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ITU-T

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TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

MAN-MACHINE LANGUAGE

THE CHARACTER SET AND BASIC ELEMENTS

ITU-T Recommendation Z.314

(Extract from the *Blue Book*)

NOTES

1   ITU-T Recommendation Z.314 was published in Fascicle X.7 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 Z.314

THE CHARACTER SET AND BASIC ELEMENTS

1 General

The character set and the basic elements used in the syntax are essential components of MML inputs, MML outputs and the man-machine dialogue procedures.

2 The character set

The character set to be used for the CCITT MML is a sub-set of the CCITT International Alphabet No. 5 which has been established jointly by the CCITT and the International Organization for Standardization.

To allow for possible implementation of the CCITT MML using national languages, the sub-set is taken from the basic code table given in Recommendation T.50 [1]. The code positions reserved in this table for national use are not contained in the basic character set of the CCITT MML, but may be used in these national implementations.

According to Recommendation T.50 [1] transmission control characters and information separators are intended to control or to facilitate transmission of information over telecommunication networks. Hence these control characters are not used in the MML. This will avoid interference with data transmission procedures when information in the MML is transmitted via a data transmission network.

It is furthermore recommended when information is printed or displayed that devices are used which print or display different graphic symbols for the digit zero and the capital letter O.

The characters selected for use in the CCITT MML are given in Table 1/Z.314.

TABLE 1/Z.314

Character set to be used for the CCITT man-machine language

				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
b4	b3	b2	b1	Pos.	0	1	2	3	4	5	6	7
0	0	0	0	0	NUL		SP	0	ⓐ	P	ⓐ	p
0	0	0	1	1		DC₁	!	1	A	Q	a	q
0	0	1	0	2		DC₂	"	2	B	R	b	r
0	0	1	1	3		DC₃	#	3	C	S	c	s
0	1	0	0	4		DC₄	$	4	D	T	d	t
0	1	0	1	5			%	5	E	U	e	u
0	1	1	0	6			&	6	F	V	f	v
0	1	1	1	7	BEL		'	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT (FE1)	EM	)	9	I	Y	i	y
1	0	1	0	10	LF (FE2)	SUB	*	:	J	Z	j	z
1	0	1	1	11	VT (FE3)	ESC	+	;	K	ⓐ	k	ⓐ
1	1	0	0	12	FF (FE4)		,	<	L	ⓐ	l	ⓐ
1	1	0	1	13	CR (FE5)		–	=	M	ⓐ	m	ⓐ
1	1	1	0	14	SO		.	>	N	ⓐ	n	ⓐ
1	1	1	1	15	SI		/	?	O	_	o	DEL

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ⓐ These positions are reserved for national use.

General remarks – The characters proper to the open positions are considered as outside the MML. They are implementation dependent and, together with the characters named in the table but not included in the MML, may be used in accordance with the rules given in Recommendation T.50 [1]. The position of a character in the table can be indicated by its column and row number, e.g., Pos. 3/1 gives the position of the digit 1 in the table. The table gives also the binary codes allocated to the table positions according to Recommendation T.50 [1]. The bits are identified by b_7, b_6, ... b_1, where b_7 is the highest order, or most significant bit, and b_1 is the lowest order, or least significant bit.

3 Summary of use of characters

The use of characters in the character set, except for letters, digits, and characters used solely as graphic characters and format effectors, is described in Table 2/Z.314. CCITT International Alphabet No. 5 code is indicated by position number (see Table 1/Z.314).

3.1 *Letter*

A letter is one of the characters listed in Table 1/Z.314, columns 4, 5, 6 and 7. However, positions 5/15 and 7/15 are excluded. The characters reserved for national use may be used as letters or as graphic characters.

3.2 *Digit*

A digit is one of the characters listed in Table 1/Z.314, column 3, positions 0 to 9.

3.3 *Graphic characters*

Graphic characters are a collection of characters one or more of which may be used to improve readability. Graphic characters which have other syntactic uses are listed in Table 2/Z.314. The $ (position 2/4 in Table 1/Z.314) is the only character used solely as a graphic character.

3.4 *Format effector*

The format effectors used in MML are the characters FE1 to FE5 and SP (space) as defined in Table 1/Z.314. The character BACK SPACE (FE0 in Recommendation T.50 [1]) is not regarded as a format effector in the MML.

