
**Information technology — Keyboard
layouts for text and office systems —**

**Part 9:
Multi-lingual, multiscrypt keyboard
layouts**

*Technologies de l'information — Disposition des claviers conçus pour
la bureautique —*

Partie 9: Dispositions de claviers multilingues et multi-écritures

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 35, *User interfaces*.

ISO/IEC 9995 consists of the following parts, under the general title *Information technology — Keyboard layouts for text and office systems*:

- *Part 1: General principles governing keyboard layouts*
- *Part 2: Alphanumeric section*
- *Part 3: Complementary layouts of the alphanumeric zone of the alphanumeric section*
- *Part 4: Numeric section*
- *Part 5: Editing and function section*
- *Part 7: Symbols used to represent functions*
- *Part 8: Allocation of letters to the keys of a numeric keypad*
- *Part 9: Multilingual, multiscript keyboard layouts*
- *Part 10: Conventional symbols and methods to represent graphic characters not uniquely recognizable by their glyph on a keyboard and in documentation*
- *Part 11: Functionality of dead keys and repertoires of characters entered by dead keys*

Information technology — Keyboard layouts for office systems — Part 9: Multi-lingual, multiscript keyboard layouts

1 Scope

Within the general scope described in ISO/IEC 9995-1, this part of ISO 9995 defines the allocation on a keyboard of a set of graphic characters which, when used in combination with an existing national version keyboard layout, allows the input of a minimum character repertoire as defined herein.

This repertoire is intended to address all characters needed to write all contemporary languages using the Latin script, together with standardized Latin transliterations of some major languages using other scripts. It also contains all symbols and punctuation marks contained in ISO 8859-1, together with some selected other ones commonly used in typography and office use.

It also addresses characters of some other scripts (Greek, Cyrillic, Armenian, Georgian, Hebrew) to the same extent (in the case of Cyrillic, leaving out some minority languages of the Russian Federation which have only a few hundred speakers left). It provides means to include other scripts (e.g. Arabic, Devanagari) in future versions of this part of ISO 9995 (e.g. by amendments).

Furthermore, it addresses the International Phonetic Alphabet (IPA).

This part of ISO 9995 is primarily intended for word-processing and text-processing applications, to be used with full-sized keyboards as well as with miniature keyboards found on mobile devices ("smartphones" or handheld computers), especially ones which have only keys for the 26 basic Latin letters but no dedicated keys for digits.

2 Conformance

The layout of a keyboard conforms to this part of ISO 9995 if it meets all of the following conditions:

- It is either a Latin keyboard, or a Latin-conformant keyboard, as defined in Clause 3.
- It is either a compact keyboard, or a full keyboard, as defined in Clause 3.
- There is a special function called "Superselect", which, when (according to the layout) either operated (i.e. pressed if it is a key) together with any A to Z key, or followed by the actuation of any A to Z key, performs the function according to Tables 1 and 2 in Clause 5.

NOTE 1 The "Superselect" can be a single dedicated key, or a special sequence of other keys to be input.

EXAMPLE The "Superselect" can be a "symbol key" to be pressed together with a "shift key".

Furthermore, the software driving the keyboard shall fulfil the following requirements to make the keyboard conform to this part of ISO 9995:

- The keyboard is intended to output valid ISO/IEC 10646 characters and valid sequences thereof.
- Any of the groups contained in Tables 1 and 2 in Clause 5 and specified in the subsequent text are contained in the layout, unless they are marked as optional in these tables. The groups may contain

additional characters associated with other keys than in the tables as long as any listed pairing of D-Groups and L-Groups is unaffected.

NOTE 2 It is not specified in this part of 9995 which characters or symbols are in fact to be engraved on the keyboard.

Any statement of conformance to this part of ISO 9995 shall be taken to imply that the complete character repertoire of the IPA table in Annex C and of all groups listed in Clause 5 has been implemented, with the exception that group YY (compatibility characters and symbols), which may be implemented only partially or not at all.

