International Standard

ISO 8063/2

Information processing — Data interchange on 6,30 mm (0.25 in) wide magnetic tape cartridge using IMFM recording at 252 ftpmm (6 400 ftpi) —
Part 2: Track format and method of recording for data interchange in start/stop mode

Traitement de l'information — Échange de données sur cartouche pour bande magnétique de 6,30 mm (0,25 in) de large utilisant un enregistrement IMFM à 252 ftpmm (6 400 ftpi) — Partie 2: Schéma de pistes et méthode d'enregistrement pour l'échange de données en mode marche/arrêt

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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, govern-mental 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 8063/2 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 6,30 mm (0.25 in) wide magnetic tape cartridge using IMFM recording at 252 ftpmm (6 400 ftpi) — Part 2: Track format and method of recording for data interchange in start/stop mode

1 Scope and field of application

ISO 8063 specifies the characteristics of a tape cartridge using 6,30 mm (0.25 in) wide magnetic tape for data interchange between data processing systems.

ISO 8063/1 specifies the dimensional, physical and magnetic characteristics of the cartridge, and the track layout.

This part of ISO 8063 specifies the quality of the recorded signals, and the track format to be used on a 6,30 mm (0.25 in) magnetic tape cartridge, recorded at 252 ftpmm (6 400 ftpi) using IMFM recording and the start/stop mode of operation.

Together with the labelling scheme specified in ISO 4341, ISO 8063/1 and ISO 8063/2 provide for full data interchange between data processing systems.

NOTE — Numeric values in the SI and/or Imperial measurement system in this part of ISO 8063 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 was made using the Imperial measurement system.

ISO 8063 applies to cartridges used for data interchange. Where it applies for testing only, this is specifically stated.

2 Conformance

A 6,30 mm (0.25 in) wide magnetic tape cartridge shall be in conformance with ISO 8063 if it meets all mandatory requirements of both ISO 8063/1 and ISO 8063/2.

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 4341, *Information processing — Magnetic tape cassette and cartridge labelling and file structure for information interchange.*

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

4 Data representation

Characters shall be represented by means of the ISO 7-bit coded character set (see ISO 646) and, where required, by its 7-bit or 8-bit extensions (see ISO 2022) or by means of the ISO 8-bit coded character set (see ISO 4873).

4.1 Recording of 7-bit coded characters

Each 7-bit coded character shall be recorded in bit positions B1 to B7 of an 8-bit byte; bit-position B8 shall always be recorded with ZERO. The relationship shall be as shown in figure 1.

4.2 Recording of 8-bit coded characters

Each 8-bit coded character shall be recorded in bit positions B1 to B8 of an 8-bit byte. The relationship shall be as shown in figure 2.

5 Recording

5.1 Method of recording

The method of recording shall be Inverted Modified Frequency Modulation (IMFM) for which the conditions shall be

Bits of the 7-bit combination	0	b7	b6	b5	b4	b3	b2	b1
Bit-positions in the byte	B8	B7	B6	B5	B4	B3	B2	B1

Figure 1

1

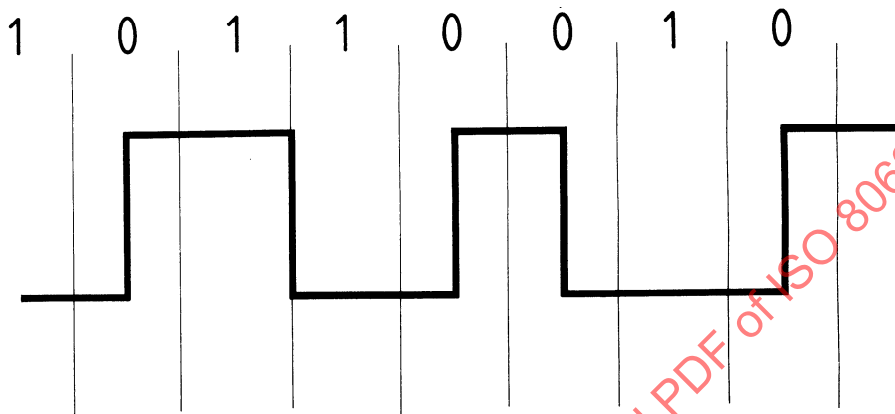| Bits of the 8-bit combination		b8	b7	b6	b5	b4	b3	b2	b1
Bit-positions in the byte		B8	B7	B6	B5	B4	B3	B2	B1

Figure 2

Figure 3

a) a flux transition shall be written at the centre of a bit cell containing a ZERO;

b) a flux transition shall be written at the cell boundary between consecutive bit cells containing ONEs.

See figure 3.

5.2 Measurement

All signal measurements shall be made at the point in the read chain where the amplitude is proportional to the rate of change of flux in the read head. The ratio of tape speed to the surface speed of the belt capstan shall be assumed to be exactly 0,76.

5.3 Density of recording

5.3.1 The nominal recording density shall be 252 ftpmm (6 400 ftpi). The nominal bit cell length shall be 3,97 µm (156 µin).

5.3.2 The long-term average bit cell length shall be the average bit cell length measured over at least 500 000 flux transitions. It shall be within ± 3 % of the nominal bit cell length.

5.3.3 The short-term average bit cell length, referred to a particular bit cell, shall be the average of the lengths of the preceding four bit cells. It shall be within ± 7 % of the long-term average bit cell length and shall be within ± 2 % of the average bit cell length of any string of 128 consecutive bit cells containing the said particular bit cell.

5.4 Flux transition spacing

5.4.1 Effect of asymmetry

At nominal recording density the average variation of spacing between consecutive flux transitions, taken over 32 flux transition spacings, shall not be greater than 2 % (see figure 4).

5.4.2 Effect of data patterns

In each of the two possible sequences of flux transitions defined by bit pattern 00000001000000010000000 the spacing d_1 between the two ZERO flux transitions preceding the ONE bit cell shall not exceed the average of the four earlier flux transition spacings by more than 12 %.

Similarly, the spacing d_2 between the two ZERO flux transitions following the ONE bit cell shall not exceed the average of the four subsequent flux transition spacings by more than 12 % (see figure 5).

5.5 Signal amplitude of the interchanged cartridge

5.5.1 The average peak-to-peak signal amplitude at 252 ftpmm (6 400 ftpi) shall not deviate by more than $^{+50}_{-30}$ % from SRA_{252}.

Averaging shall be done over a minimum of 6 400 flux transitions, which may be segmented into blocks

5.5.2 No peak-to-peak signal amplitude at 126 ftpmm (3 200 ftpi) shall be more than three times SRA_{252}.