4 Basic elements used in the syntax

Syntax diagrams of the basic elements used in the syntax are given in § 5 in sub-paragraphs with numbers corresponding to those in § 4.

4.1 *Identifier*

An identifier is a string of one or more characters which begins with a letter and, if applicable, subsequently contains only digits and/or letters e.g., U, UPDATE, UPD8.

4.2 *Symbolic name*

A symbolic name is a string of one or more characters used for the purpose of representing an entity which cannot be adequately represented by numerals or identifiers. The string contains at least one letter and/or at least one of the graphic characters + (plus sign), # (number sign), % (percent sign) plus any number of digits, including none. The characters may appear in any order. For example a time duration of 6 hours may be represented by the symbolic name 06H, a 10 percent threshold value by 10%, a signalling system such as CCITT No. 6 by SS#6.

4.3 *Decimal numeral*

A decimal numeral is a character combination, consisting of a digit or digits and an optional . (full stop), preceded by the special character combination D' (D apostrophe). If the numeric default base for an information unit (see Recommendation Z.315) is decimal, then the D' is optional.

4.4 *Nondecimal numerals*

A nondecimal numeral is a character combination preceded by a special character combination indicating the type of numeral.

4.4.1 H' (H apostrophe) is used to indicate a hexadecimal numeral, the following characters thus being any of: digits 0 to 9 or letters A, B, C, D, E, F.

4.4.2 O' (letter O apostrophe) is used to indicate an octal numeral, the following characters thus being any of: digits 0, 1, 2, 3, 4, 5, 6, 7.

4.4.3 B' (B apostrophe) is used to indicate a binary numeral, the following characters thus being digit(s) 0 and/or

digit(s) 1.

4.4.4   K' (K apostrophe) is used to indicate a keyed numeral, the following characters thus being any of: digits 0-9, * (asterisk), # (number sign), or letters A, B, C, D.

4.4.5   When the default base for an information unit (see Recommendation Z.315) is one of the nondecimal numerals e.g., hexadecimal, the corresponding character combination, i.e. H' in this example, is optional.

TABLE 2/Z.314

Summary of use of characters

CCITT International Alphabet No. 5 (Recommendation T.50) [1]			Man-machine language use
Character or character string	Position number	Name	
CAN	1/8	Cancel	Used as a deletion character.
!	2/1	exclamation mark	An indicator used in dialogue procedures (continuation character in input language).
"	2/2	quotation mark	A text string delimiter and a graphic character.
#	2/3	number sign	A character which may be used in symbolic names and keyed numerals and as a graphic character.
%	2/5	percent sign	A character which may be used in symbolic names and as a graphic character.
&	2/6	ampersand	A separator for information grouping and a graphic character.
'	2/7	apostrophe	A separator used when indication of type of numeral is required. The character is placed between a letter indicating the type of numeral and the numeral itself. Also used as a graphic character.
(	2/8	left parenthesis	Used for delimiting arithmetical expressions, and conditions in a selection argument. Also a graphic character.
)	2/9	right parenthesis	Used for delimiting arithmetical expressions, and conditions in a selection argument. Also a graphic character.
*	2/10	asterisk	Used for keyed numerals, as an arithmetic operator and as a graphic character.
+	2/11	plus sign	A character which may be used in symbolic names, as an arithmetic operator and as a graphical character.
+ +	2/11 2/11	plus sign, plus sign	A separator used for separating the increment from a group of consecutive parameter values.
,	2/12	comma	A separator used to separate parameters (if more than one) within a block of parameters.
–	2/13	hyphen	A separator used to separate information units or to separate identifiers and/or index numbers within compound parameter names. Also used as an arithmetic operator and as a graphic character.
.	2/14	full stop	A separator used for subdividing a number into an integer part and a fraction part and as a graphic character.
/	2/15	solidus	Used as an arithmetic operator and as graphic character.
:	3/10	colon	A separator used to separate blocks of parameters from each other and from the command code, an indicator used in the parameter block request indication and a separator used in output.
;	3/11	semicolon	An indicator used to terminate a command (execution character).
<	3/12	less than sign	An indicator used as a ready indicator for the system to output that it is ready to receive information, and a relational operator used in a selection argument.
=	3/13	equal sign	A separator used to separate the parameter name and the parameter value of a parameter. Also a relational operator used in a selection argument.

