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ALPHABETICAL TELEGRAPH TERMINAL EQUIPMENT

ALPHABETS AND PRESENTATION CHARACTERISTICS FOR THE INTEX SERVICE

ITU-T Recommendation S.33

(Previously “CCITT Recommendation”)

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation S.33 was prepared by the ITU-T Study Group IX (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

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

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ALPHABETS AND PRESENTATION CHARACTERISTICS FOR THE INTEX SERVICE

(Helsinki, 1993)

The CCITT,

considering,

(a) that new networks are being introduced based upon stored program control techniques;

(b) that these networks as well as being able to carry the International Telex Service, can also carry the Intex service using alphabets other that International Telegraph Alphabet No. 2 and that interworking between these services is essential;

(c) that the Intex service requires the establishment of new types of signalling, and that these signalling types shall permit interworking between Intex terminals, between telex terminals and Intex terminals, and between telex terminals and terminal capable of operating both telex and Intex dual service terminals;

(d) that Recommendation U.210 defines the network interworking requirements between the International Telex Service and the Intex service;

(e) that Recommendation S.34 describes Intex terminal requirements to effect interworking with the International Telex Service;

(f) that Recommendation S.35 defines the coding of answerbacks for the Intex service;

(g) that Recommendation F.150 defines the operational and service requirements of the Intex service;

(h) that Recommendation F.82 defines the operational and service requirements for interworking between the Intex service and the International Telex Service;

NOTE – The development in the future of services similar to Intex may occur. It may be possible that some of the provisions of this Recommendation should be applied to such services.

unanimously declares the view

1 Modes of operation

Up to four operating modes are envisaged for terminals connected to the Intex service. These are telex interworking mode, normal mode, extended mode and transparent mode.

The choice of the three non-telex modes is a customer option on a call-by-call basis, or within a call.

1.1 Telex interworking mode

On calls to and from telex customers, only telex interworking mode shall be used, and an Intex terminal shall not generate mode change requests on such calls. Operation in the telex interworking mode is described in Recommendation S.34.

An Intex terminal connected to a Type 1 network (see Recommendation U.210) shall always default to the telex interworking mode on any call, incoming or outgoing, unless a Speed Indicator sequence indicating connection to another Intex terminal is received from the network at the start of the call as described in Recommendation U.101.

An Intex terminal connected to a Type 2 network (see Recommendation U.210) shall switch to “Telex Interworking” mode upon receipt of the Telex Indicator sequence IA5 character 5/1(Q).

1.2 Normal mode

Normal mode is intended for the exchange of basic textual messages on a universal basis, without any pre-arrangement or pre-knowledge between the terminals involved. The character set in this mode shall comprise a subset of the International Alphabet No. 5 (see Recommendation T.50).

An Intex terminal connected to a Type 2 network (see Recommendation U.210) shall always default to normal mode on any call, incoming or outgoing, unless a telex indicator sequence is received from the network at the start of that call as described in Recommendation U.101.

An Intex terminal connected to a Type 1 network (see Recommendation U.210) shall switch to "Normal" mode upon receipt of any valid Speed Indicator sequence as defined in Table 9/U.101.

1.3 Extended mode

Extended mode allows for the exchange of messages using the full character set of the International Alphabet No. 5 in accordance with Recommendation T.50. This mode shall only be used when it has been established that it is supported by both terminals, by the exchange of request and response sequences described in 5.2 and 5.3.

1.4 Transparent mode

In this mode the alphabet to be used is defined by the customers involved in the call, subject only to the restriction on character structure detailed in 2.2 and 2.3. This mode shall only be used between terminals which are known to be compatible and after the exchange of request and response sequences described in 5.6 and 5.7.

2 Character sets and structure

2.1 In normal and extended modes, each transmitted character shall comprise a start bit, seven information bits, a parity bit (all of one unit interval duration) plus a stop signal of not less than one unit interval duration.

2.2 In transparent mode each transmitted character shall comprise a start bit, eight bits (all one unit interval duration) plus a stop signal of not less than one unit interval duration.

2.3 The start bit is binary 0; the stop signal is binary 1. The bits are transmitted in the order B1 to B7 with the parity bit (where applicable) added before the stop signal. In normal and extended modes parity is even with respect to binary 1.

2.4 The character set for normal and extended mode is shown in Table 1.

3 Line length

In normal mode an Intex terminal shall be able to print (or display) 80 characters per line.

