



INTERNATIONAL TELECOMMUNICATION UNION

**ITU-T**

**S.18**

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

**TELEGRAPHY**

**ALPHABETICAL TELEGRAPH TERMINAL  
EQUIPMENT**

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**CONVERSION BETWEEN INTERNATIONAL  
TELEGRAPH ALPHABET No. 2 AND  
INTERNATIONAL ALPHABET No. 5**

**ITU-T Recommendation S.18**

(Extract from the *Blue Book*)

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## NOTES

1 ITU-T Recommendation S.18 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.18

### CONVERSION BETWEEN INTERNATIONAL TELEGRAPH ALPHABET No. 2 AND INTERNATIONAL ALPHABET No. 5

(Geneva, 1980)

The CCITT,

*considering*

(a) that the Recommendation cited in [1] defines International Telegraph Alphabet No. 2 (ITA2), which is used, for example, in the international telex service;

(b) that International Alphabet No. 5 (IA5), defined in Recommendation T.50 [2], has been established jointly by the CCITT and the International Organization for Standardization (ISO) for use in data transmission (for example);

(c) that rules for converting from ITA2 to IA5 and vice versa are desirable to facilitate interworking, for example between terminals in the international telex service and terminals in data networks;

(d) that a suitable set of rules has been drawn up in collaboration with ISO;

(e) that for specific user applications some variations in the tables below may be developed and applied by bilateral agreement;

(f) that this Recommendation does not define whether the alphabetic characters of ITA2 are represented as capital or small letters;

*unanimously recommends*

that the following rules for conversion should apply.

#### **1 Conversion from ITA2 to IA5**

1.1 The conversion of characters shall be as specified in Table 1/S.18.

1.2 Annex A, together with Table A-1/S.18, provides information on alternative conversions that are in general use in some countries.

#### **2 Conversion from IA5 to ITA2**

2.1 The conversion of characters shall be as specified in Table 2/S.18.

2.2 The control characters of positions 0/1, 0/2, 0/3, 0/4, 0/6, 1/0, 1/5, 1/6 and 1/7 are generally not converted because they are removed from the character string by the link control equipment.

2.3 Characters for which there are no direct equivalents shall be represented by the single character question mark (?), unless prior agreement has been made between the interchange parties.

2.4 The greater number of code combinations available in IA5 means that not every character can be translated unambiguously into a single ITA2 character. Use of a single character, rather than a multi-character representation, will minimize formatting problems.

2.5 Annex A together with Table A-2/S.18 provide information on some alternative conversions that are in use in some countries.