CCITT International Alphabet No. 5 (Recommendation T.50) [1]			Man-machine language use
Character or character string	Position number	Name	
>	3/14	greater than sign	A separator to terminate the destination identifier and a relational operator used in a selection argument.
< =	3/12 3/13	less than or equal sign	A relational operator used in a selection argument.
< >	3/12 3/14	less than or greater than sign	A relational operator used in a selection argument.
> =	3/14 3/13	greater than or equal sign	A relational operator used in a selection argument.
?	3/15	question mark	An indicator used for prompting or help.
&&	2/6 2/6	ampersand, ampersand	Separator used for information grouping.
&–	2/6 2/13	ampersand, hyphen	Separator used for information grouping.
&&–	2/6 2/6 2/13	ampersand, ampersand, hyphen	Separator used for information grouping.
/*	2/15 2/10	solidus, asterisk	Used to open a comment.
*/	2/10 2/15	asterisk, solidus	Used to close a comment.

4.5 *Text string*

A text string allows input of a literal text, including any delimiters which would have syntactical meanings when input outside a text string. It consists of zero or more characters enclosed by a " (quotation mark) at the beginning and end. The string may contain any of the characters belonging to the character set defined in § 2 except correction characters (see Recommendation Z.315). If " (quotation mark) is required within a string, it is represented by "" (double quotation marks). Text strings in output need not be delimited by quotation marks. Text strings for use in extended MML (Recommendations Z.321-Z.323) need not be delimited by quotation marks.

4.6 *Arithmetical expression*

An arithmetical expression is a combination of certain basic elements and arithmetic operators delimited by parentheses.

4.7 *Ancillary facilities*

Additional facilities have been provided when using MML commands as follows.

4.7.1 *Comment facility*

A comment is defined as a character string enclosed between the separators /* (solidus asterisk) and */ (asterisk solidus), where the character string may contain any characters except the sequence */ (asterisk solidus) and correction characters (see Recommendation Z.315). The character string, including the delimiters, has neither MML syntactical nor semantical significance. However, if it occurs in a text string, it is regarded as being part of the text string. A comment may be inserted only before and/or after a separator, indicator, arithmetic delimiter [((left parenthesis),) (right parenthesis)], arithmetic operator [+ (plus sign), - (hyphen), / (solidus), * asterisk)], identifier or information unit [excluding the ' (apostrophe) between the type of numeral and the numeral itself and the . (full stop) between the integer and fractional part of a number].

4.7.2 *Espace syntax*

In some systems it is not possible to use characters with syntactical meaning [e.g., ; (semi colon), - (hyphen)] or correction characters as data. In such systems an escape indication may be used in order to introduce the following character as data.

A specific escape indication is not proposed due to the diverse nature of terminals.

No syntax diagram is given.

4.7.3 *Format effector*

A format effector (see § 3.4) is used to format input and output in a suitable manner. Format effectors have no significance in a command and may appear anywhere in input.

No syntax diagram is given.

4.8 *Separator*

A separator is a character or a string of characters used to separate items of information in the input or output and it may, in addition, have structural, semantic or other significance.

No syntax diagram is given.

4.9 *Indicator*

An indicator is a character used to indicate a state or make a request.

No syntax diagram is given.

5 Definition of the basic elements used in the syntax in diagrams

All these elements may be used in both input and output but for simplicity only the input elements are shown in the diagrams. The output elements are identical to the input elements.

5.1 *Identifier*

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5.2 *Symbolic name*

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5.3 *Index number*

T1000690-87
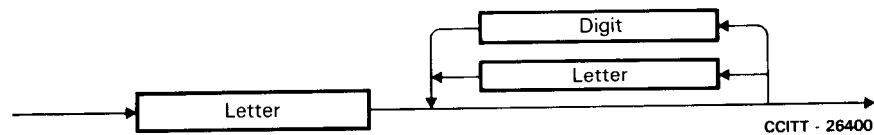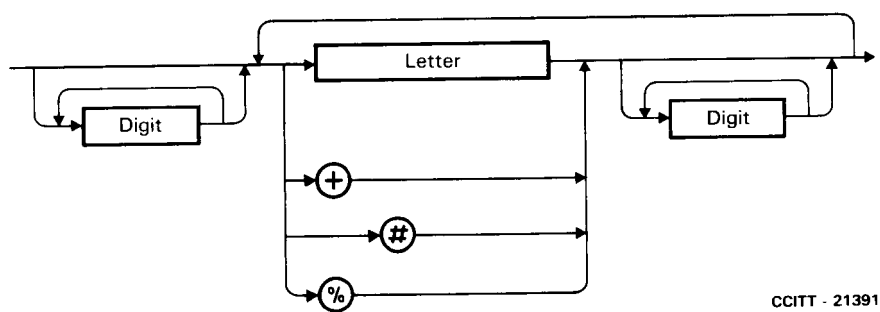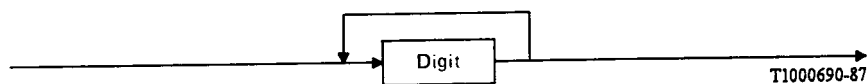
5.4   *Decimal numeral*

