

STN	Audio-, video- a podobné zariadenia Určenie spotreby energie Časť 3: Televízne zostavy	STN EN IEC 62087-3 36 7004
------------	-------------------------------------------------------------------------------------------------------------------	----------------------------------------------------

Audio, video, and related equipment - Determination of power consumption - Part 3: Television sets

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 05/23

Obsahuje: EN IEC 62087-3:2023, IEC 62087-3:2023

Oznámením tejto normy sa od 24.03.2026 ruší
STN EN 62087-3 (36 7004) z augusta 2016

136891



EUROPEAN STANDARD

EN IEC 62087-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2023

ICS 33.160.10

Supersedes EN 62087-3:2016

English Version

**Audio, video, and related equipment - Determination of power consumption - Part 3: Television sets
(IEC 62087-3:2023)**

Appareils audio, vidéo et matériel connexe - Détermination de la consommation de puissance - Partie 3: Téléviseurs
(IEC 62087-3:2023)

Audio-, Video- und verwandte Geräte - Messverfahren für die Leistungsaufnahme - Teil 3: Fernsehgeräte
(IEC 62087-3:2023)

This European Standard was approved by CENELEC on 2023-03-24. 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 62087-3:2023 (E)

European foreword

The text of document 100/3772/CDV, future edition 2 of IEC 62087-3, prepared by Technical Area 12 "AV energy efficiency and smart grid applications" 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 IEC 62087-3:2023.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-12-24
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2026-03-24

This document supersedes EN 62087-3:2016 and all of its amendments and corrigenda (if any).

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.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62087-3:2023 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 standard indicated:

IEC 62087-4 NOTE Approved as EN 62087-4

IEC 62087-5 NOTE Approved as EN 62087-5

IEC 62087-6 NOTE Approved as EN 62087-6

IEC 62542 NOTE Approved as EN 62542



IEC 62087-3

Edition 2.0 2023-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Audio, video, and related equipment – Determination of power consumption –
Part 3: Television sets**

**Appareils audio, vidéo et matériel connexe – Détermination de la consommation
de puissance –
Partie 3: Téléviseurs**





THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2023 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC -

webstore.iec.ch/advsearchform

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, ...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 300 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 19 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.



IEC 62087-3

Edition 2.0 2023-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Audio, video, and related equipment – Determination of power consumption –
Part 3: Television sets**

**Appareils audio, vidéo et matériel connexe – Détermination de la consommation
de puissance –
Partie 3: Téléviseurs**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 33.160.10

ISBN 978-2-8322-6478-2

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references	8
3 Terms, definitions, and abbreviated terms	8
3.1 Terms and definitions.....	9
3.2 Abbreviated terms.....	11
4 Specification of operating modes and functions	12
4.1 Table of operating modes and functions.....	12
4.2 Configurations and picture settings	13
4.2.1 Conceptual framework	13
4.2.2 Selection of normal configuration.....	14
4.2.3 Selection of retail configuration.....	14
5 Measurement conditions.....	15
5.1 General.....	15
5.2 Power source.....	15
5.3 Environmental conditions	15
5.4 Ambient light conditions	15
5.5 Measuring equipment.....	15
5.5.1 Power measuring instrument	15
5.5.2 Luminance measuring device.....	15
5.5.3 Illuminance measuring instrument.....	15
5.6 Signal generation.....	15
5.6.1 Equipment	15
5.6.2 Interfaces	15
5.6.3 Accuracy	15
5.6.4 Light source for specific illuminance levels	16
5.6.5 Light source for disabling the ABC feature	16
5.6.6 Test table surface material	16
6 Procedures.....	17
6.1 Order of activities	17
6.2 Preparation.....	18
6.2.1 Measuring plan.....	18
6.2.2 Power source voltage and frequency	19
6.2.3 Test signal input terminals.....	19
6.2.4 Video signal, On mode power consumption procedure	19
6.2.5 Video signal, peak luminance ratio determination	19
6.2.6 Video format.....	20
6.2.7 Automatic brightness control capabilities	21
6.2.8 Automatic brightness control levels.....	21
6.2.9 Motion-based Dynamic Dimming.....	21
6.2.10 Network connection selection	21
6.3 Initial activities	22
6.3.1 Order of initial activities	22
6.3.2 Main batteries.....	23
6.3.3 Plug-in module	23

