INTERNATIONAL TELECOMMUNICATION UNION

CCITT

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

S.1

(11/1988)

SERIES S: TELEGRAPH SERVICES TERMINAL EQUIPMENT

Start-stop terminals

INTERNATIONAL TELEGRAPH ALPHABET No. 2

Reedition of CCITT Recommendation S.1 published in the Blue Book, Fascicle VII.1 (1988)

NOTES

1 CCITT Recommendation S.1 was published in Fascicle VII.1 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

2 In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Recommendation S.1

INTERNATIONAL TELEGRAPH ALPHABET No. 2

(Malaga-Torremolinos, 1984; amended Melbourne, 1988)

1 Introduction

1.1 This Recommendation defines the repertoire of the graphic and control characters used in International Telegraph Alphabet No. 2 (ITA2) and the coded representation of these characters for communication purposes. It also contains provisions concerning the use of certain specific combinations.

1.2 The coded character set of ITA2 is based on a 5-unit-structure.

1.3 ITA2 is also defined in Recommendation F.1 for the international public telegram service, and it is specified in Recommendation F.60 that it should also be used for the telex service. It may also be used for other applications, such as specialized or leased circuits.

1.4 For definitions concerning alphabetic telegraphy, see definitions in Recommendation R.140 and the International Electrotechnical Vocabulary (IEV), Chapter 721.

2 Character repertoire

2.1 Graphic characters that have a corresponding signal in ITA 2 are:

- the 26 latin alphabetic characters: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z;
- decimal figures: 0 1 2 3 4 5 6 7 8 9;
- punctuation marks and miscellaneous signs:

Full Stop	.
Comma	,
Colon or division sign	:
Question mark	?
Apostrophe	'
Cross or addition sign	+
Hyphen or dash or subtraction sign	–
Fraction bar or division sign	/
Equal sign or double hyphen	=
Left-hand bracket (parenthesis)	(
Right-hand bracket (parenthesis)	)

2.2 Three graphic characters (such as accented letters and currency signs) may be applied for national or private use (see § 4.2)

2.3 This Recommendation does not define the particular printing style, font or case (capital or small letters) of graphic characters, nor does it define the layout of keyboards in teleprinters or similar terminal devices.

2.4 The control characters provided in ITA2 are:

- “Who are you?” (operation of the answerback unit of the corresponding installation)
- operation of an audible signal of the corresponding installation;
- carriage return;
- line-feed;
- letter-shift;

– figure-shift;

– space or blank;

– all-space or null (no tape perforation).

3 Coding

3.1 The 32 combinations available in ITA2 are produced by a sequence of five units, each of which may assume one of two significant conditions (A or Z), as shown in Table 1/S.1.

3.2 Condition A corresponds to start polarity, no perforation in paper tape and symbol 0 of the binary notation. Condition Z corresponds to stop polarity, perforation in paper tape and symbol 1 in the binary notation.

For the equivalent frequency and amplitude modulation corresponding to conditions A and Z in voice-frequency telegraph equipment, see Recommendation V.1 and the relevant Series R Recommendations.

Note 1 – The level and polarity of voltage and current corresponding to conditions A and Z (e.g. in the local end with its termination) are national options and hence are not defined internationally.

Note 2 – The terms "start" and "stop", "space" and "mark" have also been used to describe conditions A and Z respectively (see definition 31.37 in Recommendation R.140).

4 Particular combinations

4.1 In accordance with Recommendation S.8 and the Series U Recommendations, "WRU" (who are you? combination No. 4 in figure case), is used to operate the answerback unit of the corresponding instrument in the international telex and gentex services, and may also provide a printed symbol (as in Table 2/S.1)

4.2 Since some Administrations assign combination Nos. 6, 7 and 8 in figure case for internal use whereas others do not, it is desirable to avoid varying interpretation in these circumstances that might result if they were used freely in international services. Consequently the use of combination Nos. 6, 7 and 8 in figure case is not defined and therefore should not be used in international services, except by direct agreement between Administrations; and it is recommended:

– that, in all services, they should be shown in some special manner on the keyboards and:

– that services in which they are not used should place on the secondary position on the printing blocks (or on the equivalent mechanism) an arbitrary sign, for the letters F, G and H such as, for instance, a square. The appearance of such sign on the paper is to indicate an abnormal impression.