CCITT - 29381
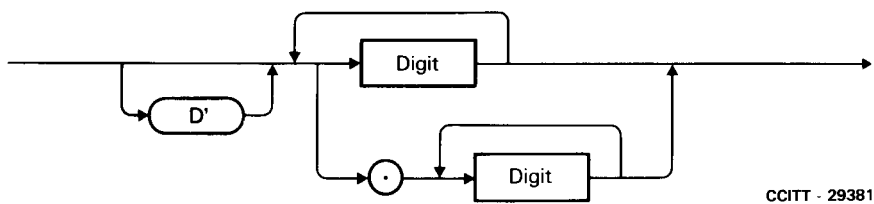
5.5   *Nondecimal numerals*

5.5.1   *Hexadecimal numeral*

CCITT - 26421
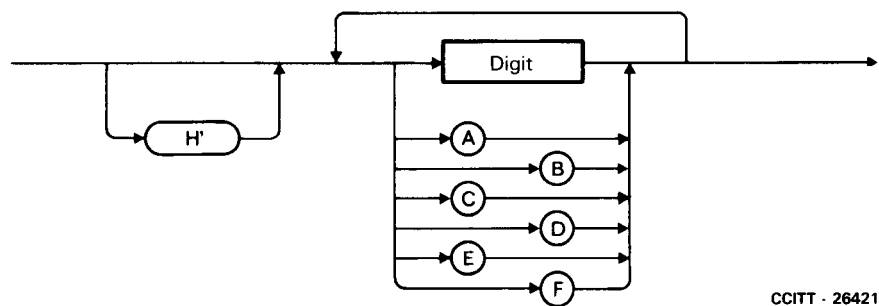
5.5.2   *Octal numeral*
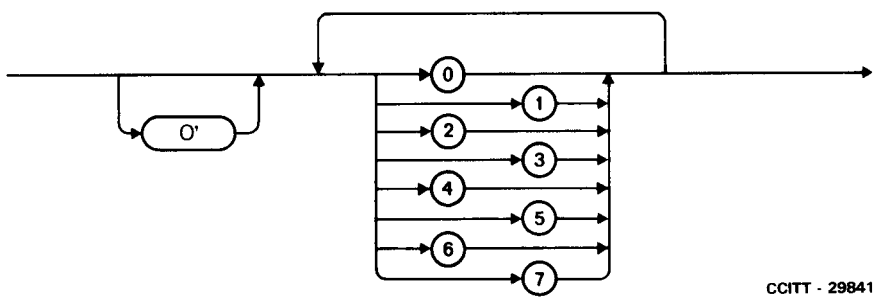
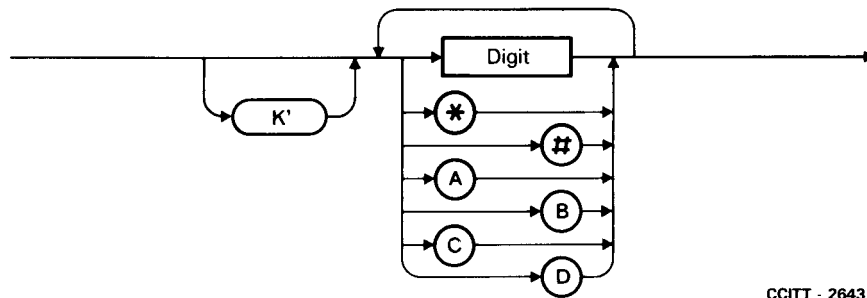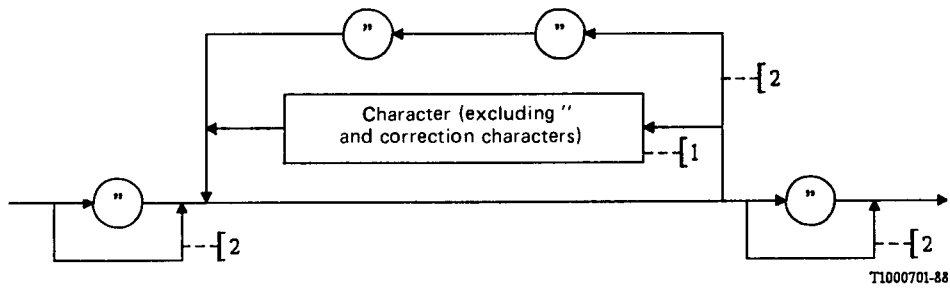CCITT - 29841