Such statements of conformance may be made for fonts. If such a statement of conformance for a font is made in connection with one or more of the terms: "Latin", "Greek", "Cyrillic", "Armenian", "Georgian", "Hebrew", "Arabic", "Korean", "IPA", this shall be taken to imply that the character repertoire(s) listed in Annex D under the correspondingly named headers D.2.2 to D.2.10 has/have to be supplied by the font, and, as long as any of the listed terms except "IPA" is applied, this shall be taken to imply that also the character repertoire listed there under D.2.1 "Digits, punctuation and symbols" has to be supplied by the font. In no case is there an implication whether the character repertoire listed under D.2.1 "Compatibility characters and symbols" is supplied completely, partially or not at all by the font.

3 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 646:1991, *Information technology — ISO 7-bit coded character set for information interchange*

ISO/IEC 9995-1:2009, *Information technology — Keyboard layouts for text and office systems — Part 1: General principles governing keyboard layouts*

ISO/IEC 9995-3:2010, *Information technology — Keyboard layouts for text and office systems — Part 3: Complementary layouts of the alphanumeric zone of the alphanumeric section*

ISO/IEC 10646: 2014, *Information technology — Universal Coded Character Set (UCS)*

IPA: Handbook of the International Phonetic Association. Cambridge 1999 (reprinted 2003). ISBN 0 521 63751 1: Appendix 2: Computer coding of IPA symbols (pp. 161-185)

4 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 9995-1 and the following apply.

4.1

actuate a character

select a character by selecting the appropriate group and level (if necessary) and pressing the key itself

4.2

associated with <key>

key used to enter a character or to call a function

Note 1 to entry: Any group and/or level selection prerequisite for this action must be done for the key actuation to enter the intended character or call the intended function.

4.3

A to Z key

key associated with any Latin letter A...Z

4.4**base mode**

mode in which keys have their usual function such as selecting characters according to the active group and level

4.5**compact keyboard**

keyboard having at least the following 30 different keys: 26 keys for the Latin letters A...Z, Space key, Enter key; and having a function to select Level 2, function to select the group and/or level which contains the digits 0...9, and where the digits 0...9 have none of their own keys but are contained in a single level of a group

4.6**complementary group**

group that can be paired with another group in such a manner that on a full keyboard, it can be unified with the other group by incorporating its full content

Note 1 to entry: This is true of D-groups and L-groups.

Note 2 to entry: This doubles the input possibilities for the characters contained in the paired groups, but may be useful especially when the contents of such a pair are engraved on the keys according to the rules for a single group.

4.7**D-group**

group declaring characters associated to the levels 1 and 2 of any digit key, where the associations to the levels are independent on the level to which the digits themselves are in their group

4.8**digit key**

key associated with any digit 0...9

4.9**enter key**

key associated with an enter or return function

4.10**full keyboard**

keyboard having at least the following 39 different keys: 26 keys for the Latin letters A...Z, 10 keys for the digits 0...9, Space key, Enter key; and a level 2 selector key

Note 1 to entry: The digit keys typically enter the digits in level 1 or 2 of group 1.

Note 2 to entry: The level 2 selector key is usually called "shift key".

4.11**L-Group**

group which declares characters associated to levels 1 and 2 of any A to Z key and optionally of the Space key

4.12**latch to <a group>**

select a group in such a manner that only the next key actuation is affected, with the group reverting to the previously selected group (reference group) afterwards

4.13**latin keyboard**

keyboard with a layout which has all Latin lowercase letters a...z (U+0061...U+007A) in group 1 level 1, and all Latin uppercase letters A...Z (U+0041...U+005A) in group 1 level 2, each uppercase letter being associated with the same key as its lowercase counterpart, and which has a level 2 selector key which is either to be pressed simultaneously with the letter key or separately immediately before pressing the letter key, to select level 2