4 Printing enhancements

In normal mode, Intex terminals shall be able to support underlining and bold printing as printing enhancements. Where a message is not printed but displayed on a screen, underlining and bold printing may be replaced by the use of half intensity, inverse video, or other video highlighting.

4.1 Underlining

4.1.1 When a transmitting terminal requires subsequent transmitted characters to be underlined it shall transmit the character sequence 1/11, 2/13, 3/1. When a transmitting terminal requires underlining of characters to cease it shall transmit the character 1/11, 2/13, 3/0.

4.1.2 When a receiving terminal receives the character sequence 1/11, 2/13, 3/1 it shall underline (or display in video highlight) subsequent received characters. When a receiving terminal receives the character sequence 1/11, 2/13, 3/0 it shall cease underlining (or highlighted display) of received characters.

4.1.3 At the beginning of any incoming or outgoing call an Intex terminal shall default to the non-underlined mode.

TABLE 1/S.33

Character set

				B7	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1
					Column							
B4	B3	B2	B1	Row	0	1	2	3	4	5	6	7
0	0	0	0	0	NUL (Note 2)	DLE (Note 1)	SP	0		P		p
0	0	0	1	1	SOH (Note 1)	DC1 (Note 3)	!	1	A	Q	a	q
0	0	1	0	2	STX (Note 1)	DC2 (Note 1)	"	2	B	R	b	r
0	0	1	1	3	ETX (Note 1)	DC3 (Note 3)		3	C	S	c	s
0	1	0	0	4	EOT (Note 1)	DC4 (Note 1)		4	D	T	d	t
0	1	0	1	5	ENQ (WRU)	NAK (Note 1)	%	5	E	U	e	u
0	1	1	0	6	ACK (Note 1)	SYN (Note 1)	&	6	F	V	f	v
0	1	1	1	7	BELL	ETB (Note 1)	’	7	G	W	g	w
1	0	0	0	8	BS	CAN (Note 1)	(	8	H	X	h	x
1	0	0	1	9	HT (Note 1)	EM (Note 1)	)	9	I	Y	i	y
1	0	1	0	10	LF	SUB (Note 1)	*	:	J	Z	j	z
1	0	1	1	11	VT (Note 1)	ESC (Note 4)	+	;	K		k	
1	1	0	0	12	FF (Note 1)	FS (Note 1)	,		L		1	
1	1	0	1	13	CR	GS (Note 1)	–	=	M		m	
1	1	1	0	14	SO (Note 1)	RS (Note 5)	.		N		n	
1	1	1	1	15	SI (Note 1)	US (Note 5)	/	?	O	–	o	DEL

NOTES

1 These characters shall not be transmitted by an Intex terminal in normal mode (except as detailed in Note 4). If received in normal mode they shall be ignored (except as detailed in Note 4).

2 This character (NUL, 0/0) shall not be transmitted by an Intex terminal in normal mode. It may be generated by telex networks as a call connected signal and when received at the appropriate stage in a call may be interpreted as such. It may also be generated by a network during call clearing.

3 These characters will be used for X-ON/X-OFF flow control in normal and extended modes. An Intex terminal shall cease transmission when a DC3 (1/3) character is received. Transmission shall recommence when a DC1 (1/1) character is received.

4 In normal mode this character (ESC, 1/11) shall be generated to implement printing enhancements (such as bold print), to request mode changes or to respond to mode change requests, and shall be followed by specific other characters to define the action involved. See clauses 4 and 5.

5 These characters shall not be generated by an Intex terminal in normal mode other than as part of the answerback. On calls to/from telex customers Type 1 networks will convert between these characters and letter/figure shifts (see Recommendations U.210 and S.35). When received in normal mode by an Intex terminal these characters shall be ignored.

6 In both normal and extended modes:

BELL is a character which causes an audible alarm to be sounded:

CR is a carriage return;

LF is line feed;

BS is back space;

SP is space;

DEL is delete.

7 In normal mode ENQ (WRU) is the character which causes an answerback to be transmitted.

8 In both normal and extended modes in the following characters represent national options. It is recommended that these characters are not transmitted on international calls:

2/3, 2/4, 4/0, 5/11, 5/12, 5/13, 5/14, 6/0, 7/11, 7/13 and 7/14

4.2 Bold printing

4.2.1 When a transmitting terminal requires subsequent transmitted characters to be bold printed it shall transmit the character sequence 1/11, 4/5. When a transmitting terminal requires bold printing of characters to cease it shall transmit the character sequence 1/11, 4/6.

