SLOVENSKI STANDARD
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Information processing - Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 13 262 ftprad, on 80 tracks each side - Part 1: Dimensional, physical and magnetic characteristics (ISO 8630-1:1987)

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Informationsverarbeitung - Datenaustausch auf 130 mm (5,25 in) Disketten mit modifizierter Wechseltaktschrift bei zweiseitiger Aufzeichnung mit 13 262 Flußwechsel/rad und 80 Spuren auf jeder Seite - Teil 1: Maße, physikalische und magnetische Eigenschaften (ISO 8630-1:1987, Ausg. 1)

Traitement de l'information - Echange de données sur cartouches a disquettes de 130 mm (5,25 in) utilisant un enregistrement a modulation de fréquence modifiée (MFM) a 13 262 ftprad sur 80 pistes sur chaque face - Partie 1: Caractéristiques dimensionnelles, physiques et magnétiques (ISO 8630-1:1987, éd. 1)

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

FOREWORD

The Technical Board has decided to submit the

International Standard 8630-1:1987 "Information processing - Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 13 262 ftprad, on 80 tracks each side - Part 1: Dimensional, physical and magnetic characteristics"

for Formal Vote. The standard was accepted.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 1993 and conflicting national standards shall be withdrawn at the latest by February 1993.

According to the CEN/CENELEC Common Rules, the following countries are bound to implement this standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

ENDORSEMENT NOTICE

The text of the ISO 8630-1:1987 was approved by CEN as a European Standard without any modification.

INTERNATIONAL STANDARD

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Information processing — Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 13 262 ftprad, on 80 tracks on each side —

Part 1:
Dimensional, physical and magnetic characteristics

Reference number
ISO 8630-1 : 1987 (E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8630-1 was prepared by Technical Committee ISO/TC 97, *Information processing systems.*

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Information processing — Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 13 262 ftprad, on 80 tracks on each side —

Part 1: Dimensional, physical and magnetic characteristics

0 Introduction

ISO 8630 specifies the characteristics of 130 mm (5.25 in) flexible disk cartridges recorded at 13 262 ftprad, using modified frequency modulation (MFM) recording, on 80 tracks on each side.

ISO 8630-2 and ISO 8630-3 each specify the quality of recorded signals, the track layout, and a track format to be used on 130 mm (5.25 in), 13 262 ftprad flexible disk cartridges intended for data interchange between data processing systems.

ISO 8630-1 and ISO 8630-2, together with the labelling scheme specified in ISO 7665, provide for full data interchange between data processing systems.

ISO 8630-1 and ISO 8630-3, together with the labelling scheme specified in ISO 9293, provide an alternative method of full data interchange between data processing systems.

1 Scope and field of application

This part of ISO 8630 specifies the dimensional, physical and magnetic characteristics of the cartridge so as to provide physical interchangeability between data processing systems.

NOTE — Numeric values in the SI and/or Imperial measurement system in this part of ISO 8630 may have been rounded off and therefore are consistent with, but not exactly equal to, each other. Either system may be used, but the two should be neither intermixed nor re-converted. The original design was made using Imperial units and further developments were made using SI units.

2 Conformance

A flexible disk cartridge shall be in conformance with ISO 8630 when it meets all the requirements of this part of ISO 8630 and all those of either ISO 8630-2 or ISO 8630-3.

3 References

ISO 646, *Information processing — ISO 7-bit coded character set for information interchange.*

ISO 2022, *Information processing — ISO 7-bit and 8-bit coded character sets — Code extension techniques.*

ISO 4873, *Information processing — ISO 8-bit code for information interchange — Structure and rules for implementation.*

ISO 6429, *Information processing — ISO 7-bit and 8-bit character sets — Additional control functions for character-imaging devices.*

ISO 7665, *Information processing — File structure and labelling of flexible disk cartridges for information interchange.*

ISO 9293, *Information processing — Volume and file structure of flexible disk cartridges for information interchange.*

4 Definitions

For the purpose of ISO 8630 the following definitions apply.

4.1 flexible disk: A flexible disk which accepts and retains on the specified side or sides magnetic signals intended for input/output and storage purposes of information data processing and associated systems.

4.2 Reference Flexible Disk Cartridge: A flexible disk cartridge arbitrarily selected for a given property for calibrating purposes.

4.3 Secondary Reference Flexible Disk Cartridge: A flexible disk cartridge intended for routine calibrating purposes, the performance of which is known and stated in relation to that of the reference flexible disk cartridge.

4.4 Signal Amplitude Reference Flexible Disk Cartridge: A reference flexible disk cartridge selected as a standard for recording field and signal amplitude.

NOTE — A master standard for signal amplitudes reference field, overwrite and resolution characteristics has been established by the Physikalisch-Technische Bundesanstalt (PTB) Bundesallee 100 in Braunschweig, Germany, F.R. Secondary reference flexible disk cartridges can be ordered from PTB Lab 1.41 under part number RM 8630 as long as available. This material is also available through the U.S. National Bureau of Standards (NBS)[1] under the part number RM 8630.

4.5 Typical Field: In the plot of average signal amplitude against recording field, at the specified track location and flux transition density, the Typical Field is the minimum field which causes an average signal amplitude equal to 95 % of the maximum average signal amplitude.

4.6 Reference Field: The Typical Field of the reference flexible disk cartridge for recording field and signal amplitude.

There are two Reference Fields, one for each side.

4.7 Test Recording Current (for each side): The current between 145 % and 155 % of the current which produces the Reference Field at 250 000 flux transitions per second (ftps) on track 00.

There are two Test Recording Currents, one for each side.

4.8 Standard Reference Amplitude (SRA): The average signal amplitudes derived from the reference tracks on the signal amplitude reference flexible disk cartridge using the appropriate Test Recording Current.