4.3 Combination No. 10 "audible signal", may also provide a printed symbol (as in Table 2/S.1)

4.4 Combinations Nos. 29 and 30, "letter-shift" and "figure-shift", respectively, are used to place the terminal installation in the "letter" or "figure" position, so that:

– any combination No. 1 to 26 received engenders a printed signal in the "letter" case (second column of Table 1/S.1) if the last shift signal received is a "letter-shift" signal;

– any combination No. 1 to 26 received engenders a printed signal in the "figure" case (third column of Table 1/S.1) if the last shift signal received is a "figure-shift" signal", except as noted for combinations Nos. 4 and 10 in §§ 4.1 and 4.3.

TABLE 1/S.1

International Telegraph Alphabet No. 2 (ITA2)

Combination number	Letter case	Figure case	Coding				
			1	2	3	4	5
1	A	–	Z	Z	A	A	A
2	B	?	Z	A	A	Z	Z
3	C	:	A	Z	Z	Z	A
4	D	See § 4.1	Z	A	A	Z	A
5	E	3	Z	A	A	A	A
6	F	See § 4.2	Z	A	Z	Z	A
7	G	See § 4.2	A	Z	A	Z	Z
8	H	See § 4.2	A	A	Z	A	Z
9	I	8	A	Z	Z	A	A
10	J	Audible Signal	Z	Z	A	Z	A
11	K	(	Z	Z	Z	Z	A
12	L	)	A	Z	A	A	Z
13	M	.	A	A	Z	Z	Z
14	N	,	A	A	Z	Z	A
15	O	9	A	A	A	Z	Z
16	P	0	A	Z	Z	A	Z
17	Q	1	Z	Z	Z	A	Z
18	R	4	A	Z	A	Z	A
19	S	'	Z	A	Z	A	A
20	T	5	A	A	A	A	Z
21	U	7	Z	Z	Z	A	A
22	V	=	A	Z	Z	Z	Z
23	W	2	Z	Z	A	A	Z
24	X	/	Z	A	Z	Z	Z
25	Y	6	Z	A	Z	A	Z
26	Z	+	Z	A	A	A	Z
27	Carriage-return		A	A	A	Z	A
28	Line-feed		A	Z	A	A	A
29	Letter-shift	See § 4.5	Z	Z	Z	Z	Z
30	Figure-shift	See § 4.5	Z	Z	A	Z	Z
31	Space		A	A	Z	A	A
32	See § 4.7		A	A	A	A	A

Note – In serial transmission, code element 1 is transmitted first.

4.5 Combinations Nos. 29 (letter-shift), 30 (figure-shift) and 32 (all-space, null or no tape perforation) shall not affect the spacing movement of terminal machines, except where their reception is indicated by printing a symbol, as mentioned in § 5 below.

4.6 *Use of capital and small letters*

4.6.1 In ITA2, it is possible to use teleprinters with two series of letter characters, capital and small letters.

4.6.2 It is possible to use sequences of the shift combinations of ITA2 for transfer from one series to the other.

4.6.3 If this possibility is used, it is essential to obtain compatibility with teleprinters having only one series of letter characters.

4.7 *Use of combination No. 32*

4.7.1 Combination No. 32 can be used in certain sequences of switching signals; these uses are set out in Recommendations U.11, U.20, U.22 and S.4.

4.7.2 Combination No. 32 must not be used during the phase of communication (after a call is set up) in the international telex service.

4.7.3 Combination No. 32 can be used during the phase of communication after a call is set up in domestic national service or by bilateral agreement between two Administrations, as a command signal for certain functions, e.g. transfer to a national alphabet other than ITA2;

4.7.4 Combination No. 32 must not be used for transfer from one form of characters to another while remaining within ITA2, nor for transfer from one international telegraph alphabet to another.

5 Graphic representation of control characters

Where a graphic indication of the reception or transmission of certain control characters is required, this should be effected by printing the symbols shown in Table 2/S.1.

TABLE 2/S.1

Printed symbols for control characters

Function	Combination No.	Case	Symbol	Alphabetic representation
Who are you? (WRU)	4	Figure	⊠ (see Note 1)	EQ
Audible signal (bell)	10	Figure	🔔	BL
Carriage-return	27	Either	←	CR
Line-feed	28	Either	≡	LF
Letter-shift	29	Either	↓	SL or LS
Figure-shift	30	Either	↑	SF or FS
Space	31	Either	△	SP
All-space: Null	32	Either	□	NU

Note 1 – The pictorial representation shown is a schematic of ✠, which may also be used when equipment allows.

Note 2 – Each alphabetic representation is to be considered as a single symbol. It may occupy one position on a printed or displayed line.

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