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Information technology — Digitally recorded media for information interchange and storage — Information Versatile Disk for Removable usage (iVDR) cartridge

Technologies de l'information — Supports enregistrés numériquement pour échange et stockage d'information — Disque versatile d'information pour cartouche d'emploi amovible (iVDR)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 29171 was prepared by Technical Committee ISO/TC JTC 1, *Information technology*, Subcommittee SC 23, *Digitally Recorded Media for Information Interchange and Storage*.

Introduction

The original iVDR specification was developed by the “iVDR Consortium”, (http://www.ivdr.org).

Hard disk drive technologies can be used in the cartridge. A major use of iVDR cartridges might be storage for digitally recorded audio and video content.

Information technology — Digitally recorded media for information interchange and storage — Information Versatile Disk for Removable usage (iVDR) cartridge

1 Scope

This International Standard specifies the dimensional, mechanical and physical characteristics of an information Versatile Disk for Removable usage (iVDR) cartridge to enable mechanical interchangeability between data processing systems. Hard disk drive technologies can be used in the cartridge.

This International Standard specifies the environment in which iVDR cartridges are to be operated and stored, and specifies the dimensions and pin assignments of a connector employed by iVDR cartridges to enable data interchange.

Together with ISO/IEC 24739-3 and a standard for volume and file structure, this International Standard enables full data interchange between data processing systems.

Figure 1 shows an external view of an iVDR cartridge.

Figure 1 — External view of iVDR cartridge

2 Normative references

The following referenced documents are indispensable for the application 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 60950-1, *Information technology equipment — Safety — Part 1: General requirements*

ISO/IEC 24739-3, *Information technology — AT Attachment with Packet Interface - 7 — Part 3: Serial Transport Protocols and Physical Interconnect (ATA/ATAPI-7 V3)*[1)]

3 Terms and definitions

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

3.1
cartridge
housing that protects the inner storage mechanism and facilitates data interchange

3.2
clamp area
part of the cartridge to which the clamping force is applied by the clamping mechanism

3.3
eject area
part of the cartridge to which the ejection force is applied by the eject mechanism

3.4
gap
part of the housing that is used to lock the cartridge in place to prevent ejection

3.5
guide rail
part of the housing that facilitates proper cartridge loading and ejection

3.6
interface ID
identification of interface type such as ATA

3.7
insertion direction mark area
area on the cartridge that is used to apply markings which indicate the proper insertion of the cartridge into the receiving system

3.8
label area
area on the cartridge that is used to apply labels

3.9
load area
part of the cartridge to which the loading force is applied by the loading mechanism

3.10
locking system
mechanism that prevents ejection of the cartridge

3.11
plug connector
male type connector implemented on the cartridge

3.12
power ID
identification of operating voltage

1) Under preparation.

3.13
receiving system
part of a data processing system of which the mechanism is designed to “receive” the cartridge

3.14
receptacle connector
female type connector implemented on the receiving system

4 Conventions and notations

4.1 Representation of numbers

A measured value is rounded off to the least significant digit of the corresponding specified value. For instance, 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.

Numbers in decimal notations are represented by the digits 0 to 9.

Numbers in hexadecimal notation are represented by the hexadecimal digits 0 to 9 and A to F in parentheses.

The setting of bits is denoted by ZERO and ONE.

Numbers in binary notations and bit patterns are represented by strings of digits 0 and 1.

4.2 Names

The names of entities, e.g. specific sides, are given a capital initial, except for iVDR.

5 Acronyms

AT	Advanced Technology
ATA	Advanced Technology Attachment
GND	ground
ID	identification
IF	interface
PWR	power

6 Environment and safety

The conditions specified below refer to the environment where air immediately surrounding the iVDR cartridge has the following properties.

6.1 Testing environment

Unless stated otherwise, tests and measurements made on the iVDR cartridge to check conformance with this International Standard shall be carried out under the following conditions:

- Temperature: 20 °C ± 3 °C

- Relative humidity: 50 % ± 20 %
- Condition before testing: 24 h min.

The iVDR cartridge shall not be exposed to magnetic fields greater then 1,5 mT. No condensation on or in the iVDR cartridge shall occur.

6.2 Operating environment

The operating environment is the environment where air immediately surrounding the iVDR cartridge shall have the following properties:

- Temperature: 5 °C to 50 °C
- Relative humidity: 8 % to 90 %
- Wet bulb temperature: 29,4 °C max.
- Temperature gradient: 20 °C /h max.
- Atmospheric pressure: 714 hPa to 1 050 hPa
- Vibration: 9,8 m/s^2 max.

  at 5 Hz to 500 Hz swept sine wave at 1,0 octave per minute.