There are four Standard Reference Amplitudes, two for each side.

SRA_{1f} is the average signal amplitude from a recording written using 250 000 ftps at track 00.

SRA_{2f} is the average signal amplitude from a recording written using 500 000 ftps at track 76 (see 9.1.4).

4.9 Average Signal Amplitude: The arithmetically averaged value for a track of the output voltages measured peak-to-peak over the whole track.

4.10 in-contact: An operating condition in which the magnetic surface of the disk intended for data storage is in physical contact with the magnetic heads.

4.11 formatting: Writing the proper control information, establishing the physical tracks and designating the addresses of physical records on the flexible disk surfaces.

4.12 initialization: Writing any information initially required to be on the flexible disk cartridge, for example the ERMAP Label, prior to the commencement of general processing.

4.13 recording area: That area of each disk surface with which the head may come into contact.

5 General description

5.1 General figures

A typical flexible disk cartridge is represented in figures 1 to 3 as follows:

Figure 1 — Flexible disk cartridge, shows the cartridge seen from above, side 0 up.

Figure 2 — Section A-A, is a cross-section along line A-A in figure 1.

Figure 3 — Protective envelope with cartridge, shows a protective envelope with cartridge, side 1 up.

5.2 Main elements

The main elements of this flexible disk cartridge are

- the recording disk;
- the liner;
- the jacket.

The cartridge is stored in an envelope.

5.3 Description

The jacket is of a square form. It includes a central window, an index window, and a head window in both sides.

The liner is fixed to the inside of the jacket. It comprises two layers of material between which the disk is held. The liner has the same openings as the jacket.

The disk has only a central hole and an index hole.

5.4 Optional features

The interchange characteristics of the jacket allow for variations of its construction as follows:

a) the jacket may include flaps (for example three flaps as shown in figure 2, or none); and

b) notches along the reference edge.

6 General requirements

6.1 Environment and transportation

6.1.1 Testing environment

Tests and measurements made on the cartridge to check the requirements of ISO 8630 shall be carried out under the following conditions:

- temperature: 23 ± 2 °C (73 ± 4 °F);
- relative humidity: 40 to 60 %;
- conditioning before testing: 24 h minimum.

1) NBS, Office of Standard Reference Materials, Room 311, Chemistry Building, Gaithersburg, MD 20899, USA.

The temperature and the relative humidity shall be measured in the air immediately surrounding the cartridge.

The stray magnetic field at any point on the disk surface, including that resulting from the concentrating effect of the recording head, shall not exceed 4 000 A/m (50 Oe).

6.1.2 Operating environment

Cartridges used for data interchange shall be operated under the following conditions:

— temperature: 10 to 51,5 °C (50 to 125 °F);

— relative humidity: 20 to 80 %;

— wet-bulb temperature: less than 29 °C (84 °F).

The temperature and the relative humidity shall be measured in the air immediately surrounding the cartridge. It is recommended that the rate of change of the temperature should not exceed 20 °C (36 °F) per hour.

There shall be no deposit of moisture on or in the cartridge.

The stray magnetic field at any point on the disk surface, including that resulting from the concentrating effect of the recording head, shall not exceed 4 000 A/m (50 Oe).

6.1.3 Storage environment

During storage the cartridges shall be kept under the following conditions:

— temperature: 4 to 51,5 °C (40 to 125 °F);

— relative humidity: 8 to 80 %.

Each cartridge shall be in an envelope and in an upright position.

There shall be no deposit of moisture on or in the cartridge.

The ambient stray magnetic field at any point on the disk surface shall not exceed 4 000 A/m (50 Oe).

NOTE — Cartridges which have been stored at temperatures and humidities outside the operating conditions may exhibit degraded performance characteristics. Such cartridges should be subjected to a conditioning period of not less than 24 h within the operating environment prior to use.

6.1.4 Transportation

Responsibility for ensuring that adequate precautions are taken during transportation shall be with the sender. During transportation the cartridge shall be in its envelope and in a protective package. The latter shall be free from dust or extraneous matter. It shall have a clean interior and construction to minimize ingress of dust and moisture. It is recommended that a sufficient space exists between cartridge and outer surface of the final container, so that risk of damage due to stray magnetic fields will be negligible.

It is recommended that the following conditions are not exceeded:

— temperature: −40 to +51,5 °C (−40 to +125 °F);

— maximum rate of temperature change: 20 °C (36 °F) per hour;

— relative humidity: 8 to 90 %.

There should be no deposit of moisture on or in the cartridge.

6.1.5 Handling

The cartridge shall stay out of its envelope for the shortest time possible. When handling the cartridge the operator shall not touch the exposed magnetic surfaces of the disk and shall avoid exposing the cartridge to direct sunlight, moisture and dust.

6.2 Materials

6.2.1 Jacket

The jacket may be constructed from any suitable material.

6.2.2 Liner

The material of the liner shall be able to retain dust without damage to the disk.

6.2.3 Disk

The disk may be constructed from any suitable material (for example bi-axially oriented polyethylene terephthalate) coated on both sides with a strong and flexible layer of magnetic material (for example Co-γFe_2O_3).

6.2.4 Envelope

The envelope may be manufactured from any suitable material (for example paper).

6.3 Direction of rotation

The direction of rotation shall be counterclockwise when looking at side 0.

7 Dimensional characteristics

The dimensional characteristics listed in the following clauses are indicated in figures 4 to 7.

Figure 4 — Jacket dimensions, shows the jacket.

Figure 5 — Cartridge thickness, shows a partial cross-section of the jacket.

Figure 6 — Disk dimensions, shows the disk.

Figure 7 — Disk thickness, shows a cross-section of the disk.

All dimensions are referred to the reference edge of the cartridge (see figure 4).