
International Standard



8378/2

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Information processing — Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 7 958 ftprad, 3,8 tpmm (96 tpi), on both sides — Part 2: Track format A

Traitement de l'information — Échange de données sur cartouches à disquette de 130 mm (5,25 in) utilisant un enregistrement à modulation de fréquence modifiée à 7 958 ftprad, 3,8 tpmm (96 tpi), sur les deux faces — Partie 2: Schéma de piste A

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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.

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 8378/2 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 7 958 ftrad, 3,8 tpmm (96 tpi), on both sides —

Part 2: Track format A

0 Introduction

ISO 8378 specifies the characteristics of 130 mm (5.25 in) flexible disk cartridges recorded at 7 958 ftrad, 3,8 tpmm (96 tpi), on both sides using modified frequency modulation (MFM) recording.

ISO 8378/1 specifies the dimensional, physical and magnetic characteristics of the cartridge so as to provide physical interchangeability between data processing systems.

ISO 8378/3 specifies an alternative track format for data interchange.

Together with the labelling scheme specified in ISO 7665, ISO 8378/1 and ISO 8378/2 provide for full data interchange between data processing systems.

1 Scope and field of application

This part of ISO 8378 specifies the quality of recorded signals, the track layout, and a track format to be used on 130 mm (5.25 in) flexible disk cartridges intended for data interchange between data processing systems.

NOTE — Numeric values in the SI and/or Imperial measurement system in this part of ISO 8378 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 reconverted. The original design of this part of ISO 8378 was made using SI units.

2 Conformance

A flexible disk cartridge shall be in conformance with ISO 8378 when it meets all the requirements either of parts 1 and 2 or of parts 1 and 3 of ISO 8378.

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

ISO 8378, *Information processing — Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 7 958 ftrad, 3,8 tpmm (96 tpi), on both sides —*

Part 1: Dimensional, physical and magnetic characteristics.

Part 3: Track format B.

4 Track format

4.1 General requirements

4.1.1 Mode of recording

4.1.1.1 Track 00, side 0

The mode of recording shall be two-frequency where the start of every bit cell is a clock flux transition. A ONE is represented by a data flux transition between two clock flux transitions. Exceptions to this are defined in 4.1.12.

4.1.1.2 All tracks other than track 00, side 0

The mode of recording shall be Modified Frequency Modulation (MFM) for which the conditions are

- a flux transition shall be written at the centre of each bit cell containing a ONE;
- a flux transition shall be written at each cell boundary between consecutive bit cells containing ZEROs.

Exceptions to this are defined in 4.1.12.

4.1.2 Track location tolerance of the recorded flexible disk cartridge

The centrelines of the recorded tracks shall be within $\pm 0,042\ 5\ \text{mm}$ (0.001 7 in) of the nominal positions, over the range of operating environment specified in ISO 8378/1.

4.1.3 Recording offset angle

At the instant of writing or reading a magnetic transition, the transition shall have an angle of $0^\circ \pm 18'$ with the radius.

NOTE — As tracks may be written and overwritten at extremes of the tolerances given in 4.1.2 and 4.1.3, a band of old information may be left at one edge of the newly written data and would constitute unwanted noise when reading. It is, therefore, necessary to trim the edges of the tracks by erasure after writing.

4.1.4 Density of recording

4.1.4.1 The nominal density of recording shall be 7 958 ftrpad. The nominal bit cell length for track 00, side 0 is 251 μrad , and for all the other tracks it is 125,7 μrad .

4.1.4.2 The long-term average bit cell length shall be the average bit cell length measured over a sector. It shall be within $\pm 3,5\ \%$ of the nominal bit cell length.

4.1.4.3 The short-term average bit cell length, referred to a particular bit cell, shall be the average of the lengths of the preceding eight bit cells. It shall be within $\pm 8\ \%$ of the long-term average bit cell length.

4.1.5 Flux transition spacing

The instantaneous spacing between flux transitions may be influenced by the reading and writing process, the bit sequence recorded (pulse crowding effects), and other factors. The locations of the transitions are defined as the locations of the peaks in the signal when reading. Tests should be carried out using a peak-sensing amplifier.

4.1.5.1 Flux transition spacing for track 00, side 0 (see figure 1).

4.1.5.1.1 The spacing between two clock flux transitions surrounding a data flux transition or between two data flux transitions surrounding a clock flux transition shall be between 90 % and 140 % of the nominal bit cell length.

4.1.5.1.2 The spacing between two clock flux transitions not surrounding a data flux transition or between two data flux transitions surrounding a missing clock flux transition shall be between 60 % and 110 % of the nominal bit cell length.

4.1.5.1.3 The spacing between a data flux transition and the preceding clock flux transition (when not missing) or between a clock flux transition and the preceding data flux transition (when not missing) shall be between 45 % and 70 % of the nominal bit cell length.

4.1.5.2 Flux transition spacing for all tracks other than track 00, side 0 (see figure 2).

4.1.5.2.1 The spacing between the flux transitions in a sequence of ONEs shall be between 80 % and 120 % of the short-term average bit cell length.

4.1.5.2.2 The spacing between the flux transition for a ONE and that between two ZEROs preceding or following it shall be between 130 % and 165 % of the short-term average bit cell length.

4.1.5.2.3 The spacing between the two ONE flux transitions surrounding a ZERO bit cell shall lie between 185 % and 225 % of the short-term average bit cell length.

4.1.6 Average signal amplitude

For each side the average signal amplitude on any non-defective track (see ISO 8378/1) of the interchanged flexible disk cartridge shall be less than 160 % of SRA_{1f} and more than 40 % of SRA_{2f} .

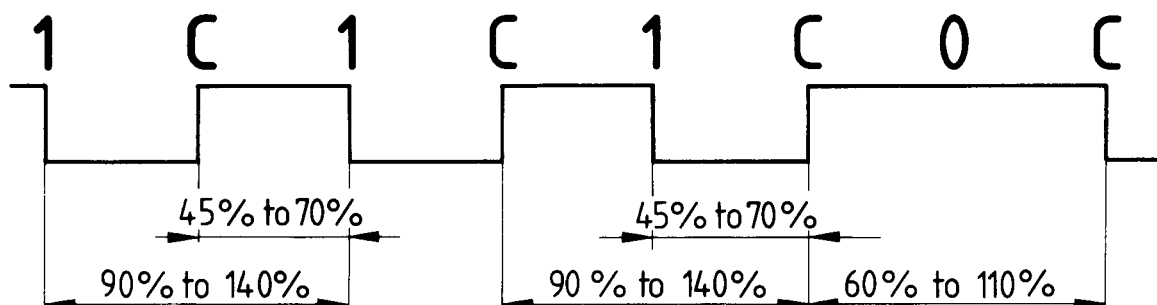


Figure 1