The iVDR cartridge surface temperature in operating mode shall be below 55 °C.

No condensation on or in the iVDR cartridge shall occur. The iVDR cartridge shall not be exposed to magnetic fields greater then 1,5 mT. If an iVDR cartridge has been exposed during storage and/or transportation to a condition outside the above values, before use, the cartridge shall be conditioned in the operating environment for a time at least equal to the period during which it has been out of the operating environment, up to a maximum of 24 h.

The iVDR cartridge shall be operated under the following electrical conditions:

- Power supply voltage: +5,00 V ± 0,25 V
- Maximum peak to peak ripple noise: 100 mV

  Frequency range of the ripple noise of power supply voltage is from 0 MHz to 1 MHz.
- Power supply current: 2 A max.

Maximum duration time of the incident peak current is 3 seconds.

6.3 Storage environment

The iVDR cartridge shall be stored under the following conditions:

- Temperature: -40 °C to 65 °C
- Relative humidity: 5 % to 95 %
- Wet bulb temperature: 40 °C max.
- Temperature gradient: 20 °C /h max.
- Atmospheric pressure: 282 hPa to 1 050 hPa

The iVDR cartridge shall not be exposed to magnetic fields greater then 1,5 mT. No condensation on or in the iVDR cartridge shall occur.

6.4 Safety

The iVDR cartridge assembly shall satisfy the requirements of IEC 60950-1 when used in the intended manner or in any foreseeable use in a receiving system.

6.5 Flammability

The iVDR cartridge assembly shall be constructed such that, if ignited it does not continue to burn in a still carbon dioxide atmosphere.

6.6 Transportation

Recommended limits for the environment to which an iVDR cartridge may be subjected during transportation, and the precautions to be taken to minimise the possibility of damage, are provided in Annex E.

7 Dimensional, mechanical, and physical characteristics of the iVDR cartridge

7.1 General description of the iVDR cartridge

The iVDR cartridge (see Figure 2) is a container of rectangular shape. It features guide rails on both sides to facilitate proper connector insertion. It has gaps for a locking system and has areas for a label and insertion direction mark. The label and insertion direction mark are optional.

Figure 2 shows a drawing of the iVDR cartridge in isometric form, with major features identified.

