TECHNICAL REPORT

ISO/TR 11548-1

First edition
2001-12-15

Communication aids for blind persons — Identifiers, names and assignation to coded character sets for 8-dot Braille characters —

Part 1: General guidelines for Braille identifiers and shift marks

Aides à la communication pour personnes aveugles — Identificateurs, noms et attribution aux jeux de caractères codés pour caractères Braille à 8 points —

Partie 1: Lignes directrices générales pour les identificateurs Braille et marques de changement de caractères

Reference number
ISO/TR 11548-1:2001(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

Contents

Page

Foreword iv
Introduction v
1 Scope 1
2 Terms and definitions 1
3 Braille pattern structure, identification and coding 2
3.1 Braille pattern structure 2
3.2 Universal multiple-Octet Coded Character Set (UCS) 2
3.3 Braille identifier 3
4 Shift marks 15
5 Assignation of character set indicators 16
Annex A Code tables according to ISO/IEC 10646-1:2000 17
Bibliography 21

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 3.

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.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

Attention is drawn to the possibility that some of the elements of this part of ISO/TR 11548 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TR 11548-1 was prepared by Technical Committee ISO/TC 173, *Technical systems and aids for disabled or handicapped persons*.

ISO/TR 11548 consists of the following parts, under the general title *Communication aids for blind persons — Identifiers, names and assignation to coded character sets for 8-dot Braille characters*:

— *Part 1: General guidelines for Braille identifiers and shift marks*

— *Part 2: Latin alphabet based character sets*

Further parts may be developed to meet the needs of other languages, such as Arabic, Chinese, Japanese, etc.

Introduction

The objective of this Technical Report is, in addition to ISO/IEC 10646-1:2000 which encodes 8-dot Braille patterns, to assign semantics to 8-dot Braille patterns via mapping to other coded character sets. Their coding with the 8-bit code is determined in order to set guidelines for the manufacturing of compatible input and output equipment using the Braille system. This enables visually-impaired persons to interprete the output of data processing equipment and facilitates communication with sighted people.

This Technical Report is neither intended to create a new code nor to alter or modify existing 6-dot Braille systems.

As there are many different character sets used worldwide (e.g. Arabic, Chinese, Japanese, Latin) a corresponding number of reference tables is necessary. The standardization work started with defining general guidelines for Braille identifiers and shift marks as well as in creating the reference for Latin alphabet based character sets; further expansion to other character sets is encouraged.

Communication aids for blind persons — Identifiers, names and assignation to coded character sets for 8-dot Braille characters —

Part 1:
General guidelines for Braille identifiers and shift marks

1 Scope

This part of ISO/TR 11548 specifies short identifiers for 8-dot Braille patterns in addition to the names specified in ISO/IEC 10646-1:2000.

As there are many different code tables in use dealing with various character sets (e.g. Arabic, Chinese, Japanese, Latin) and for special purposes (e.g. chemistry, mathematics and music notation), this part of ISO/TR 11548-1 also defines a method of shifting between various Braille tables.

This part of ISO/TR 11548 is intended to be used by users and manufacturers of 8-dot Braille input and output devices, interfaces and software for data exchange.

This part of ISO/TR 11548 does not apply to 6-dot Braille, and does not specify any physical dimension of Braille characters.

2 Terms and definitions

For the purposes of this part of ISO/TR 11548, the definitions given in ISO/IEC 10367 and the following apply.

2.1
Braille
writing system consisting of tactile dot combinations to be used by blind persons

2.2
6-dot Braille
dot combination arranged as follows:

1● ●4
2● ●5
3● ●6

2.3
8-dot Braille
dot combination arranged as follows:

1● ●4
2● ●5
3● ●6
7● ●8

2.4
Braille pattern
graphical or tactile representation of one of the 64 (for 6-dot Braille) or 256 (for 8-dot Braille) possible dot combinations without particular meaning assigned to any given pattern

2.5
Braille character
Braille pattern with its assigned meaning

2.6
code table
table showing the character allocated to each bit combination in a code

2.7
Braille table
table showing the Braille character allocated to each element of a code table

2.8
shift mark
control character indicating that one or more succeeding coded elements are to be interpreted for switching between different Braille tables

2.9
Braille identifier
set of four characters used to identify a Braille pattern

3 Braille pattern structure, identification and coding

3.1 Braille pattern structure

The dots of the Braille pattern will be assigned to digits 1 to 8 as follows:

1● ●4
2● ●5
3● ●6
7● ●8

The designation of dots 1 to 6 corresponds to that of 6-dot Braille. The additional dots 7 and 8 are added beneath.

NOTE In some 8-dot Braille character sets dots 7 and 8 are added above the 6-dot pattern. These are not subject of this Technical Report.

In ink-print representation of Braille patterns (Braille characters), a full circle corresponds to a tangible (set) dot while empty circles serve as position indicators for dots not set within the dot matrix. In addition to their ink-print representation, the Braille pattern is defined in Table 1 by indicating the designation digits of the required (tangible) dots.

3.2 Universal multiple-Octet Coded Character Set (UCS)

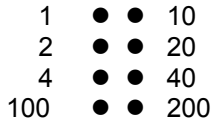
Within the Universal Multiple-Octet Coded Character Set (UCS) according to ISO/IEC 10646-1, the 256 Braille patterns have been encoded in the Basic Multilingual Plane at code positions U+2800 to U+28FF (see Annex A).

