

ell

UNIVERSAL CODE CHARTS

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Abbreviations Used in These Charts

ACK	- Acknowledge	IRS (RS)	- Information Record Separator
BEL	- Bell	IUS (US)	- Information Unit Separator
BS	- Backspace	LC	- Lower Case
BY	- Bypass	LF	- Line Feed
CAN	- Cancel	MZ	- Minus Zero
CR	- Carriage Return	NAK	- Negative Acknowledge
DC1	} Device Control	NL	- New Line
DC2		NUL	- Null
DC3		PF	- Punch Off
DC4		PFX	- Prefix
DEL	- Delete	PN	- Punch On
DLE	- Data Link Escape	PZ	- Plus Zero
EM	- End of Medium	RES	- Restore
ENQ	- Enquiry	RS	- Reader Stop
EOT	- End of Transmission	SI	- Shift In
ESC	- Escape	SO	- Shift Out
ETB (EOB)	- End of Transmission Block	SOH	- Start of Heading
ETX	- End of Text	STX	- Start of Text
FF	- Form Feed	SUB	- Substitute
HT	- Horizontal Tabulation	SYN	- Synchronous Idle
IFS (FS)	- Information File Separator	UC	- Upper Case
IGS (GS)	- Information Group Separator	VT	- Vertical Tabulation
IL	- Idle		

This edition completely supersedes the previous edition of this document (M-1525-0870).

NOTES

1. Friden, IBM 1050, and Baudot paper tape codes include both lower and upper case characters. The chart indicates lower and upper case characters by a slash: lower case on the left, upper case on the right. The absence of a slash indicates that the character shown is assigned to both cases.

A control code (LC or UC) determines what translation will result from each code. The required control code is punched as the first frame of each data file. It remains effective for the entire file unless a new control code is introduced or the unit's power is shut off.

Example: Friden code 761 can represent either lower case "a" or upper case "A." If a Friden LC code (76542) precedes the paper tape data, the chart indicates that Friden code 761 will translate to EBCDIC D1 or IBM Hollerith 12-0-1. However, if a Friden UC code (76543) has preceded the file, the same 761 code will translate to EBCDIC DC1 or Hollerith 12-1.

Lower case and upper case control codes are also found within EBCDIC and IBM Hollerith. These codes are used for punching the proper control code when *writing* a paper tape file.

EIA paper tape code is all upper case, and no control codes are needed to achieve correct translation.

----- Without feature
 _____ With feature

Character	BCD	EBCDIC	Hollerith
IBM ?	BA82	C82	12-8-2
		DC	12-0
IBM !	B82	CA82	11-8-2
		DCA	11-0
Honeywell ;	A82	CA842	11-8-6
		DC	12-0
Honeywell #	B82	CBAB21	8-3
		DCA	11-0
GE +	BA82	C842	12-8-6
		DC	12-0
GE †	B82	C82	12-8-2
		DCA	11-0
Univac ?	A21	CB8421	0-8-7
		DC	12-0
Univac !	B21	CA82	11-8-2
		DCA	11-0
Burroughs +	BA82	C842	12-8-6
		DC	12-0
Burroughs x	B82	C82	12-8-2
		DCA	11-0