5.5.3 *Binary numeral*
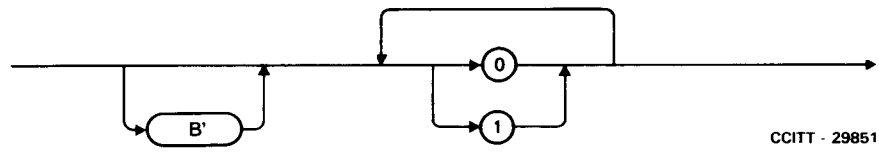
CCITT - 29851
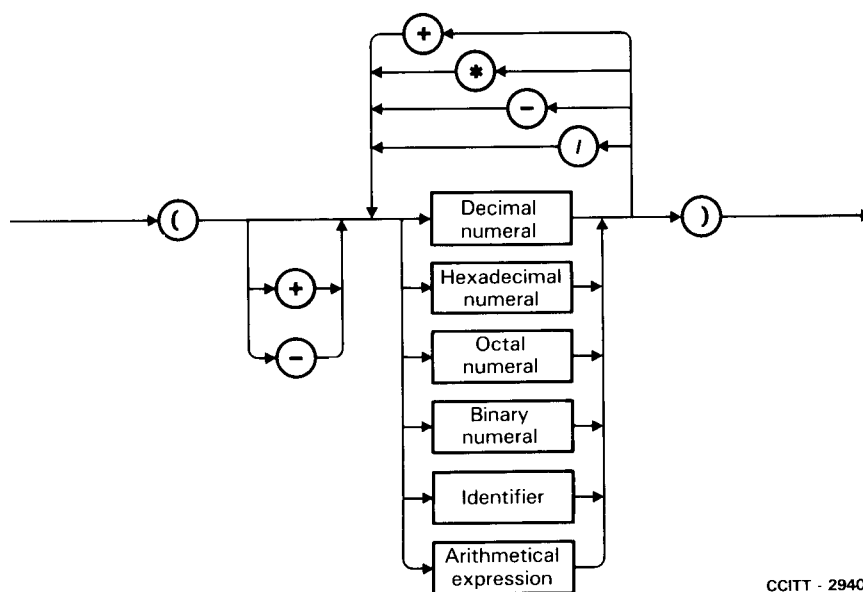
5.5.4 *Keyed numeral*

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5.6 *Text string*

T1000701-88

1) Not further expanded in diagram form.

2) When using this diagram for output in extended MML
   (Recommendations Z.321-Z.323),
   text strings need not be delimited with quotation marks.
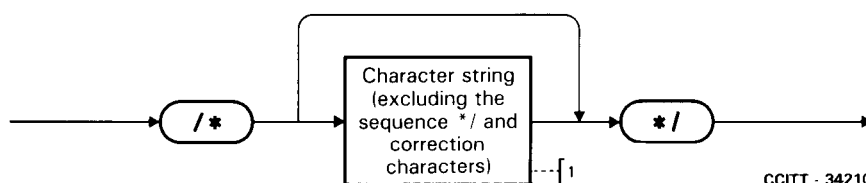
5.7   *Arithmetical expression*

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Note – The deepest level of the arithmetical expression has to satisfy the diagram in a form where the box "arithmetical expression" is omitted.

5.8   *Ancillary facilities*

5.8.1   *Comment*

CCITT - 34210

1) Not further expanded in diagram form.

Reference

[1]   CCITT Recommendation *International Alphabet No. 5*, Rec. T.50.