4.14

latin conformant keyboard

keyboard with a layout which has all Latin letters a...z and A...Z in a single group other than Group 1, where that group can be selected permanently, and which otherwise behaves as a Latin keyboard as long as that group is selected

4.15

mode

state which determines the effects of all the keys of a keyboard

4.16

reference group

group that is switched to, or reverted to after the actuation of a key has disengaged a group previously latched to

4.17

reference group switching mode

special mode where the next key actuation either switches to a new group or has the sole effect of generating an error signal to the user, should there be no group to be switched to when pressing that key

4.18

space key

key associated with character U+0020 SPACE

4.19

special mode

mode which is not the base mode, and where the functions of the keys are defined by the description of the mode

4.20

supplementary group

group not identical to the primary group of the national version keyboard layout or to the complementary Latin group layout (secondary group)

4.21

supplementary character collection

collection of characters contained in any supplementary group

4.22

superselect

function which, upon simultaneous or consecutive actuation of any A to Z key, latches or switches to a supplementary group

EXAMPLE Superselect can be a key, a combination of keys, or another function.

4.23

switch to <a group>

select a group or a mode which then stays in effect until another group or mode is selected, be it by switching to another group or selecting another reference group

4.24

symbol

graphical symbol which is neither a letter nor a digit nor a punctuation mark

Note 1 to entry: This definition does not apply to the term "symbol" as part of the phrase "graphical symbol" as defined in ISO/IEC 9995-1.

5 Groups and modes

5.1 General

The groups in this standard are denoted by a single Latin letter (if such a group is to be primarily used as a reference group which can be switched to, which does not exclude that such a group can also be latched to) or a combination of two Latin letters (if such a group is primarily designed to be latched to). For the latter ones, the first letter either denotes the single-letter-named group to which its content is related, or "D" for diacritics, or "Y" for symbols (including digits).

The group denoted "N" and all two letter combinations containing a "N" are reserved for national standards based on this standard and thus will not be used in future versions of this standard.

The group number according to ISO/IEC 9995-1 is computed for the former groups as "letter number $\times$ 100", for the latter groups as "first letter number $\times$ 100 + second letter number", where "letter number" is 1 for A, 2 for B, and so on until 26 for Z (e.g. "Group G" is "Group 700", "Group GE" is "Group 705").

This standard thus defines groups within the number range from "Group 100" to "Group 2626" (not filling this number range contiguously).

Group L matches the basic Latin letters to itself (lowercase letters in Level 1, uppercase letters in Level 2), as well as the space and the digits (in Level 1). All other groups are defined in Annex B.

All combining characters (accents, diacritical marks, etc.) contained in the groups defined in this standard are to be entered after their corresponding base character, according to the order in which they are to be stored according to ISO/IEC 10646, with the following single exception:

When the keyboard layout incorporates a secondary group according to ISO/IEC 9995-3:2010, or any "dead keys" in its primary group, the three combining characters contained in the group G ("Greek") are to be entered using the Dead Key method described in ISO/IEC 9995-3:2010.

NOTE This exception will enable users who only use the combining characters of the secondary group and the additional Greek combining characters contained in the group G ("Greek") defined in this standard, to use all combining characters in a uniform way.

5.2 Groups denoted by single Latin letters

The following table lists the Groups denoted by single Latin letters (all these groups are "L-Groups").

Table 1 — Groups denoted by single Latin letters

Key	Reference group selected by the key in the reference group switching mode	Symbol ^a
Q	Group Q (Georgian) ^c	105 ლ ^b
W	Group W (Armenian) ^d	105 Խ
E	<i>Reserved for future use</i>	
R	<i>Reserved for future use</i>	
T	<i>Reserved for future use</i>	
Y	<i>Reserved for future use</i>	
U	<i>Reserved for future use</i>	
I	<i>Reserved for future use</i>	