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
00	NUL No Bits	NUL No Bits			NUL No Punch		NUL No Punch						NUL 12-0-9-8-1	
01	SOH 1	SOH 1					SOH 1						SOH 12-9-1	
02	STX 2	STX 2					STX 2						STX 12-9-2	
03	ETX 21	ETX 21					ETX 21						ETX 12-9-3	
04	PF 4	8 543		PF 76543									PF 12-9-4	
05	HT 4 1	HT 4 1	TAB 65432	HT 76 43 1		TAB 65432	HT 4 1						HT 12-9-5	
06	LC 42	8 32	LC 7654 2	LC 76 432	LC | ↓ 54321	LC 7654 2							LC 12-9-6	
07	DEL 421	DEL 7654321		DEL 7654321		DEL 7654321							DEL 12-9-7	
08	8	8 5 321											12-9-8	
09	8 1	8 43 1											12-9-8-1	
0A	8 2	8 432											12-9-8-2	
0B	VT 8 21	VT 4 21					VT 4 21						VT 12-9-8-3	
0C	FF 84	FF 43					FF 43						FF 12-9-8-4	
0D	CR 84 1	CR 43 1	CR 8		CR | (< 4	CR 8	CR 43 1						CR 12-9-8-5	
0E	SO 842	SO 432					SO 432						SO 12-9-8-6	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
0F	SI 8421	SI 4321					SI 4321						SI 12-9-8-7	
10	DLE A	DLE 5					DLE 5						DLE 12-11-9-8-1	
11	DC1 A 1	DC1 5 1					DC1 5 1						DC1 11-9-1	
12	DC2 A 2	DC2 5 2					DC2 5 2						DC2 11-9-2	
13	DC3 A 21	DC3 5 21					DC3 5 21						DC3 11-9-3	
14	RES A 4	8 543 1		RES 7 43		RES 7 43							RES 11-9-4	
15	NL A 4 1	8 3 1		NL 7 543 1		NL 7 543 1							NL 11-9-5	
16	BS A 42	BS 4	BS 6 4 2	BS 7 5432		BS 6 4 2	BS 4						BS 11-9-6	
17	IL A 421	8 321		IL 7 4321									IL 11-9-7	
18	CAN A8	CAN 54					CAN 54						CAN 11-9-8	
19	EM A8 1	EM 54 1					EM 54 1						EM 11-9-8-1	
1A	A8 2	8 5 2											11-9-8-2	
1B	A8 21	8 4321											11-9-8-3	
1C	IFS A84	FS 543					FS 543						IFS 11-9-8-4	
1D	IGS A84 1	GS 543 1					IGS 543 1						IGS 11-9-8-5	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
	IRS	RS					IRS						IRS	
1E	A842	5432					5432						11-9-8-6	
	IUS	US					IUS						IUS	
1F	A8421	54321					54321						11-9-8-7	
20	B	8											11-0-9-8-1	
21	B 1	8 1											0-9-1	
22	B 2	8 2											0-9-2	
23	B 21	8 21											0-9-3	
	BY			BY		BY							BY	
24	B 4	8 3		6 43		6 43							0-9-4	
	LF	LF		LF	LF | ≡	LF	NL						LF	
25	B 4 1	4 2		6543 1	2	6543 1	4 2						0-9-5	
	ETB	ETB		EOB		EOB	ETB						ETB	
26	B 42	5 321		65432		4 21	5 321						0-9-6	
	ESC	ESC		PFX			ESC						ESC	
27	B 421	54 21		6 4321			54 21						0-9-7	
28	B 8	8 4											0-9-8	
29	B 8 1	8 4 1											0-9-8-1	
2A	B 8 2	8 4 2											0-9-8-2	
2B	B 8 21	8 4 21											0-9-8-3	
2C	B 84	8 43											0-9-8-4	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
	ENQ	ENQ					ENQ						ENQ	
2D	B 84 1	3 1					3 1						0-9-8-5	
	ACK	ACK					ACK						ACK	
2E	B 842	32					32						0-9-8-6	
	BEL	BEL			BEL		BEL						BEL	
2F	B 8421	321			4 21		321						0-9-8-7	
30	BA	8 5											12-11-0-9-8-1	
31	BA 1	8 5 1											9-1	
	SYN	SYN					SYN						SYN	
32	BA 2	5 32					5 32						9-2	
33	BA 21	8 5 21											9-3	
	PN			PN		PN							PN	
34	BA 4	8 5 3		543		543							9-4	
	RS			RS		RS							RS	
35	BA 4 1	8 5 3 1		43 1		43 1							9-5	
	UC		UC	UC	UC | †	UC							UC	
36	BA 42	8 5 32	76543	432	54 21	76543							9-6	
	EOT	EOT		EOT		EOT	EOT						EOT	
37	BA 421	3		54321		54321	3						9-7	
38	BA8	8 54											9-8	
39	BA8 1	8 54 1											9-8-1	
3A	BA8 2	8 54 2											9-8-2	
3B	BA8 21	8 54 21											9-8-3	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
	DC4	DC4					DC4						DC4	
3C	BA84	5 3					5 3						9-8-4	
	NAK	NAK					NAK						NAK	
3D	BA84 1	5 3 1					5 3 1						9-8-5	
3E	BA842	8 5432											9-8-6	
	SUB	SUB					SS						SUB	
3F	BA8421	54 2					54 2						9-8-7	
	SPACE	SPACE	SPACE	SPACE	SP | •	SPACE	SPACE	SPACE	SPACE	SPACE	SPACE	SPACE	SPACE	SPACE
40	C	6	5	5	3	5	6	A	84 1	84	A	B 84	Blank	Blank
41	C 1	8 6											12-0-9-1	
42	C 2	8 6 1											12-0-9-2	
43	C 21	8 6 2											12-0-9-3	
44	C 4	8 6 21											12-0-9-4	
45	C 4 1	8 6 3											12-0-9-5	
46	C 42	8 6 3 1											12-0-9-6	
47	C 421	8 6 32											12-0-9-7	
48	C 8	8 6 321											12-0-9-8	
49	C 8 1	8 6 4											12-8-1	
4A	€	[	€ |	| €			£	?	€	†	x	£	€	£
	C 8 2	7 54 21	5 32	6			6 3	BA8 2	BA8421	BA8421	B 8 2	B 8	12-8-2	0-8-2

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
4B	C 8 21	6 432	76 4 21	76 4 21	543	76 4 21	6 432	BA8 21	A8 21	842	BA8 21	B 2	12-8-3	10-8-3
4C	C 84	6543	76 43 1	2			6543	BA84	BA	BA8 2	BA842	BA	12-8-4	11-8-6
4D	C 84 1	6 4	54 1	54 1	4321	6 4321	6 4	BA84 1	BA84	B 84 1	BA84 1	B 4	12-8-5	8-5
4E	C 842	6 4 21	54 2	765		765	6 4 21	BA842	A	B	BA8 2	B 421	12-8-6	10-8-2
4F	C 8421	6 1	7 4 2	6 4 2			7 54 21	BA8421	BA842	A8421	BA8421	421	12-8-7	11-8-2
50	C A	6 32	765	765	54 2	432	6 32	BA	8421	84 1	BA	B 8 2	12	10-0
51	C A 1	8 6 4 1											12-11-9-1	
52	C A 2	8 6 4 2											12-11-9-2	
53	C A 21	8 6 4 21											12-11-9-3	
54	C A 4	8 6 43											12-11-9-4	
55	C A 4 1	8 6 43 1											12-11-9-5	
56	C A 42	8 6 432											12-11-9-6	
57	C A 421	8 6 4321											12-11-9-7	
58	C A8	8 65											12-11-9-8	
59	C A8 1	8 65 1											11-8-1	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
5A	| C A8 2	| 7 543 1	| 1	| 7 54 21	| 43 1 4	| 7 4 2	| 6 1	| B 8 2	| B 8421	| A	| 8421	| B 84 1	| 11-8-2	| 10-8-7
5B	\$ C A8 21	\$ 6 3	\$ 3	\$ 7 54 21	\$ 4 1		\$ 7 543	\$ B 8 21	\$ B 8 21	\$ B 84	\$ B 8 21	\$ No Bits	\$ 11-8-3	\$ 11-8-3
5C	* C A84	* 6 4 2	* 4	* 4			* 6 4 2	* B 84	* B 84	* BA	* B 84	* B 42	* 11-8-4	* 11-8-4
5D	) C A84 1	) 6 4 1	) 6	) 54 2	) 5 2	) 54 2	) 6 4 1	) B 84 1	) A84	) B 842	) B 84 1	) B 4 1	) 11-8-5	) 8-6
5E	; C A842	; 654 21	; 765	; 5 21	; 5432		; 654 21	; B 842	; A8 2	; A8 2	; B 842	; BA 421	; 11-8-6	; 10-8-4
5F	┘ C A8421	∧ 7 5432	┘ 54 2	┘ 4 21			← 7 54321	Δ B 8421	≠ B 842	(BA84 1	┘ B 8421	← 21	┘ 11-8-7	← 0-8-7
60	- CB	- 6 43 1	- 7	- 7	- 21	- 7	- 6 43 1	- B	- B	- 8421	- B	- B 1	- 11	- 11
61	/ CB 1	/ 6 4321	/ 65 1	/ 65 1	/ 543 1	/ 65 1	/ 6 4321	/ A 1	/ BA 1	/ B 8421	/ A 1	/ B 21	/ 0-1	/ 0-1
62	CB 2	8 65 2											11-0-9-2	
63	CB 21	8 65 21											11-0-9-3	
64	CB 4	8 65 3											11-0-9-4	
65	CB 4 1	8 65 3 1											11-0-9-5	
66	CB 42	8 65 32											11-0-9-6	
67	CB 421	8 65 321											11-0-9-7	
68	CB 8	8 654											11-0-9-8	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
69	CB 8 1	8 654 1											0-8-1	
6A	CB 8 2	76543					] 7 543 1					] 1	12-11	8-7
6B	CB 8 21	6 43	654 21	654 21	43	654 21	6 43	A8 21	BA8 21	8 21	A8 21	B	0-8-3	0-8-3
6C	CB 84	6 3 1	7 54 21	5 3 1		7 54 21	6 3 1	A84	A84 1	B 8 2	A84	B 8 1	0-8-4	0-8-4
6D	CB 84 1	7 54321	7 54 21				↑ 7 5432	∨ A84 1	- BA84 1	← A842	[BA84	↑ 2	0-8-5	11-8-7
6E	CB 842	65432	76 43 1				65432	A842	842	BA8 21	842	BA 2	0-8-6	11-8-5
6F	CB 8421	654321	321	65 1	54 1	7 5432	654321	A8421	A8421	A84	No Bits	BA 21	0-8-7	0-8-5
70	CBA	8 654 2											12-11-0	
71	CBA 1	8 654 21	F1Stop 4 21										12-11-0-9-1	
72	CBA 2	8 6543	F2 543										12-11-0-9-2	
73	CBA 21	8 6543 1	F3 Res 6 43										12-11-0-9-3	
74	CBA 4	8 65432	F4 7 43										12-11-0-9-4	
75	CBA 4 1	8 654321	F5 76 432										12-11-0-9-5	
76	CBA 42	87	F6 6 4321										12-11-0-9-6	
77	CBA 421	87 1	F7 7 5432										12-11-0-9-7	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
78	CBA8	87 2	F8 43 1										12-11-0-9-8	
79	CBA8 1	76											8-1	
7A	CBA8 2	654 2	65 1	3	432		654 2		84	A84 1	84 1	BA 42	8-2	10-8-5
7B	CBA8 21	# 6 21	# 5 21	# 4 21	# 5 3	# 7 4321	# 6 21	# 8 21	# B 8 2	# BA 1	# 8 21	# B 8421	# 8-3	# 8-3
7C	CBA84	@ 7	@ 2	@ 6			@ 7	@ 84	@ BAB 2	@ 8 2	@ 84	@ A84	@ 8-4	@ 8-4
7D	CBA84 1	' 6 321	' 7 4 2	' 5 32	' 3 1		' 6 321	' 84 1	' 8 2	' BA84	' A842	' B 8 21	' 8-5	' 10-8-6
7E	CBA842	= 6543 1	= 5 3 1	= 1			= 6543 1	) 842	= 8 21	= B 8 21	= A84 1	= BA 1	= 8-6	= 0-8-6
7F	CBA8421	" 6 2	" 7	" 321	" 5 1		" 6 2	EOF 8421	" B 84 1	" A8 21	" A8421	" B 842	" 8-7	" 11-0
80	D	87 21											12-0-8-1	
81	D 1	a 76 1	a 76 1	a 76 1			a 76 1						a 12-0-1	
82	D 2	b 76 2	b 76 2	b 76 2			b 76 2						b 12-0-2	
83	D 21	c 76 21	c 765 21	c 765 21			c 76 21						c 12-0-3	
84	D 4	d 76 3	d 76 3	d 76 3			d 76 3						d 12-0-4	
85	D 4 1	e 76 3 1	e 765 3 1	e 765 3 1			e 76 3 1						e 12-0-5	
86	D 42	f 76 32	f 765 32	f 765 32			f 76 32						f 12-0-6	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
87	g D 421	g 76 321	g | 76 321	g | 76 321			g 76 321						g 12-0-7	
88	h D 8	h 76 4	h | 76 4	h | 76 4			h 76 4						h 12-0-8	
89	i D 8 1	i 76 4 1	i | 7654 1	i | 7654 1			i 76 4 1						i 12-0-9	
8A	D 8 2	87 3											12-0-8-2	
8B	D 8 21	87 3 1					< 7654 21						12-0-8-3	
8C	D 84	87 32											12-0-8-4	
8D	D 84 1	87 321											12-0-8-5	
8E	D 842	87 4											12-0-8-6	
8F	D 8421	87 4 1											12-0-8-7	
90	D A	87 4 2											12-11-8-1	
91	j D A 1	j 76 4 2	j | 7 5 1	j | 7 5 1			j 76 4 2						j 12-11-1	
92	k D A 2	k 76 4 21	k | 7 5 2	k | 7 5 2			k 76 4 21						k 12-11-2	
93	l D A 21	l 76 43	l | 7 21	l | 7 21			l 76 43						l 12-11-3	
94	m D A 4	m 76 43 1	m | 7 5 3	m | 7 5 3			m 76 43 1						m 12-11-4	
95	n D A 4 1	n 76 432	n | 7 3 1	n | 7 3 1			n 76 432						n 12-11-5	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
	o	o	o |	o |			o						o	
96	D A 42	76 4321	7 32	7 32			76 4321						12-11-6	
	p	p	p |	p |			p						p	
97	D A 421	765	7 5 321	7 5 321			765						12-11-7	
	q	q	q |	q |			q						q	
98	D A8	765 1	7 54	7 54			765 1						12-11-8	
	r	r	r |	r |			r						r	
99	D A8 1	765 2	7 4 1	7 4 1			765 2						12-11-9	
9A	D A8 2	87 4 21											12-11-8-2	
							>							
9B	D A8 21	87 43					76543 1						12-11-8-3	
9C	D A84	87 43 1											12-11-8-4	
9D	D A84 1	87 432											12-11-8-5	
9E	D A842	87 4321											12-11-8-6	
9F	D A8421	87 5											12-11-8-7	
A0	D B	87 5 1											11-0-8-1	
		~												
A1	D B 1	765432											11-0-1	
	s	s	s |	s |			s						s	
A2	D B 2	765 21	65 2	65 2			765 21						11-0-2	
	t	t	t |	t |			t						t	
A3	D B 21	765 3	6 21	6 21			765 3						11-0-3	
	u	u	u |	u |			u						u	
A4	D B 4	765 3 1	65 3	65 3			765 3 1						11-0-4	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
	v	v	v |	v |			v						v	
A5	D B 4 1	765 32	6 3 1	6 3 1			765 32						11-0-5	
	w	w	w |	w |			w						w	
A6	D B 42	765 321	6 32	6 32			765 321						11-0-6	
	x	x	x |	x |			x						x	
A7	D B 421	7654	65 321	65 321			7654						11-0-7	
	y	y	y |	y |			y						y	
A8	D B 8	7654 1	654	654			7654 1						11-0-8	
	z	z	z |	z |			z						z	
A9	D B 8 1	7654 2	6 4 1	6 4 1			7654 2						11-0-9	
AA	D B 8 2	87 5 2											11-0-8-2	
AB	D B 8 21	87 5 21											11-0-8-3	
AC	D B 84	87 5 3											11-0-8-4	
AD	D B 84 1	87 5 3 1					i 765432						11-0-8-5	
AE	D B 842	87 5 32											11-0-8-6	
AF	D B 8421	87 5 321											11-0-8-7	
B0	D BA	87 54											12-11-0-8-1	
B1	D BA 1	87 54 1											12-11-0-1	
B2	D BA 2	87 5 2											12-11-0-2	
B3	D BA 21	87 54 21											12-11-0-3	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
B4	D BA 4	87 543											12-11-0-4	
B5	D BA 4 1	87 543 1											12-11-0-5	
B6	D BA 42	87 5432											12-11-0-6	
B7	D BA 421	87 54321											12-11-0-7	
B8	D BA8	876											12-11-0-8	
B9	D BA8 1	876 1	F9 432										12-11-0-9	
BA	D BA8 2	876 2	F10 54321										12-11-0-8-2	
BB	D BA8 21	876 21	F11 7 4321										12-11-0-8-3	
BC	D BA84	876 3	F12 7 543 1										12-11-0-8-4	
BD	D BA84 1	876 3 1	F13 6543 1				~ 76543						12-11-0-8-5	
BE	D BA842	876 32											12-11-0-8-6	
BF	D BA8421	876 321											12-11-0-8-7	
C0	DC	{ 7654 21		PZ | J 7654 2									12-0	
C1	A DC 1	A 7 1	A 76 1	A 76 1	A 21	A 76 1	A 7 1	A BA 1	A A 1	A A 1	A BA 1	A A84 1	A 12-1	A 10-1
C2	B DC 2	B 7 2	B 76 2	B 76 2	B 54 1	B 76 2	B 7 2	B BA 2	B A 2	B A 2	B BA 2	B A842	B 12-2	B 10-2

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
C3	C DC 21	C 7 21	C 765 21	C 765 21	C 432	C 765 21	C 7 21	C BA 21	C A 21	C A 21	C BA 21	C A8421	C 12-3	C 10-3
C4	D DC 4	D 7 3	D 76 3	D 76 3	D 4 1	D 76 3	D 7 3	D BA 4	D A 4	D A 4	D BA 4	D A8	D 12-4	D 10-4
C5	E DC 4 1	E 7 3 1	E 765 3 1	E 765 3 1	E 1	E 765 3 1	E 7 3 1	E BA 4 1	E A 4 1	E A 4 1	E BA 4 1	E A8 1	E 12-5	E 10-5
C6	F DC 42	F 7 32	F 765 32	F 765 32	F 43 1	F 765 32	F 7 32	F BA 42	F A 42	F A 42	F BA 42	F A8 2	F 12-6	F 10-6
C7	G DC 421	G 7 321	G 76 321	G 76 321	G 54 2	G 76 321	G 7 321	G BA 421	G A 421	G A 421	G BA 421	G A8 21	G 12-7	G 10-7
C8	H DC 8	H 7 4	H 76 4	H 76 4	H 5 3	H 76 4	H 7 4	H BA8	H A8	H A8	H BA8	H A 4	H 12-8	H 10-8
C9	I DC 8 1	I 7 4 1	I 7654 1	I 7654 1	I 32	I 7654 1	I 7 4 1	I BA8 1	I A8 1	I A8 1	I BA8 1	I A 4 1	I 12-9	I 10-9
CA	DC 8 2	876 4											12-0-9-8-2	
CB	DC 8 21	876 4 1											12-0-9-8-3	
CC	DC 84	876 4 2											12-0-9-8-4	
CD	DC 84 1	876 4 21											12-0-9-8-5	
CE	DC 842	876 43											12-0-9-8-6	
CF	DC 8421	876 43 1											12-0-9-8-7	
D0	-0 DC A	} 76543 1		MZ| 7 4 2									-0 11-0	
D1	J DC A 1	J 7 4 2	J 7 5 1	J 7 5 1	J 4 21	J 7 5 1	J 7 4 2	J B 1	J B 1	J B 1	J B 1	J A 42	J 11-1	J 11-1