TABLE 1/S.18

## Conversion from ITA2 to IA5

ITA 2 combination number	ITA 2 letter case	IA 5				ITA 2 figure case	IA 5	
		Character (See Note 3)	Coding	Character (See Note 3)	Coding		Character	Coding
1	<b>A</b>	<b>A</b>	4/1	<b>a</b>	6/1	–	–	2/13
2	<b>B</b>	<b>B</b>	4/2	<b>b</b>	6/2	?	?	3/15
3	<b>C</b>	<b>C</b>	4/3	<b>c</b>	6/3	:	:	3/10
4	<b>D</b>	<b>D</b>	4/4	<b>d</b>	6/4	WRU	ENQ (See Note 1)	0/5
5	<b>E</b>	<b>E</b>	4/5	<b>e</b>	6/5	<b>3</b>	<b>3</b>	3/3
6	<b>F</b>	<b>F</b>	4/6	<b>f</b>	6/6	National use	} (See Note 4)	
7	<b>G</b>	<b>G</b>	4/7	<b>g</b>	6/7	National use		
8	<b>H</b>	<b>H</b>	4/8	<b>h</b>	6/8	National use		
9	<b>I</b>	<b>I</b>	4/9	<b>i</b>	6/9	<b>8</b>	<b>8</b>	3/8
10	<b>J</b>	<b>J</b>	4/0	<b>j</b>	6/10	BELL	BEL	0/7
11	<b>K</b>	<b>K</b>	4/11	<b>k</b>	6/11	(	(	2/8
12	<b>L</b>	<b>L</b>	4/12	<b>l</b>	6/12	)	)	2/9
13	<b>M</b>	<b>M</b>	4/13	<b>m</b>	6/13	.	.	2/14
14	<b>N</b>	<b>N</b>	4/14	<b>n</b>	6/14	,	,	2/12
15	<b>O</b>	<b>O</b>	4/15	<b>o</b>	6/15	<b>9</b>	<b>9</b>	3/9
16	<b>P</b>	<b>P</b>	5/0	<b>p</b>	7/0	<b>0</b>	<b>0</b>	3/0
17	<b>Q</b>	<b>Q</b>	5/1	<b>q</b>	7/1	<b>1</b>	<b>1</b>	3/1
18	<b>R</b>	<b>R</b>	5/2	<b>r</b>	7/2	<b>4</b>	<b>4</b>	3/4
19	<b>S</b>	<b>S</b>	5/3	<b>s</b>	7/3	'	'	2/7
20	<b>T</b>	<b>T</b>	5/4	<b>t</b>	7/4	<b>5</b>	<b>5</b>	3/5
21	<b>U</b>	<b>U</b>	5/5	<b>u</b>	7/5	<b>7</b>	<b>7</b>	3/7
22	<b>V</b>	<b>V</b>	5/6	<b>v</b>	7/6	=	=	3/13
23	<b>W</b>	<b>W</b>	5/7	<b>w</b>	7/7	<b>2</b>	<b>2</b>	3/2
24	<b>X</b>	<b>X</b>	5/8	<b>x</b>	7/8	/	/	2/15
25	<b>Y</b>	<b>Y</b>	5/9	<b>y</b>	7/9	<b>6</b>	<b>6</b>	3/6
26	<b>Z</b>	<b>Z</b>	5/10	<b>z</b>	7/10	+	+	2/11
ITA 2 combination number	ITA 2 character (either case)		IA5 character		IA5 coding			
27	Carriage-return		FE <sub>5</sub>		0/13			
28	Line-feed		FE <sub>2</sub>		0/10			
29	Letter-shift		(See Note 2)					
30	Figure-shift		(See Note 2)					
31	Space		SP		2/0			
32	Not normally used		(See Note 4)		0/0			

*Note 1* – This character is used only to operate the answer-back unit of the corresponding instrument in the international public services.

*Note 2* – These characters have no corresponding function in IA5. Conversion equipment operates the appropriate shift and discards the characters.

*Note 3* – Small or capital letters may be used, however intermixing of small and capital letters is not allowed.

*Note 4* – These characters have no international allocation.

TABLE 2/S.18  
Conversion from IA5 to ITA2

	0	1	2	3	4	5	6	7
0	NUL ?	DLE ?	SP SP	0 0	@ ?	P P	\ ?	P P
1	SOH ?	DC <sub>1</sub> ?	! ?	1 1	A A	Q Q	a A	q Q
2	STX ?	DC <sub>2</sub> ?	" ?	2 2	B B	R R	b B	r R
3	ETX ?	DC <sub>3</sub> ?	# ?	3 3	C C	S S	c C	s S
4	EOT ?	DC <sub>4</sub> ?	Q ?	4 4	D D	T T	d D	t T
5	ENQ WRU	NAK ?	% ?	5 5	E E	U U	e E	u U
6	ACK ?	SYN ?	& ?	6 6	F F	V V	f F	v V
7	BEL BEL	ETB ?	' ?	7 7	G G	W W	g W	w W
8	FE <sub>0</sub> ?	CAN ?	( (	8 8	H H	X X	h H	x X
9	FE <sub>1</sub> ?	EM ?	) )	9 9	I I	Y Y	i Y	y Y
10	FE <sub>2</sub> LF	SUB ?	* ?	: :	J J	Z Z	j Z	z Z
11	FE <sub>3</sub> ?	ESC ?	+ +	; ?	K K	[ ?	k K	{ ?
12	FE <sub>4</sub> ?	IS <sub>4</sub> ?	' ?	< ?	L L	\ ?	l L	?
13	FE <sub>5</sub> CR	IS <sub>3</sub> ?	- -	= =	M M	] ?	m M	} ?
14	SO ?	IS <sub>2</sub> ?	. ?	> ?	N N	^ ?	n N	- ?
15	Si ?	IS <sub>1</sub> ?	/ ?	? ?	O O	- ?	o O	DEL removed

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Note - Characters allocated to letter case or figure case are specified in Table 1/S.18. The current converted character must be preceded by the appropriate shift character if a change of case is required, i.e. if the last shift that occurred differs from the required one.

