

INTERNATIONAL STANDARD

IEC
62403

First edition
2005-06

**High density recording format on CD-R/RW disc
systems – HD-BURN format**

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Reference number
IEC 62403:2005(E)

Publication numbering

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HIGH DENSITY RECORDING FORMAT ON CD-R/RW DISC SYSTEMS – HD-BURN FORMAT

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International Standard IEC 62403 has been prepared by technical area 7: Moderate data rate storage media, equipment and systems of IEC technical committee TC 100: Audio, video and multimedia systems and equipment.

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

CDV	Report on voting
100/844/CDV	100/926/RVC

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

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 maintenance result date indicated on the IEC web site 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- withdrawn;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.

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HIGH DENSITY RECORDING FORMAT ON CD-R/RW DISC SYSTEMS – HD-BURN FORMAT

1 Scope

This International Standard specifies the HD-BURN format applied to CD-R/RW discs. The HD-BURN system is capable of recording the information in double density compared to the conventional CD-R/RW disc. It enables the realization of products with high reliability, high speed and interchangeability, and is especially suitable for consumer applications with high cost-performance.

This document describes:

- the physical characteristics for the recording and playback;
- the track structure of a disc;
- the data structure in the track;
- logical format structure.

2 Normative references

The following references are indispensable for the application of this document. For dated references, only the cited edition applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60908, *Audio recording – Compact disc digital audio system*

[IEC 62403:2005](#)

[http://www.iso.org/iso/iec-62403-2005](#)

ISO/IEC 20563, *Information technology – 80 mm (1,23 Gbytes per side) and 120 mm (3,95 Gbytes per side) DVD-recordable disc (DVD-R)*

IEC 62291:2002, *Multimedia data storage – Application program interface for UDF based file systems*

ISO 9660:1988, *Volume and file structure of CD-ROM for Information Interchange*

ISO/IEC 13346-1:1995, *Information technology – Volume and file structure of write-once and rewritable media using non-sequential recording for information interchange – Part 1: General*

The Red Book: *Compact disc digital Audio System Description Version*, May 1999
Sony/Philips

The Orange Book part2: *Recordable compact disk systems, Part2 CD-R Version 3.1*,
Sony/Philips

The Orange Book part 3: *Recordable compact disk system, Part3 CD-RW Volume 3, Ultra-Speed Ver 1.0*

NOTE The Red book and Orange book can be obtained from Sony/Philips.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

absolute time in pre-groove

ATIP

time-code information contained in the pre-groove with an additional modulation of the wobble

3.2

access guard area

AGA

preamble data area for reading the following ECC blocks

3.3

HD-BURN

high-density write system at CD-R/RW disc

3.4

land pre pit

LPP

pits embossed on the land during the manufacture of the disc substrate, which contain address information

3.5

multi-session

disc constituted by some sessions

3.6

non CD sector

sector, which has a different structure from the CD

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physical sector number

PSN

serial number, which is allocated to physical sectors on the disc

3.8

pre-groove

guidance track in which clocking and time code information is stored by means of an FM modulated wobble

3.9

program memory data

PMD

information, which is described on the recording program of the disc, including information on each recording mode

3.10

program start information

PSI

start address of the first lead-in

3.11

Reed-Solomon product code

RSPC

method of an error correction code, which corrects errors by multiple bits

3.12

sector

smallest addressable part of a track in the information zone of a disc that can be accessed independently of other addressable parts

3.13

session

area on the disc consisting of lead-in area, program area and lead-out area

3.14

synchronization frame

group of 1488 channel bits, which is representing a synchronization pattern

3.15

temporary program memory area

TPMA

area, which is used for intermediate storage

3.16

track

path, which is followed by the focus of the optical beam during one revolution of the disc

4 Convention and notations

4.1 Representation of numbers

A measured value is rounded off to the least significant digit of the corresponding specified value. It implies that a specified value of 1,26 with a positive tolerance of +0,01, and a negative tolerance of –0,02 allows a range of measured values from 1,235 to 1,275.

- Letters and digits in parentheses represent numbers in hexadecimal notation.
- The setting of a bit is denoted by ZERO or ONE.
- Numbers in binary notation and bit combinations are represented by strings of 0 and 1.
- Numbers in binary notation and bit combinations are shown with the most significant bit to the left.
- Negative values of numbers in binary notation are given in Two's complement.
- In each field the data is recorded so that the most significant byte (byte 0) is recorded first. Within each byte the least significant bit is numbered 0 and is recorded first, the most significant bit (numbered 7 in an 8-bit byte) is recorded last. This order of recording applies also to the data input of the error detection and correction circuits and to their output.

4.2 Names

The names of entities, for example specific tracks, fields, etc., are given with a capital letter.

5 List of acronyms

ADB	Address Data Bit
ALPC	Auto Laser Power Control
ASYM	Asymmetry
BCD	Binary Coded Decimal
BP	Byte Position
BPF	Band Pass Filter
CD-R	Compact Disk Recordable
CD-RW	Compact Disk ReWritable
CDS	Codeword Digital Sum
CD-WO	Compact Disk Write Once
CLV	Constant Linear Velocity
CRC	Cyclic Redundancy Check
DCB	Data Channel Bit
DSV	Digital Sum Value
DVD	Digital Versatile Disc
ECC	Error Correction Code
EDC	Error Detection Code
HDB	High Density Burn (= HD-BURN)
HF	High Frequency
ID	Identification Data
IED	ID Error Detection code
LOS	Lead-out Start Address
LPF	Low-Pass Filter
LSB	Least Significant Byte
MSB	Most Significant Byte
NRZI	Non Return to Zero Inverted
OPC	Optimum Power Control
PAD	Padding
PCA	Power Calibration Area
PI	Parity of Inner-code
PMA	Program Memory Area
PO	Parity of Outer-code
PUH	Pick Up Head
R/W	Rewritable
RID	Recorder Identifier
RS	Reed-Solomon