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
D2	K DC A 2	K 7 4 21	K 7 5 2	K 7 5 2	K 4321	K 7 5 2	K 7 4 21	K B 2	K B 2	K B 2	K B 2	K A 421	K 11-2	K 11-2
D3	L DC A 21	L 7 43	L 7 21	L 7 21	L 5 2	L 7 21	L 7 43	L B 21	L B 21	L B 21	L B 21	L A	L 11-3	L 11-3
D4	M DC A 4	M 7 43 1	M 7 5 3	M 7 5 3	M 543	M 7 5 3	M 7 43 1	M B 4	M B 4	M B 4	M B 4	M A 1	M 11-4	M 11-4
D5	N DC A 4 1	N 7 432	N 7 3 1	N 7 3 1	N 43	N 7 3 1	N 7 432	N B 4 1	N B 4 1	N B 4 1	N B 4 1	N A 2	N 11-5	N 11-5
D6	O DC A 42	O 7 4321	O 7 32	O 7 32	O 54	O 7 32	O 7 4321	O B 42	O B 42	O B 42	O B 42	O A 21	O 11-6	O 11-6
D7	P DC A 421	P 7 5	P 7 5 321	P 7 5 321	P 5 32	P 7 5 321	P 7 5	P B 421	P B 421	P B 421	P B 421	P 84	P 11-7	P 11-7
D8	Q DC A8	Q 7 5 1	Q 7 54	Q 7 54	Q 5 321	Q 7 54	Q 7 5 1	Q B 8	Q B 8	Q B 8	Q B 8	Q 84 1	Q 11-8	Q 11-8
D9	R DC A8 1	R 7 5 2	R 7 4 1	R 7 4 1	R 4 2	R 7 4 1	R 7 5 2	R B 8 1	R B 8 1	R B 8 1	R B 8 1	R 842	R 11-9	R 11-9
DA	DC A8 2	876 432											12-11-9-8-2	
DB	DC A8 21	876 4321											12-11-9-8-3	
DC	DC A84	8765											12-11-9-8-4	
DD	DC A84 1	8765 1											12-11-9-8-5	
DE	DC A842	8765 2											12-11-9-8-6	
DF	DC A8421	8765 21											12-11-9-8-7	
E0	‡ DCB	\ 7 543	ˆ	‡ | ‡ 6 4 2		‡ 76 43 1	- 76	A8 2	• A842	BA842	≠ A8 2		‡ 0-8-2	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
E1	DCB 1	8 54321											~ 11-09-1	
E2	DCB 2	7 5 21	S | S 65 2	S | S 65 2	S | 3 1	S 65 2	S 7 5 21	S A 2	S BA 2	S BA 2	S A 2	S 8421	S 0-2	S 0-2
E3	DCB 21	7 5 3	T | T 6 21	T | T 6 21	T | 5	T 6 21	T 7 5 3	T A 21	T BA 21	T BA 21	T A 21	T 8	T 0-3	T 0-3
E4	DCB 4	7 5 3 1	U | U 65 3	U | U 65 3	U | 321	U 65 3	U 7 5 3 1	U A 4	U BA 4	U BA 4	U A 4	U 8 1	U 0-4	U 0-4
E5	DCB 4 1	7 5 32	V | V 6 3 1	V | V 6 3 1	V | 5432	V 6 3 1	V 7 5 32	V A 4 1	V BA 4 1	V BA 4 1	V A 4 1	V 8 2	V 0-5	V 0-5
E6	DCB 42	7 5 321	W | W 6 32	W | W 6 32	W | 5 21	W 6 32	W 7 5 321	W A 42	W BA 42	W BA 42	W A 42	W 8 21	W 0-6	W 0-6
E7	DCB 421	7 54	X | X 65 321	X | X 65 321	X | 543 1	X 65 321	X 7 54	X A 421	X BA 421	X BA 421	X A 421	X 4	X 0-7	X 0-7
E8	DCB 8	7 54 1	Y | Y 654	Y | Y 654	Y | 5 3 1	Y 654	Y 7 54 1	Y A8	Y BA8	Y BAB	Y A8	Y 4 1	Y 0-8	Y 0-8
E9	DCB 8 1	7 54 2	Z | Z 6 4 1	Z | Z 6 4 1	Z | 5 1	Z 6 4 1	Z 7 54 2	Z A8 1	Z BA8 1	Z BA8 1	Z A8 1	Z 42	Z 0-9	Z 0-9
EA	DCB 8 2	8765 3											11-09-8-2	
EB	DCB 8 21	8765 3 1											11-09-8-3	
EC	DCB 84	8765 32											11-09-8-4	
ED	DCB 84 1	8765 321											11-09-8-5	
EE	DCB 842	87654											11-09-8-6	
EF	DCB 8421	87654 1											11-09-8-7	

