

INTERNATIONAL STANDARD

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

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 7: Computer monitors

FOREWORD

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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.

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- withdrawn,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.

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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.

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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*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62087-1 and the following apply.

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

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

3.1.1

ND filter

neutral density filter

optical device that reduces the light intensity in the visible wavelength region

3.1.2

computer monitor

product for the display of data, visual and video signals from a computer

3.1.3

default picture setting

picture setting as set by the manufacturer for computer monitors

3.1.4

special functions

functions that are related to, but not required for, the basic operation of the device

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Note 1 to entry: Examples of special functions include, but are not limited to, special sound processing, power saving functions (e.g. automatic brightness control), cameras, motion sensors and microphones.

3.2 Abbreviated terms

AV	audio-visual
ABC	automatic brightness control
CRT	cathode ray tube
DVI	Digital Visual Interface
LCD	liquid crystal display
LMD	luminance measuring device
ND	neutral density
OLED	organic light-emitting diode
PDP	plasma display panel
SCR	silicon controlled rectifier
UUT	unit under test
VGA	Video Graphics Array

4 Specification of operating modes and functions

4.1 General

Table 1 contains the operating modes and functions for computer monitors.

4.2 Auto power down function

An auto power down feature may be implemented on a computer monitor to power down into a standby mode after a predetermined time and possibly predetermined conditions. Such a feature should be referred to as "auto power down".

Table 1 – Operating modes and functions

Power	Mode	Sub-mode	Function(s)	Description
0 W	Disconnected	Disconnected	Disconnect from power source	The equipment is disconnected from all external power sources.
≥ 0 W	Off	Off	Off	The equipment is connected to an external power source and provides no functions that depend on a power source. The equipment cannot be switched into any other mode with the remote control unit, or an external or internal signal. Note that some power may be consumed if an EMC filter or other components exist on the source side of the power switch.
> 0 W	Partial On-	Standby-passive	<ul style="list-style-type: none"> – Wake on • remote control • internal signal 	The equipment is connected to an external power source and does not provide its primary functions. The equipment can be switched into another mode with the remote control unit or an internal signal, but not with an external signal.
		Standby-active, low	<ul style="list-style-type: none"> – Wake on • remote control • internal signal • external signal 	<p>The equipment is connected to an external power source and does not provide its primary functions.</p> <p>The equipment can be switched into another mode with the remote control unit, an internal signal, or an external signal.</p>
		Standby-active, high	<ul style="list-style-type: none"> – Wake on • remote control • internal signal • external signal <ul style="list-style-type: none"> – Data communications 	<p>The equipment is connected to an external power source and does not provide its primary functions.</p> <p>The equipment can be switched into another mode with the remote control unit, an internal signal, or an external signal. Additionally, the equipment is exchanging/receiving data with/from an external source.</p>
	On	Operation	Operation	The computer monitor is connected to an external power source and provides pictures and, if possible, sound.