6.3.4	Installation.....	23
6.3.5	Application of input signals.....	24
6.3.6	Luminance measuring device setup.....	24
6.3.7	Light source setup.....	24
6.3.8	Power on.....	27
6.3.9	UUT firmware update.....	27
6.3.10	TV settings.....	27
6.4	Determination of power consumption, On mode.....	28
6.4.1	Order of activities.....	28
6.4.2	Stabilization.....	29
6.4.3	Television sets without automatic brightness control enabled by default.....	30
6.4.4	Television sets with automatic brightness control enabled by default.....	30
6.4.5	Power measurement.....	30
6.5	Determination of peak luminance ratio and power factor.....	32
6.5.1	General.....	32
6.5.2	Activities for peak luminance ratio and power factor determination.....	33
6.6	Determination of power consumption, Partial On mode.....	36
6.6.1	General.....	36
6.6.2	Order of activities.....	36
6.6.3	AV inputs.....	36
6.6.4	Standby-passive.....	36
6.6.5	Standby-active, low.....	37
6.7	Determination of power consumption, Off mode.....	38
6.7.1	Connections and networking.....	38
6.7.2	Availability.....	38
6.7.3	Measurement.....	38
Annex A (informative)	Considerations for On mode television set power measurements.....	39
A.1	General.....	39
A.2	Weighting of automatic brightness control levels.....	39
A.3	Calculating On mode power consumption.....	39
A.4	Picture level adjustments.....	40
Annex B (normative)	Test report.....	41
Annex C (informative)	Example test report template.....	43
Annex D (informative)	Representative test tools.....	46
Annex E (normative)	Measurement process overview.....	47
Bibliography	49
Figure 1	– Configurations and picture settings, conceptual framework.....	14
Figure 2	– Recommended order of activities.....	18
Figure 3	– Order of initial activities.....	23
Figure 4	– Light source configuration.....	25
Figure 5	– Wall-mounted TV with built-in ABC sensor.....	26
Figure 6	– Wall Mounted TV with External ABC Sensor.....	26
Figure 7	– Order of activities for determining power consumption, On mode.....	29
Figure 8	– Order of activities for determining peak luminance ratio and power factor.....	34
Figure 9	– Order of activities for determining the power consumption, Partial On mode.....	36
Figure E.1	– Comprehensive measurement process flow chart.....	48

Table 1 – Operating modes and functions	13
Table 2 – Network Connection Hierarchy	22

INTERNATIONAL ELECTROTECHNICAL COMMISSION

AUDIO, VIDEO, AND RELATED EQUIPMENT – DETERMINATION OF POWER CONSUMPTION –

Part 3: Television sets

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.

IEC 62087-3 has been prepared by technical area 19: Environmental and energy aspects for multimedia systems and equipment, of IEC technical committee 100: Audio, video and multimedia systems and equipment. It is an International Standard.

This second edition cancels and replaces the first edition published in 2015. This edition constitutes a technical revision.

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

- a) it introduces measuring procedures for the determination of power consumption in the On mode while viewing static metadata HDR video content;
- b) all tests for On mode power determination are performed with MDD disabled;
- c) only progressive video signals are used for testing;
- d) a dimmable LED reflector lamp is used as a light source for illuminating the ABC sensor to achieve specific illuminance levels;

e) a dynamic box and outline video signal is used for determining the ratio of peak luminance.

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

Draft	Report on voting
100/3772/CDV	100/3849/RVC

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 62087 series, published under the general title *Audio, video, and related equipment – Determination of power consumption*, 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,
- replaced by a revised edition, or
- amended.

INTRODUCTION

This document specifies the determination of the power consumption of television sets for consumer use.

This document includes measuring procedures for the determination of power consumption in the On (operation) mode, which was identified as "On (average) mode" in previous editions of IEC 62087. Additionally, it specifies measuring procedures for the determination of power consumption in the Off mode and Partial On mode. This document also defines the determination of the peak luminance ratio for use associated with television set power consumption evaluation as well as the power factor. It also defines measuring procedures for the determination of power consumption in the On mode while viewing representative static metadata HDR video content.

A verification procedure to assess product compliance is described in Annex A of IEC 62087-1:2015.

The IEC 62087 series consists of the following planned or published parts:

- Part 1: General
- Part 2: Signals and media
- Part 3: Television sets
- Part 4: Video recording equipment
- Part 5: Set-top boxes
- Part 6: Audio equipment
- Part 7: Computer monitors

AUDIO, VIDEO, AND RELATED EQUIPMENT – DETERMINATION OF POWER CONSUMPTION –

Part 3: Television sets

1 Scope

This part of IEC 62087 specifies the determination of the power consumption and related characteristics of television sets. Television sets include, but are not limited to, those with LCD, OLED, or projection technologies.

The operating modes and functions, as they specifically apply to television sets, are defined in detail in this part of IEC 62087.

This document is limited to television sets that can be connected to an external power source. Television sets that include a non-removable, main battery are not covered by this document. Television sets can include any number of auxiliary batteries.

The measuring conditions in this document represent the normal use of the equipment and can differ from specific conditions, for example as specified in safety standards.

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 62087-1:2015, *Audio, video, and related equipment – Determination of power consumption – Part 1: General*

IEC 62087-2:2023, *Audio, video, and related equipment – Determination of power consumption – Part 2: Signals and media*

IEC 62301, *Household electrical appliances – Measurement of standby power*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN