INTERNATIONAL STANDARD ISO 840

Numerical control of machines — 7-bit coded character set

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 97, *Computers and information processing*, has reviewed ISO Recommendation R 840-1968 and found it technically suitable for transformation. International Standard ISO 840 therefore replaces ISO Recommendation R 840-1968, which was approved by the Member Bodies of the following countries :

Belgium	Italy	Sweden
Czechoslovakia	Japan	Switzerland
Denmark	Netherlands	Turkey
Egypt, Arab Rep. of	New Zealand	United Kingdom
France	Poland	U.S.A.
Germany	Portugal	
Iran	Spain	

No Member Body expressed disapproval of the Recommendation.

Numerical control of machines — 7-bit coded character set

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a 7-bit coded character set for the numerical control of machines and associated equipment (printers, punchers); it is to be implemented on 8-track punched tape.

The code is specified by means of a table, notes and a key. An annex gives the meanings assigned to the symbols in the International Standards on punched tape block formats.

2 REFERENCES

2.1 The recommended character set is based upon and compatible with the 7-bit coded character set, which is the subject of ISO 646, *7-bit coded character set for information processing interchange.*

2.2 The implementation of this coded character set on punched tapes is in accordance with ISO 1113, *Information processing — Representation of 6- and 7-bit coded character sets on punched tape*; it includes a parity check (even parity); the parity bit is on track 8.

2.3 The technical terms used in this International Standard are based on the ISO data processing vocabulary[1].

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1) In preparation.

3 TABLE, NOTES AND KEY

3.1 Table

				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	column / row	0	1	2	3	4	5	6	7
0	0	0	0	0	NUL		SP	0		P		
0	0	0	1	1				1	A	Q		
0	0	1	0	2				2	B	R		
0	0	1	1	3				3	C	S		
0	1	0	0	4				4	D	T		
0	1	0	1	5			%	5	E	U		
0	1	1	0	6				6	F	V		
0	1	1	1	7				7	G	W		
1	0	0	0	8	BS[1]		([3]	8	H	X		
1	0	0	1	9	HT		)[3]	9	I	Y		
1	0	1	0	10	LF[2]			:[4]	J	Z		
1	0	1	1	11			+		K			
1	1	0	0	12					L			
1	1	0	1	13	CR[2]		-		M			
1	1	1	0	14					N			
1	1	1	1	15			/		O			DEL

3.2 Notes

① The "Backspace" function causes the printer carriage, and not the tape, to move backward one space.

② The "End of Block" function is performed by

— the "Line Feed" function (LF), when the printer requires distinct combinations of holes for the carriage return and line feed;

— the "New Line" function (NL), when the printer has only one instruction for the combined carriage return and line-feed operation.

The NL and LF functions are represented by the same combination of holes (position 0/10).

When the printer requires distinct combinations of holes for carriage return (CR) and line feed (LF), the machine control ignores the CR character.

③ The graphic symbols "(" left parenthesis and ")" right parenthesis are used to indicate that the characters between them must not be interpreted by the machine control equipment. They represent respectively "Control Out" and "Control In" functions.

④ The characters "%" and ":" shall not be used between the parentheses.

3.3 Key

Abbreviation	Meaning	Position in the code table
BS	Backspace	0/8
CR	Carriage Return	0/13
DEL	Delete	7/15
HT	Horizontal Tabulation	0/9
LF	Line Feed	0/10
NL	New Line	0/10
NUL	Null	0/0
SP	Space	2/0

Graphic	Name	Position in the code table
%	Per cent sign	2/5
(	Left parenthesis	2/8
)	Right parenthesis	2/9
+	Plus sign	2/11
−	Minus sign	2/13
/	Solidus	2/15
:	Colon	3/10

ANNEX

**LIST OF MEANINGS ASSIGNED TO THE SYMBOLS
IN PUNCHED TAPE BLOCK FORMATS**

Symbol	Meaning	Position in the code table
HT	Tabulation	0/9
LF or NL	End of block	0/10
%	Program start	2/5
(	Control Out	2/8
)	Control In	2/9
+	Plus	2/11
−	Minus	2/13
/	Optional block skip	2/15
:	Alignment function	3/10

For more details, see relevant International Standards, as follows :

— ISO 1057, *Numerical control of machines — Interchangeable punched tape variable block format for positioning and straight-cut machining;*

— ISO 1058, *Numerical control of machines — Punched tape variable block format for positioning and straight-cut machining;*

— ISO 1059, *Numerical control of machines — Punched tape fixed block format for positioning and straight-cut machining.*

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