The Braille pattern for each UCS-character is directly derived from the character code, as follows: subtract 2800_{16} from the character code. If bit 0 is 1, then dot 1 is black (raised); if bit 1 is 1, then dot 2 is black (raised); and so on. The Braille pattern at U+2800 is blank.

The name of the blank pattern is “BRAILLE PATTERN BLANK”. The names of the remaining patterns are “BRAILLE PATTERN DOTS-*numbers*”, with *numbers* replaced by the sequence of dot numbers (in ascending order) which are black (raised).

3.3 Braille identifier

The 8-dot Braille patterns are identified by Braille identifiers. Braille identifiers begin with the designation letter B which is followed by a three-digit octal number. This octal number is calculated as follows. Values with octal representation corresponding to powers of 2 are assigned to the dots of the Braille pattern in the following way:



The octal number in question is obtained by adding the values corresponding to the tangible (set) dots. This sum lies between zero for no dot set (BRAILLE PATTERN BLANK) and 377, in the event that all 8 dots are set. Numbers smaller than 100 shall be expanded to three digits by inserting leading zeroes.

EXAMPLE The Braille identifier of the Braille pattern with dots 1, 2, 4 and 7 set, which leads to octal values 1, 2, 10 and 100, the sum of which is 113, is B113.

The following table gives a comprehensive overview of Braille patterns listed according to their Braille identifiers, location in UCS according ISO/IEC 10646-1, the Braille pattern, dot combinations in digits (dots) and the name assigned by ISO/IEC 10646-1.

Table 1 — 8-dot Braille patterns

Braille Identifier	UCS location G=00 P=00 Row 28 dec	hex	Braille pattern	Dots	Name
B000	000	00		—	BRAILLE PATTERN BLANK
B001	001	01		1	BRAILLE PATTERN DOTS-1
B002	002	02		2	BRAILLE PATTERN DOTS-2
B003	003	03		12	BRAILLE PATTERN DOTS-12
B004	004	04		3	BRAILLE PATTERN DOTS-3
B005	005	05		13	BRAILLE PATTERN DOTS-13
B006	006	06		23	BRAILLE PATTERN DOTS-23
B007	007	07		123	BRAILLE PATTERN DOTS-123
B010	008	08		4	BRAILLE PATTERN DOTS-4
B011	009	09		14	BRAILLE PATTERN DOTS-14
B012	010	0A		24	BRAILLE PATTERN DOTS-24
B013	011	0B		124	BRAILLE PATTERN DOTS-124
B014	012	0C		34	BRAILLE PATTERN DOTS-34
B015	013	0D		134	BRAILLE PATTERN DOTS-134
B016	014	0E		234	BRAILLE PATTERN DOTS-234
B017	015	0F		1234	BRAILLE PATTERN DOTS-1234
B020	016	10		5	BRAILLE PATTERN DOTS-5
B021	017	11		15	BRAILLE PATTERN DOTS-15
B022	018	12		25	BRAILLE PATTERN DOTS-25
B023	019	13		125	BRAILLE PATTERN DOTS-125
B024	020	14		35	BRAILLE PATTERN DOTS-35
B025	021	15		135	BRAILLE PATTERN DOTS-135
B026	022	16		235	BRAILLE PATTERN DOTS-235
B027	023	17		1235	BRAILLE PATTERN DOTS-1235

Table 1 (*continued*)

Braille Identifier	UCS location G=00 P=00 Row 28 dec	hex	Braille pattern	Dots	Name
B030	024	18		45	BRAILLE PATTERN DOTS-45
B031	025	19		145	BRAILLE PATTERN DOTS-145
B032	026	1A		245	BRAILLE PATTERN DOTS-245
B033	027	1B		1245	BRAILLE PATTERN DOTS-1245
B034	028	1C		345	BRAILLE PATTERN DOTS-345
B035	029	1D		1345	BRAILLE PATTERN DOTS-1345
B036	030	1E		2345	BRAILLE PATTERN DOTS-2345
B037	031	1F		12345	BRAILLE PATTERN DOTS-12345
B040	032	20		6	BRAILLE PATTERN DOTS-6
B041	033	21		16	BRAILLE PATTERN DOTS-16
B042	034	22		26	BRAILLE PATTERN DOTS-26
B043	035	23		126	BRAILLE PATTERN DOTS-126
B044	036	24		36	BRAILLE PATTERN DOTS-36
B045	037	25		136	BRAILLE PATTERN DOTS-136
B046	038	26		236	BRAILLE PATTERN DOTS-236
B047	039	27		1236	BRAILLE PATTERN DOTS-1236
B050	040	28		46	BRAILLE PATTERN DOTS-46
B051	041	29		146	BRAILLE PATTERN DOTS-146
B052	042	2A		246	BRAILLE PATTERN DOTS-246
B053	043	2B		1246	BRAILLE PATTERN DOTS-1246
B054	044	2C		346	BRAILLE PATTERN DOTS-346
B055	045	2D		1346	BRAILLE PATTERN DOTS-1346
B056	046	2E		2346	BRAILLE PATTERN DOTS-2346
B057	047	2F		12346	BRAILLE PATTERN DOTS-12346