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INTERNATIONAL STANDARD

colour inside

Audio, video and related equipment – Determination of power consumption – Part 4: Video recording equipment

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

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FOREWORD

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International Standard IEC 62087-4 has been prepared by technical area 12: AV energy efficiency and smart grid applications, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

This first edition of IEC 62087-4 cancels and replaces Clause 7 of IEC 62087:2011. This standard together with IEC 62087-1 to IEC 62087-3 and IEC 62087-5 to IEC 62087-6 cancels and replaces IEC 62087:2011. This International Standard constitutes a technical revision.

This edition includes significant technical changes with respect to Clause 7 of IEC 62087:2011. The changes include fundamental and extensive revisions to cover video recorders such as DVD and BD types as well as recorders with removable solid state memory. Clause 7 has been revised in its entirety.

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

FDIS	Report on voting
100/2469/FDIS	100/2499/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.

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

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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- withdrawn,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.

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

INTRODUCTION

This part of IEC 62087 specifies methods of measurement for the power consumption of video recording equipment for consumer use.

IEC 62087:2011 revises methods for measuring power consumption of set top boxes mainly in the modes of On mode and Standby-active, high mode. These modes correspond to the active modes which are defined in IEC 62542:2013.

This standard has been divided into multiple parts. At the time of publication of this part, the following parts are planned or published:

– Part 1: General
– Part 2: Signals and media
– Part 3: Television sets
– Part 4: Video recording equipment
– Part 5: Set-top boxes (STB)
– Part 6: Audio equipment

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

Part 4: Video recording equipment

1 Scope

This part of IEC 62087 specifies methods of measurement for the power consumption of video recording equipment with removable media. It specifies the different modes of operation which are relevant for measuring power consumption.

The methods of measurement are applicable only for equipment which can be connected to the mains.

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

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 60107-1:1997, *Methods of measurement on receivers for television broadcast transmissions – Part 1: General considerations – Measurements at radio and video frequencies*

IEC 62087-1:2015, *Audio, video, and related equipment – Methods of measurement for power consumption – Part 1: General*

IEC 62216:2009, *Digital terrestrial television receivers for the DVB-T system*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62087-1:2015, as well as the following apply.

3.1.1
additional functions
functions that are not required for the basic operation of the equipment

3.1.2
buffering
temporary storage of video and audio streams in some form of memory in order to perform time shifting functions

3.1.3
hard disk drive
non removable media with a spinning disk for recording video and audio

3.1.4
removable media
write-once or rewritable device to store audio, video or other data via a standardized read/write interface usable in all devices with the respective interface

Note 1 to entry: Examples include optical discs (DVD, BD), memory cards, video tape cassettes.

3.1.5
television set
TV
equipment for the reception and display of television broadcast and similar services for terrestrial, cable, satellite and broadband network transmission of analogue and/or digital signals

Note 1 to entry: A television set may include additional functions that are not required for its basic operation.

3.1.6
time shifting
capability of a device to allow playback type functions with real time broadcast

Note 1 to entry: Such functions may include fast forward, review (rewind), pause and slow motion.

3.1.7
video recording equipment
equipment for the recording and reproduction of video and audio signals on a recording medium

Note 1 to entry: Equipment with only playback function are included as well.

Note 2 to entry: Examples are video cassette recorder (VCR) or a digital versatile disc (DVD) player or recorder.

3.2 Abbreviations

′	Prime
BD	Blu-ray Disc™ [1]
DVD	Digital Versatile Disc
EPG	Electronic Program Guide
IP	Internet Protocol
HD	High Definition (720 p or better)
LNB	Low Noise Block converter
PF	Picture Failure point
RF	Radio Frequency
SD	Standard Definition
TV	TeleVision set
VCR	Video Cassette Recorder
VR	Video Recorder

4 Specification of operating modes and functions

4.1 General

Table 1 contains the operating modes and functions for video recorders.

[1] Blu-ray Disc™ is a trade mark of the Blue-ray Disc Association. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named.

4.2 Auto power down function

An auto power down feature may be implemented on a VR to power down into a Partial On 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	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	– 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	– Wake on – remote control – internal signal – external 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, an internal signal, or an external signal.
		Standby-active, high	– Wake on – remote control – internal signal – external signal – Data communications	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, an internal signal, or an external signal. Additionally, the equipment is exchanging/receiving data with/from an external source.
	On	On-play	Playing a programme	Playing content from a build in storage device, from removable media or streamed via a device port.
		On-broadcast	Pictures and sound from a broadcast	The equipment is performing the function of providing a viewer with video and audio from a broadcast.
		On-record	Recording a programme from a broadcast	The equipment is connected to a power source and records a signal from an external or internal source.
		On-multifunction	Recording Playing back	The equipment is performing multifunction “On-play” and/or “On-record” simultaneously.