IEC 62087-7

Edition 1.0 2018-12

INTERNATIONAL STANDARD

Audio, video, and related equipment – Methods of measurement for power consumption
Part 7: Computer monitors

IEC 62087-7:2018-12(en)

Documents
Document Sharing Hub
Full document details: IEC 62087-7 2018

THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2018 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.

IEC Central Office
3, rue de Varembé
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 corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue
The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

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 It also gives information on projects, replaced and withdrawn publications.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 also once a month by email.

Electropedia - www.electropedia.org
The world's leading online dictionary of electronic and electrical terms containing 21 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary
67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

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.

Documents
Document Sharing Hub

Full document details: IEC 62087-7 2018

IEC 62087-7

Edition 1.0 2018-12

INTERNATIONAL STANDARD

Audio, video, and related equipment – Methods of measurement for power consumption
Part 7: Computer monitors

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 33.160.10

ISBN 978-2-8322-6329-7

Warning! Make sure that you obtained this publication from an authorized distributor.

® Registered trademark of the International Electrotechnical Commission

Documents
Document Sharing Hub

Full document details: IEC 62087-7 2018

CONTENTS

FOREWORD 4
INTRODUCTION 6
1 Scope 7
2 Normative references 7
3 Terms, definitions and abbreviated terms 8
3.1 Terms and definitions 8
3.2 Abbreviated terms 8
4 Specification of operating modes and functions 8
4.1 General 8
4.2 Auto power down function 9
5 Measurement conditions 10
5.1 General 10
5.2 Power supply 10
5.3 Environmental conditions 10
5.4 Ambient light conditions 10
5.5 Measuring equipment 10
5.5.1 Power measuring instrument 10
5.5.2 Luminance measuring device 10
5.5.3 Illuminance measuring instrument 10
5.6 Signal generation 10
5.6.1 Equipment 10
5.6.2 Interfaces 10
5.6.3 Accuracy 10
5.7 Light source for specific illuminance levels 11
5.8 Light source for disabling the ABC feature 11
5.9 Picture controls 11
5.9.1 Manufacturer's settings 11
5.9.2 Static test pattern settings 11
6 Procedure 12
6.1 Order of activities 12
6.2 Preparation 13
6.2.1 Measuring plan 13
6.2.2 Power supply voltage and frequency 14
6.2.3 Input terminals 14
6.2.4 Video signal, on-mode power consumption procedure 14
6.2.5 Video format 14
6.2.6 Automatic brightness control capabilities 14
6.2.7 Automatic brightness control levels 15
6.3 Initial activities 15
6.3.1 Order of initial activities 15
6.3.2 Cool down 16
6.3.3 Installation 16
6.3.4 Application of input signals 16
6.3.5 Luminance measuring device setup 16
6.3.6 Light source setup 16
6.3.7 Power 17

AVA Documents
Document Sharing Hub

Full document details: IEC 62087-7 2018

6.3.8 Computer monitor settings ... 17
6.4 Determination of power consumption, on mode ... 18
6.4.1 Order of activities ... 18
6.4.2 Stabilization ... 18
6.4.3 Computer monitors without automatic brightness control enabled by default ... 18
6.4.4 Computer monitors with automatic brightness control enabled by default ... 19
6.4.5 Power measurement ... 20
6.5 Determination of power factor ... 21
6.6 Determination of power consumption, partial on mode ... 21
6.6.1 General ... 21
6.6.2 Order of activities ... 21
6.6.3 AV inputs ... 21
6.6.4 Standby-passive ... 21
6.6.5 Standby-active, low ... 22
6.7 Determination of power consumption, off mode ... 22
6.7.1 Connections and networking ... 22
6.7.2 Availability ... 22
6.7.3 Measurement ... 22
Bibliography ... 23

Figure 1 – Recommended order of activities ... 13
Figure 2 – Order of initial activities ... 15
Figure 3 – Light source configuration ... 17
Figure 4 – Order of activities for determining power consumption, on mode ... 19
Figure 5 – Order of activities for determining the power consumption, partial on mode ... 21

Table 1 – Operating modes and functions ... 9
Table 2 – Luminance levels for specified MP resolutions ... 12

Documents
Document Sharing Hub

Full document details: IEC 62087-7 2018

INTERNATIONAL ELECTROTECHNICAL COMMISSION

AUDIO, VIDEO, AND RELATED EQUIPMENT – METHODS OF MEASUREMENT FOR POWER CONSUMPTION

Part 7: Computer monitors

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 62087-7 has been prepared by technical area 12: AV Energy 14 efficiency and smart grid applications of IEC technical committee 100: Audio, video and multimedia systems and equipment.

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

CDV	Report on voting
100/2916/CDV	100/2988/RVC

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

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

Documents
Document Sharing Hub

Full document details: IEC 62087-7 2018

A list of all parts in the IEC 62087 series, published under the general title *Audio, video and related equipment*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://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.

A bilingual version of this publication may be issued at a later date.

Documents
Document Sharing Hub

Full document details: IEC 62087-7 2018

INTRODUCTION

This part of IEC 62087 specifies methods of measurement for the power consumption of computer monitors for use with computers. The test method includes power measurement using static patterns and both the broadcast and web-based dynamic test loops.

The test method also includes testing with the automatic brightness control (ABC) function where it is incorporated into a computer monitor.

The test method has also been made consistent with the test method for televisions in IEC 62087-3.

Documents
Document Sharing Hub

Full document details: IEC 62087-7 2018

AUDIO, VIDEO, AND RELATED EQUIPMENT – METHODS OF MEASUREMENT FOR POWER CONSUMPTION

Part 7: Computer monitors

1 Scope

This part of IEC 62087 specifies the determination of the power consumption of computer monitors including, but is not limited to, those with CRT, LCD, PDP or OLED technologies. Computer monitors that include touch screen functionality are included in the scope of this document. This document is limited to computer monitors that are powered from a main power source other than a battery. Computer monitors that are powered from a battery source are not covered by this document. However mains-powered computer monitors may include any number of auxiliary batteries.

Computer monitors connected by digital inputs such as DisplayPort, HDMI, DVI, or by analogue VGA input, are considered in this document. This document does not apply to network- and wirelessly connected computer monitors.

A computer monitor is a display device that does not include a TV tuner and is intended to be used to display the video signals from a computer. These video signals are produced from software programs that are operating within the computer and can consist of static and moving images. As such, test procedures using static patterns, dynamic video and web-based video are specified.

The test methods specified in this document can be applied to computer monitors of any size, however, this document is not applicable to specialized monitors associated with medical equipment, publishing and other professional, commercial or industrial uses.

The various modes of operation that are relevant for measuring power consumption are also defined.

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

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

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

Documents
Document Sharing Hub

Full document details: IEC 62087-7 2018