# International Standard ISO 7064

# Data processing — Check character systems

*Traitement des données — Systèmes de caractères de contrôle*

**First edition — 1983-09-15**

ISO 7064-1983 (E)

# Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

International Standard ISO 7064 was developed by Technical Committee ISO/TC 97, *Information processing systems*, and was circulated to the member bodies in November 1981.

It has been approved by the member bodies of the following countries :

| | | |
|---|---|---|
| Belgium | Germany, F. R. | South Africa, Rep. of |
| China | Ireland | Spain |
| Czechoslovakia | Italy | Sweden |
| Denmark | Japan | Switzerland |
| Egypt, Arab Rep. of | Netherlands | United Kingdom |
| Finland | Poland | USA |
| France | Romania | |

No member body expressed disapproval of the document.

# Data processing — Check character systems

## 0  Introduction

The need for standardization of check character systems was determined by the following considerations :

a)  of the 100 or more systems in use, many have very similar characteristics, and much of the variety does not provide any significant benefit;

b)  few of the existing systems have been thoroughly verified mathematically and several have serious defects;

c)  the variety of systems undermines the economics of products which generate or validate check characters, and frequently prevents the checking of interchanged data.

Therefore a small set of compatible systems has been selected to cope with various application needs; they have been validated, and within the constraints of each application, offer high protection against typical transcription and keying errors.

Existing check character systems as specified in ISO 2108, ISO 2984 and ISO 6166 are used in special application fields. These do not however, achieve the error detection rate of the systems specified in this International Standard.

Annex A summarizes the criteria to be considered when selecting a check character system specified in this International Standard for a particular application.

Annex B illustrates how further compatible national check character systems may be developed for national alphabets having a different number of letters from the 26-letter internationally used alphabet for which the check character systems in this International Standard are designed.

## 1  Scope and field of application

**1.1**  This International Standard specifies a set of check character systems capable of protecting strings against errors which occur when people copy or key data. The strings may be of fixed or variable length and may have character sets which are

a)  numeric (10 digits : 0 to 9);

b)  alphabetic (26 letters : A to Z);

c)  alphanumeric (letters and digits).

Embedded spaces and special characters are ignored.

**1.2**  This International Standard specifies conformance requirements for products described as generating check characters or checking strings using the systems given in this International Standard.

**1.3**  These check character systems can detect :

a)  all single substitution errors (the substitution of a single character for another, for example 4234 for 1234);

b)  all or nearly all single transposition errors (the transposition of two single characters, either adjacent or with one character between them, for example 12354 or 12543 for 12345);

c)  all or nearly all shift errors (shift of the whole string to the left or right, for example

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| _ 1 _ 2 _ 3 |  for  | 1 _ 2 _ 3 _ |  );
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d)  a high proportion of double substitution errors (two separate single substitution errors in the same string, for example 7234587 for 1234567);

e)  a high proportion of all other errors.

**1.4**  This International Standard excludes systems designed specifically to :

a)  permit both error detection and automatic correction;

b)  detect deliberate falsification;

c)  check strings interchanged solely between machines.

**1.5**  This International Standard is for use in information interchange between organizations; it is also strongly recommended as good practice for internal information systems.