Key		Paper Tape Codes						BCD Codes					Card Codes	
HEX	EBCDIC	ASCII	FRIDEN	IBM 1050	BAUDOT	EIA	ICL	IBM	HON.	NCR	BURR.	ICL	IBM	ICL
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F0	DCBA	65	6	54 2	5 32	6	65	8 2	No Bit	No Bit	8 2	BA84	0	0
	1	1	1	1	1	1	1	1	1	1	1	1	1	1
F1	DCBA 1	65 1	1	1	5 321	1	65 1	1	1	1	1	BA84 1	1	1
	2	2	2	2	2	2	2	2	2	2	2	2	2	2
F2	DCBA 2	65 2	2	2	5 21	2	65 2	2	2	2	2	BA842	2	2
	3	3	3	3	3	3	3	3	3	3	3	3	3	3
F3	DCBA 21	65 21	5 21	5 21	1	5 21	65 21	21	21	21	21	BA8421	3	3
	4	4	4	4	4	4	4	4	4	4	4	4	4	4
F4	DCBA 4	65 3	3	3	4 2	3	65 3	4	4	4	4	BA8	4	4
	5	5	5	5	5	5	5	5	5	5	5	5	5	5
F5	DCBA 4 1	65 3 1	5 3 1	5 3 1	5	5 3 1	65 3 1	4 1	4 1	4 1	4 1	BA8 1	5	5
	6	6	6	6	6	6	6	6	6	6	6	6	6	6
F6	DCBA 42	65 32	5 32	5 32	5 3 1	5 32	65 32	42	42	42	42	BA8 2	6	6
	7	7	7	7	7	7	7	7	7	7	7	7	7	7
F7	DCBA 421	65 321	321	321	321	321	65 321	421	421	421	421	BA8 21	7	7
	8	8	8	8	8	8	8	8	8	8	8	8	8	8
F8	DCBA8	654	4	4	32	4	654	8	8	8	8	BA 4	8	8
	9	9	9	9	9	9	9	9	9	9	9	9	9	9
F9	DCBA8 1	654 1	54 1	54 1	54	54 1	654 1	8 1	8 1	8 1	8 1	BA 4 1	9	9
FA	DCBA8 2	87654 2											12-11-0-9-8-2	
FB	DCBA8 21	87654 21											12-11-0-9-8-3	
FC	DCBA84	876543											12-11-0-9-8-4	
FD	DCBA84 1	876543 1											12-11-0-9-8-5	
FE	DCBA842	8765432											12-11-0-9-8-6	