O	<i>Reserved for future use</i>	
P	Group A (Arabic)^e Switching to this group by this key also selects a mode "Eastern Arabic-Indian digits". This mode causes that digit keys which otherwise enter the standard decimal digits U+0030...U+0039 enter the according Eastern Arabic-Indic digits 06F0...06F9 instead. This mode stays in effect until another "reference group" selection is done.	105 U+06F5
A	Group A (Arabic) ^f	105 U+0628
S	<i>Reserved for future use</i>	
D	<i>Reserved for future use</i> (preferably a Group D "Devanagari")	
F	<i>Reserved for future use</i>	
G	Group G ("Greek")	105 Ω
H	Group H ("Hebrew")	105 ך
J	<i>Reserved for Group J ("Japanese" for Hiragana and Katakana)</i>	
K	Group K ("Korean Hangul") Switching to this group by this key also selects a mode "Hangul" (Hangeul). In this mode, one, two or three consonant (Jamo) can be input between two consecutive vowels (Jongseong, Syllable-peak letters). 1) If only one consonant Jamo is input, it will be replaced by a corresponding Choseong Jamo (Syllable-initial letter). 2) If two consonant Jamos are input, the first consonant Jamo will be replaced by a corresponding Jongseong Jamo (Syllable-final letter) and the second consonant Jamo will be replaced by a corresponding Choseong Jamo (Syllable-initial letter). 3) If three consonant Jamos are input, the first and second consonant Jamos will be replaced by a corresponding Jongseong complex Jamo (Syllable-final complex letter), and the third consonant Jamo will be replaced by a corresponding Choseong Jamo (Syllable-initial letter). 4) If no vowel precedes a consonant Jamo, it will be treated as in 1) above. 5) If no vowel follows one [or two] consonant Jamos, it [or they] will be replaced by a corresponding Jongseong Jamo [or Jongseong complex Jamo]. Implementations that replace the input of Jamo sequences by the appropriate Hangul characters when this mode is active, are compliant to this standard. This mode stays in effect until another "reference group" selection is done.	105 가 (U+AC00)
L	Group L ("Latin")	105 L
Z	<i>Reserved for future use.</i>	

X	Group A (Arabic). Switching to this group by this key also selects a mode "Arabic-Indian digits". This mode causes that digit keys which otherwise enter the standard decimal digits U+0030...U+0039 enter the according Arabic-Indic digits 0660...0669 instead. This mode stays in effect until another "reference group" selection is done.	105 U+0664
C	Group C ("Cyrillic")	105 Я
V	<i>Reserved for future use</i>	
B	<i>Reserved for future use</i>	
N	<i>Reserved for future use</i>	
M	<i>Reserved for future use</i>	

a The column "Symbol" denotes the number of the symbol in ISO/IEC 9995-7:2009 Amd1 for the group or mode selection when this selection function is associated to a single key (in addition to the "Superselect" mechanism described here), or is to be displayed on an on-screen keyboard after the actuation of "Superselect".

b If the symbol number is 105 "Switch to specific group", 106 "Latch to specific group", or 107 "Switch to specific mode". It is followed by the character to be enclosed by the symbol.

c "G" selects Greek

d "A" is reserved to select Arabic

e ; "P" stands for Persian/Pashto

f *This selection deselects any mode selected as listed for keys "P" or "X", i.e. digit keys subsequently enter the standard decimal digits U+0030...U+0039*

5.3 Other groups

The following table lists the other groups and the modes specified in this part of ISO/IEC 9995, according to the letter key which is to be pressed after or together with the "Superselect" function, as described in Clause 2.

Column G denotes whether the group is an L-Group, a D-Group, or E for an Extended D-Group.

Column labelled "CG" denotes the Complementary Group of a group if such one exists.

Column "Symbol" has the same meaning as in Table 1.

