |
| 6.4.3 Tone-based feedback .....                                     | 17 |
| 6.4.4 Speech recognition .....                                      | 18 |
| 6.5 Solutions for users with low visual perception .....            | 18 |
| 6.5.1 Overview .....                                                | 18 |
| 6.5.2 Large fonts, icons, and buttons .....                         | 18 |
| 6.5.3 Screen magnifier .....                                        | 19 |
| 6.5.4 Arrows .....                                                  | 20 |
| 6.5.5 High contrast .....                                           | 20 |
| 6.5.6 Background images .....                                       | 20 |
| 6.6 Solutions for those with limited colour vision perception ..... | 20 |
| 7 Accessibility related to mobility .....                           | 20 |
| 7.1 Overview .....                                                  | 20 |
| 7.2 Functions .....                                                 | 21 |
| 7.2.1 General .....                                                 | 21 |
| 7.2.2 Single hand operation .....                                   | 21 |
| 7.2.3 Single button operation .....                                 | 21 |

|                       |                                                            |    |
|-----------------------|------------------------------------------------------------|----|
| 7.2.4                 | Resting the remote control on a surface .....              | 21 |
| 7.2.5                 | Angle of use .....                                         | 21 |
| 8                     | Accessibility related to cognitive abilities .....         | 21 |
| 8.1                   | Overview.....                                              | 21 |
| 8.2                   | Language.....                                              | 22 |
| 8.3                   | Icons.....                                                 | 22 |
| 8.4                   | Labels.....                                                | 22 |
| 8.5                   | Buttons .....                                              | 22 |
| 8.6                   | Use of red .....                                           | 22 |
| 8.7                   | Simplicity .....                                           | 22 |
| 9                     | Accessibility related all (other) perception .....         | 22 |
| 9.1                   | Setup.....                                                 | 22 |
| 9.1.1                 | Overview .....                                             | 22 |
| 9.1.2                 | Entering account and authorisation information .....       | 23 |
| 9.1.3                 | Suggested sequence for initial setup .....                 | 23 |
| 9.2                   | Content search .....                                       | 24 |
| Annex A (informative) | Remote controls and buttons .....                          | 26 |
| Annex B (informative) | On screen display .....                                    | 28 |
| Annex C (informative) | Content .....                                              | 29 |
| C.1                   | General.....                                               | 29 |
| C.2                   | Closed captioning .....                                    | 29 |
| C.3                   | Spoken subtitles .....                                     | 29 |
| C.4                   | Subtitles .....                                            | 29 |
| C.5                   | (Open) Sign language .....                                 | 30 |
| Annex D (informative) | External devices.....                                      | 31 |
| D.1                   | Overview.....                                              | 31 |
| D.2                   | Pairing with external devices.....                         | 31 |
| D.3                   | External audio/headphone connections .....                 | 32 |
| D.4                   | Support for USB human interface input/output devices ..... | 32 |
| Annex E (informative) | Background .....                                           | 33 |
| E.1                   | Widest range of users .....                                | 33 |
| E.2                   | Context of use .....                                       | 33 |
| E.3                   | Accessibility considerations .....                         | 34 |
| E.4                   | Accessibility principles .....                             | 34 |
| E.4.1                 | General .....                                              | 34 |
| E.4.2                 | Functional equivalency .....                               | 35 |
| E.4.3                 | User interface accessibility .....                         | 35 |
| E.4.4                 | Content accessibility .....                                | 35 |
| E.4.5                 | Accessibility through external solutions .....             | 36 |
| E.4.6                 | Evaluating accessibility and usability .....               | 36 |
| E.4.7                 | Multi-modality .....                                       | 37 |
| Annex F (informative) | Brief user profile outline .....                           | 38 |
| F.1                   | Preliminary remarks .....                                  | 38 |
| F.2                   | Key demographic groups .....                               | 38 |
| F.2.1                 | Blind and partially sighted people .....                   | 38 |
| F.2.2                 | People with colour blindness .....                         | 39 |
| F.2.3                 | Deaf and hard of hearing people.....                       | 39 |
| F.2.4                 | People with physical disabilities.....                     | 40 |

|                       |                                                                                           |    |
|-----------------------|-------------------------------------------------------------------------------------------|----|
| F.2.5                 | People with cognitive disabilities .....                                                  | 40 |
| F.2.6                 | Older people .....                                                                        | 41 |
| F.3                   | Key statistics .....                                                                      | 41 |
| Annex G (informative) | Guidance on use of colours .....                                                          | 42 |
| Annex H (informative) | User abilities, characteristics and preferences – Environment<br>and context of use ..... | 43 |
| Annex I (informative) | Future access services .....                                                              | 44 |
| Annex J (informative) | FCC user interface rules .....                                                            | 45 |
| Bibliography          | .....                                                                                     | 46 |
| Figure 1              | – Recommended layout of numeric keys .....                                                | 16 |
| Figure A.1            | – Layout of numeric keys in Japan .....                                                   | 27 |
| Table H.1             | – User abilities, characteristics and preferences .....                                   | 43 |

This document is a preview generated by EVS