ANNEX A

(to Recommendation S.18)

**Alternative conversions between IA5 and ITA2**

A.1 Recommendation S.18 permits alternative conversions for characters that have no direct equivalents, provided these conversions are agreed between interchange parties. Other alternatives may be used.

A.2 Tables A-1/S.18 and A-2/S.18 list conversions that are in use in some countries.

A.3 In some nationally adapted applications of ITA2 and IA5, special conversion rules are required because national characters have been allocated in different orders in the coded character sets concerned.

A.4 NUL is equivalent to *all space* (combination No. 32 or NU) in ITA2.

TABLE A-1/S.18

**Examples of alternative conversions from ITA2 to IA5**

ITA 2				IA 5		
Alternative	Case	Combination No.	Character	Character	Code	Remarks
a)	Figure Figure Figure	6 7 8	} National use	SUB SUB SUB	1/10 1/10 1/10	
b)	Figure Figure Figure	6 7 8	} National use		5/11 5/12 5/13	See § A.3
c)	Figure Figure Figure	6 7 8	} National use		7/11 7/12 7/13	See § A.3
d)	Either Either	29 30	Letter shift Figure shift	IS <sub>2</sub> IS <sub>1</sub>	1/14 1/15	
e)	Either Either	29 30	Letter shift Figure shift	DEL DEL	7/15 7/15	
f)	As e) but with additional agreement that only shift characters following the first one are converted to 7/15. The first one is treated according to Table 1/S.18.					
g)	Either	32	NU	NUL	0/0	See § A.4

TABLE A-2/S.18

## Examples of alternative conversions from IA5 to ITA2

IA 5		ITA 2		Remarks
Code	Character	Characters	Combinations	
0/0	NUL	NU	32	See § A.4
0/1	SOH	}?)	12 (right parenthesis)	Alternative conversions where characters not removed from the character string by the link control equipment or by convention
0/2	STX		2 (question marks)	
0/3	ETX		12 (right parenthesis)	
0/4	EOT			
0/6	ACK		in figure case	
1/1	DLE			
1/5	NAK			
1/6	SYN			
1/7	ETB			
0/8	FE <sub>0</sub>	}?)	12 (right parenthesis)	
0/9	FE <sub>1</sub>		2 (question mark)	
0/11	FE <sub>3</sub>		12 (right parenthesis)	
0/12	FE <sub>4</sub>			
0/14	SO			
0/15	SI			
1/1	DC <sub>1</sub>			
1/2	DC <sub>2</sub>		in figure case	
1/3	DC <sub>3</sub>			
1/4	DC <sub>4</sub>			
1/8	CAN			
1/9	EM			
1/10	SUB			
1/11	ESC			
1/12	IS <sub>4</sub>			
1/13	IS <sub>3</sub>			
1/14	IS <sub>2</sub>	Letter-shift	29	See also Table A-1/S.18. Combinations 29 and 30 may be used with either case
1/15	IS <sub>1</sub>	Figure-shift	30	
2/1	!	}?)		
2/2	"			
2/3	#			
2/4	¤		11 (left parenthesis)	
2/5	%			
2/6	&		2 (question mark)	
2/10	*		12 (right parenthesis)	
3/11	;			
3/12	<		in figure case	
3/14	>			
4/0	@			
5/14	^			
5/15	-			
6/0	`			
7/11	{			
7/12				
7/13	}			
7/14	-			
5/11	[	National use options	6	See § A.3
5/12	\		7 } in figure case	
5/13	]		8 }	
7/11	{	National use options	6	See § A.3
7/12			7 } in figure case	
7/13	}		8 }	
7/15	DEL	Letter-shift	29	

Note – Use of *new line* requires additional agreement between the interchange parties.

## **References**

- [1] CCITT Recommendation *Operational provisions for the international public telegram service*, Rec. F.1, § C.
- [2] CCITT Recommendation *International Alphabet No. 5*, Rec. T.50.