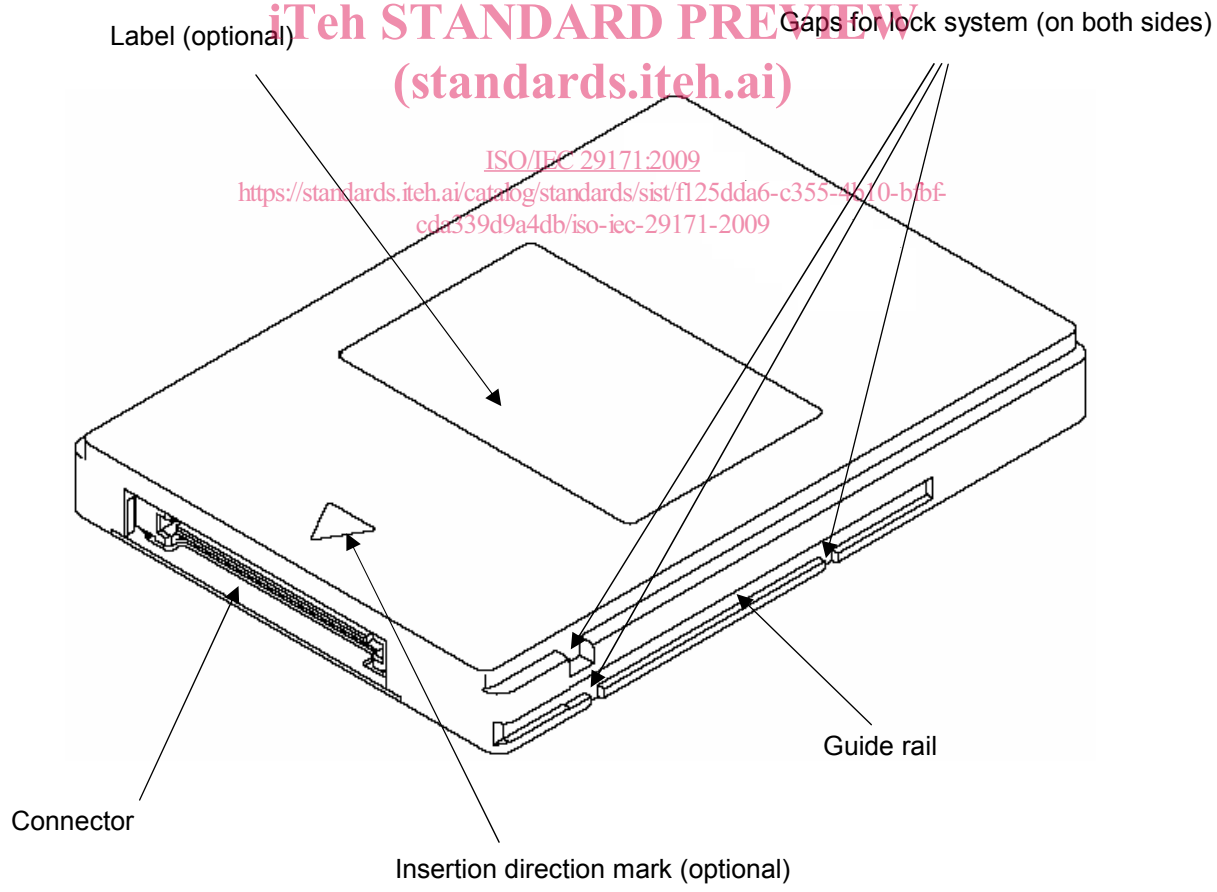

Figure 2 — iVDR cartridge outline

7.2 Outer dimensions

Figure 3 shows an outline drawing of the iVDR cartridge. A more detailed drawing can be found in Figure 4.
The total length of the iVDR shall be

$$l_1 = 110{,}0\ \text{mm}\ {}^{+0{,}0\ \text{mm}}_{-0{,}3\ \text{mm}}$$

The total width shall be

$$l_2 = 80{,}0\ \text{mm}\ {}^{+0{,}0\ \text{mm}}_{-0{,}3\ \text{mm}}$$

The total thickness shall be

$$l_3 = 12{,}7\ \text{mm}\ {}^{+0{,}0\ \text{mm}}_{-0{,}3\ \text{mm}}$$

The total thickness shall not cause the cartridge thickness l_3 to exceed the value specified above even though label and/or insertion direction mark are optional.

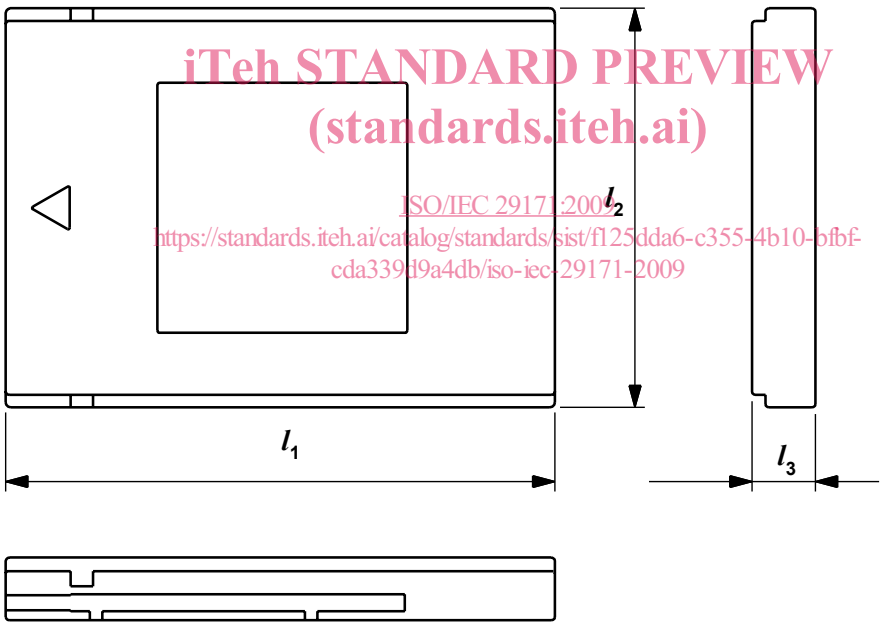

Figure 3 — Outline drawing of the iVDR cartridge

7.3 Mass

The maximum mass of the iVDR cartridge shall be 0,25 kg.