4.2.2 When a receiving terminal receives the character sequence 1/11, 4/5, it shall bold print (or display in video highlight) subsequent received characters. When a receiving terminal receives the character sequence 1/11, 4/6, it shall cease bold printing (or highlighted display) of received characters.

4.2.3 At the beginning of any incoming or outgoing call an Intex terminal shall default to the non-bold printed mode.

5 Changes of operating mode

5.1 At the beginning of any incoming or outgoing call an Intex terminal shall default to the normal mode.

5.2 When a transmitting terminal in normal mode is required to enter extended mode it shall transmit the extended mode request sequence 1/11, 1/0, 2/2 halt transmission and wait for a response.

If the transmitting terminal detects the extended mode positive response sequence 1/11, 0/6, 2/2, it shall enter the extended mode. If the negative response sequence 1/11, 1/5, 1/5 is detected the transmitting terminal shall remain in normal mode. If neither response sequence is detected the terminal shall either retransmit the extended mode request sequence or clear the call.

5.3 When a receiving terminal in normal or extended mode receives the extended mode request sequence it shall, if it is able to support extended mode, respond by transmitting the positive response sequence 1/11, 0/6, 2/2 and then enter or remain in the extended mode. If the receiving terminal is not able to support extended mode it shall respond by transmitting the negative response sequence 1/11, 1/5, 1/5 and remain in normal mode.

5.4 When a transmitting terminal in extended mode is required to restore to normal mode it shall transmit the normal mode request sequence 1/11, 1/0, 2/13, halt transmission and wait for a response.

If the transmitting terminal detects the normal mode positive sequence 1/11, 0/6, 2/13 it shall restore to normal mode. If the normal mode positive response sequence is not detected the terminal shall either retransmit the normal mode request sequence or clear the call.

5.5 When a receiving terminal in normal or extended mode receives the normal mode request sequence it shall respond by transmitting the normal mode positive response sequence 1/11, 0/6, 2/13 and either restore to or remain in normal mode.

5.6 When a transmitting terminal in normal or extended mode is required to enter transparent mode it shall transmit the transparent mode request sequence 1/11, 1/0, 2/7, halt transmission and wait for a response.

If the transmitting terminal detects the transparent mode positive response sequence 1/11, 0/6, 2/7 it shall enter the transparent mode. If the negative response sequence 1/11, 1/5, 1/5 is detected the transmitting terminal remain int its current mode. If neither response sequence is detected the terminal shall either retransmit the transparent mode request sequence or clear the call.

The option to retransmit the transparent mode request sequence shall only be used if the proposed transparent mode supports the recognition of this sequence and the generation of the appropriate response sequence.

5.7 When a receiving terminal in normal or extended mode receives the transparent mode request sequence it shall, if it is able to support transparent mode, respond by transmitting the transparent mode positive response sequence 1/11, 0/6, 2/7 and then enter the transparent mode. If the receiving terminal is not able to support transparent mode it shall respond by transmitting the negative response sequence 1/11, 1/5, 1/5 and remain in its current mode.

5.8 The mechanisms whereby terminals in transparent mode restore to either extended or normal modes are to be determined by the customers involved.

TABLE 2/S.33

Special function sequences

Significance	Coded representation
Start underlining subsequent transmitted characters	1/11 2/13 3/1
Cease underlining subsequent transmitted characters	1/11 2/13 3/0
Start underlining (or display in video highlight) subsequent received characters	1/11 2/13 3/1
Cease underlining (or display in video highlight) subsequent received characters	1/11 2/13 3/0
Start bold printing subsequent transmitted characters	1/11 4/5
Cease bold printing subsequent transmitted characters	1/11 4/6
Start bold printing (or display in video highlight) subsequent received character	1/11 4/5
Cease bold printing (or display in video highlight) subsequent received character	1/11 4/6
Extended mode request sequence	1/11 1/0 2/2
Extended mode positive response sequence	1/11 0/6 2/2
Extended mode negative response sequence	1/11 1/5 1/5
Normal mode request sequence	1/11 1/0 2/13
Normal mode positive response sequence	1/11 0/6 2/13
Transparent mode request sequence	1/11 1/0 2/7
Transparent mode positive response sequence	1/11 0/6 2/7
Transparent mode negative response sequence	1/11 1/5 1/5