Table 2 — Other groups defined in this part of ISO/IEC 9995

Key	Function performed by this key when used with the "Superselect" function	G	CG	Symbol
Q	Latches to Group LQ ("Hook below") when Group L (Latin) is the reference group.	L		90
W	Latches to Group LW ("Hook above") when Group L (Latin) is the reference group.	L		91
E	Latches to Group LE ("Latin Extra Letters") when Group L (Latin) is the reference group.	L		106 X
	Latches to Group AE ("Arabic Extra Letters") when Group A (Arabic) is the reference group.	L		
	Latches to Group CE ("Cyrillic Extra Letters") when Group C (Cyrillic) is the reference group.	L		

	Latches to Group GE ("Greek Extra Letters") when Group G (Greek) is the reference group.	L		
	Latches to Group HE ("Hebrew Extra Letters") when Group H (Hebrew) is the reference group.	L		
	Latches to Group WE ("Armenian Extra letters") when Group W (Armenian) is the ref. group.			
R	Latches to Group LR ("Raised Latin Characters")	L	YT	93
T	Latches to Group LL ("Lowered Latin Characters")	L		94
Y	Latches to Group YY ("Compatibility characters and symbols") ^a Note:	L		106 ł
U	Latches to Group YU ("Universal compatibility").	D	YP	106 &
I	Switches to Mode "IPA" (International Phonetic Alphabet)			107 ə
O	Latches to Group YT ("Digits Raised and Lowered")	D	LR	95
P	Latches to Group YP ("Punctuation")	L	YU	106 #
A	Latches to Group DD ("Diacritics"). ^b Exception: Latches to Group DI ("Diacritics for IPA") when the mode "IPA" is active, treating the next key as independent ISO/IEC 10646 character.	L		106 ~
S	Latches to Group YS ("Symbols")	L		106 §
D	Switches to Mode "Unicode decimal".			103
F	Latches to Group LS ("Latin Supplement") when Group L (Latin) is the reference group. ^c	L		106 S
G	Latches to Group G ("Greek") ^d	L		106 Ω
H	Switches to Mode "Unicode hexadecimal"			104
J	Latches to Group DS ("Spacing Diacritics") Exception: Latches to Group DJ ("Spacing Diacritics and Symbols for IPA") when the mode "IPA" is active.	L	DM	106 ´
K	Switches to Mode "reference group switching mode" to switch to a group according to Table 1 by the subsequent key actuation. ^e			107 *

L	Latches to Group GE ("Greek Extra Letters") ^f	L		106 ϖ
Z	Latches to Group LZ ("Horizontal Stroke") when Group L (Latin) is the reference group. Latches to Group CZ ("Cyrillic Church Slavonic Letters") when Group C (Cyrillic) is the reference group.	L L		87 106 Α
X	Latches to Group LX ("Diagonal Stroke") when Group L (Latin) is the reference group. Latches to Group CX ("Cyrillic Additional Extra Letters") when Group C (Cyrillic) is the reference group.	L L		88 106 Ъ
C	Latches to Group YC ("Currency symbols")	L		106
V	Reserved for future use.			
B	Latches to Group DM ("Modifier letters")	D	DS	106 ~
N	Latches to any Group NN ("National") if such a group is defined by a national standard ^g	L		
M	Latches to Group YM ("Mathematical and extra symbols")	L	YU	106 ∞
[Space]	Switches to base mode and to Group 1 (whichever this is, depending on the national or manufacturer standard used)			107 ←
[Enter]	Function: Mode selection beyond the scope of this standard (if the device supports such a function).			

^a This group needs not to be implemented completely by any device claiming conformance to this standard; see Clause 2.

^b "A" is a mnemonic for "Accents".

^c For keyboards not having a secondary group according to ISO/IEC 9995-3:2010, the group LS does not need to be implemented.

^d This is useful to enter single Greek letters used as symbols.

^e "K" is a mnemonic for "Keyboard selection"

^f This is useful to enter single Greek special letters used as symbols.

^g e.g. containing precomposed letters frequent in the concerned language[s]

6 Special keys

6.1 Use of the Backspace key

If the keyboard has a Backspace key, this shall operate as follows when pressed directly after a group selector, a mode switching key, or a level selector which does not act by simultaneous pressing with the concerned key: it simply cancels that group selection, mode switching, or level selection.

6.2 Recommended allocation of the Superselect function

On a keyboard layout which:

- has no dedicated key for the Superselect function;
- has no dedicated Symbol key;
- has a Level 3 Select key, and;
- has a Tab key which has no other character or function allocated on its Level 3;

the Superselect function should be allocated to the key combination Level 3 Select + Tab key.

NOTE1 The Level 3 select key is likely to have the engraving AltGr

NOTE2 This applies to several national layouts for full size keyboards.

6.3 The Secondary Superselect function

6.3.1 Secondary superselect function definition

Keyboards may allocate a Secondary Superselect function, which is defined as follows:

Table 3 — Secondary superselect function definition

Condition	Effect of Secondary superselect key		
	If actuated once	If actuated twice	If actuated three times
Reference group is Group L (Latin) and keyboard has a secondary group according to ISO/IEC 9995-3:2010	Latches to group LS (Latin supplement)		
Reference group is Group L (Latin) and keyboard has no secondary group	Latches to group LE (Latin extra letters)		
Reference group is Group C (Cyrillic)	Latches to group CE (Cyrillic extra letters)	Latches to Group CZ (Cyrillic church Slavonic letters)	Latches to CX (Cyrillic additional extra letters)
Reference group is Group G (Greek)	Latches to group GE (Greek extra letters)		
Reference group is group H (Hebrew)	Latches to group HE (Hebrew extra letters)		
Reference group is group W (Armenian)	Latches to group WE (Armenian extra letters)		

6.3.1.2 If it is actuated one time:

It latches to Group LS ("Latin Supplement") when Group L (Latin) is the reference group, and when the keyboard has a secondary group according to ISO/IEC 9995-3:2010.

It latches to Group LE ("Latin Extra Letters") when Group L (Latin) is the reference group, and when the keyboard does not have such a secondary group.

It latches to Group CE ("Cyrillic Extra Letters") when Group C (Cyrillic) is the reference group.

It latches to Group GE ("Greek Extra Letters") when Group G (Greek) is the reference group.

It latches to Group HE ("Hebrew Extra Letters") when Group H (Hebrew) is the reference group.

It latches to Group WE ("Armenian Extra letters") when Group W (Armenian) is the reference group.

6.3.1.3 If it is actuated two times consecutively:

It latches to Group CZ ("Cyrillic Church Slavonic Letters") when Group C (Cyrillic) is the reference group.

6.3.1.4 If it is actuated three times consecutively:

It latches to Group CX ("Cyrillic Additional Extra Letters") when Group C (Cyrillic) is the reference group.

6.3.2 Recommended allocation

On a keyboard layout which:

- has no dedicated key for the Secondary Superselect function;
- has a Level 3 select key;
- has a Backspace key which has no other character or function allocated on its Level 3;

the Secondary superselect function should be allocated to the key combination Level 3 Select + Backspace key.

NOTE The Level 3 select key is likely to have the engraving AltGr

7 The special modes "Unicode decimal" and Unicode hexadecimal"

These modes are to enter any valid ISO/IEC 10646 character, by entering their code point values as decimal resp. hexadecimal number.

NOTE 1 The names of these special modes reflect the fact that the character set defined by ISO/IEC 10646 is usually synchronized with the one defined by the industry standard "Unicode", the name of which is more popular and memorable, and is reflected in the "U"-like shapes of the ISO/IEC 9995-3 symbols which are associated with this special modes.

The mode "Unicode Decimal" works as follows:

All actuations of keys associated with decimal digits are temporarily stored into a sequence representing a decimal number. When any other key except a Backspace key is pressed, then, if the decimal number contains at least one digit and represents a valid ISO/IEC 10646 value, then the according character shall be output. If not, then a U+FFFD OBJECT REPLACEMENT CHARACTER shall be output, followed by the entered sequence of decimal digits. In any case, the temporary sequence shall be cleared.