

# LA210 Letterprinter

## Emulation Modes Reference Guide

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This guide summarizes the information on printer emulation modes found in your *LA210 Letterprinter Programmer Reference Manual*. For information on general operating and programming features, see your *LA210 Letterprinter Operator and Programmer Reference Guide*.

## EMULATION MODE 1 IBM/EPSON MX80

This mode uses the LA10X-LB mosaic cartridge (font ID 137). Install it in either slot 2 or 4. The other slot can hold any other font cartridge.

### SWITCH-SELECTABLE FEATURES

#### Switch A

Switch	Setting	Function
A1, A2	Up or down	Not used.
A3	Up	When line buffer is full, printer prints line and advances to next line.
	Down	When line buffer is full, printer drops characters.
A4	Up	Cancel (CAN) character clears line buffer.
	Down	CAN character is ignored.
A5	Up	Delete (DEL) character clears line buffer.
	Down	DEL character is ignored.
A6	Up	Printer performs an automatic line feed when it receives a carriage return (CR) character.
	Down	The printer only performs a carriage return.
A7	Up	When printer receives BELL character, error bell sounds.
	Down	BELL character is ignored.
A8	Up	Selects standard 8-inch paper width at power-up.
	Down	Selects 13-inch paper width.

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## Switch B

Switch	Setting	Function
B1 to B4	All up	Enables emulation mode.
B5	Up	Selects emulation mode 1.
B6	Down	Selects emulation mode 1.
B7	Up or down	Not used.
B8	Up	Enables 2K buffer.
	Down	Enables 0.13K buffer.

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# MODE 1 CHARACTER SET

BITS		COLUMN		1		2		3		4		5		6		7								
B7	B6	B5	B4	B3	B2	B1	ROW	0	1	2	3	4	5	6	7	8	9							
0	0	0	0	0	0	0	0	NUL	0		20	16	SP	40	0	60	@	100	P	120	+	140	p	160
0	0	0	0	0	0	0	1		1	DC1	!		33	1	61	A	101	Q	121	a	141	q	161	
0	0	0	0	1	1	1	1		2	DC2	"		42	2	62	B	102	R	122	b	142	r	162	
0	0	1	0	0	2	2	2		3	DC3	#		43	3	63	C	103	S	123	c	143	s	163	
0	0	1	0	1	3	3	3		4	DC4	\$		44	4	64	D	104	T	124	d	144	t	164	
0	1	0	0	0	4	4	4		5		%		45	5	65	E	105	U	125	e	145	u	165	
0	1	0	0	1	5	5	5		6		&		46	6	66	F	106	V	126	f	146	v	166	
0	1	1	0	0	6	6	6		7	BEL			47	7	67	G	107	W	127	g	147	w	167	
1	0	0	0	0	8	8	8		9	CAN	(		48	8	68	H	108	X	128	h	148	x	168	
1	0	0	0	1	9	9	9		10	HT	)		49	9	69	I	109	Y	129	i	149	y	169	
1	0	1	0	0	10	10	10		11	LF	*		50	10	70	J	110	Z	130	j	150	z	170	
1	0	1	0	1	11	11	11		12	VT	ESC		51	11	71	K	111	[	131	k	151	{	171	
1	1	0	0	0	12	12	12		13	FF	,		52	12	72	L	112	\	132	l	152		172	
1	1	0	0	1	13	13	13		14	CR	-		53	13	73	M	113	]	133	m	153	}	173	
1	1	1	0	0	14	14	14		15	SO	.		54	14	74	N	114	^	134	n	154	~	174	
1	1	1	1	0	15	15	15		16	SI	/		55	15	75	O	115	_	135	o	155	DEL	175	

ASCII CONTROL SET      ASCII GRAPHIC CHARACTER SET

### KEY

ASCII CHARACTER	ESC	33	OCTAL
		27	DECIMAL
		1B	HEX



	1 0 0 0	1 0 0 1	1 0 1 0	1 0 1 1	1 1 0 0	1 1 0 1	1 1 1 0	1 1 1 1
	8	9	10	11	12	13	14	15
<b>NUL</b>	200 128 80	220 144 90	240 160 A0	260 176 80	300 192 C0	320 208 D0		
	201 129 81	<b>DC1</b> 221 145 91	241 161 A1	261 177 B1	301 193 C1	321 209 D1		
	202 130 82	<b>DC2</b> 222 146 92	242 162 A2	262 178 82	302 194 C2	322 210 D2		
	203 131 83	<b>DC3</b> 223 147 93	243 163 A3	263 179 83	303 195 C3	323 211 D3		
	204 132 84	<b>DC4</b> 224 148 94	244 164 A4	264 180 84	304 196 C4	324 212 D4		
	205 133 85	225 149 95	245 165 A5	265 181 85	305 197 C5	325 213 D5		
	206 134 86	226 150 96	246 166 A6	266 182 86	306 198 C6	326 214 D6		
<b>BEL</b>	207 135 87	227 151 97	247 167 A7	267 183 87	307 199 C7	327 215 D7		
	210 136 88	<b>CAN</b> 230 152 98	250 168 A8	270 184 88	310 200 C8	330 216 D8		
<b>HT</b>	211 137 89	231 153 99	251 169 A9	271 185 89	311 201 C9	331 217 D9		
<b>LF</b>	212 138 8A	232 154 9A	252 170 AA	272 186 8A	312 202 CA	332 218 DA		
<b>VT</b>	213 139 8B	<b>ESC</b> 233 155 9B	253 171 AB	273 187 8B	313 203 CB	333 219 DB		
<b>FF</b>	214 140 8C	234 156 9C	254 172 AC	274 188 8C	314 204 CC	334 220 DC		
<b>CR</b>	215 141 8D	235 157 9D	255 173 AD	275 189 8D	315 205 CD	335 221 DD		
<b>SO</b>	216 142 8E	236 158 9E	256 174 AE	276 190 8E	316 206 CE	336 222 DE		
<b>SI</b>	217 143 8F	237 159 9F	257 175 AF	277 191 8F	317 207 CF	337 223 DF		
<b>ADDITIONAL CONTROL SET</b>	<b>MODE 1 SUPPLEMENTAL CHARACTER SET</b>							

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## CONTROL CHARACTERS

### C0 and C1 Control Characters

Name	Mnemonic	Octal Code		Function
		C0	C1	
Null	NUL	00	200	Used in escape sequences.
Bell	BEL	07	207	Sounds bell if enabled by switch <b>A7</b> .
Horizontal tab	HT	11	211	Advances to next horizontal tab, if any. Otherwise, takes no action.
Line feed	LF	12	212	Prints buffer's contents, then advances paper by current line spacing.
Vertical tab	VT	13	213	Prints buffer's contents, then moves to next vertical tab, if any. Otherwise, performs line feed.
Form feed	FF	14	214	Advances to next top of form.
Carriage return	CR	15	215	Prints buffer's contents, then performs a carriage return. Also performs a line feed if line feed/new line is enabled by switch <b>A6</b> .
Shift out	SO	16	216	Sets double width for all following characters, until the next line terminator or DC4 is received.
Shift in	SI	17	217	Sets compressed pitch for current line and following lines, until DC2 is received.

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**C0 and C1 Control Characters (Cont)**

Name	Mnemonic	Octal Code		Function
		C0	C1	
Device control 1	DC1	21	221	Enables the printer and clears print buffer.
Device control 2	DC2	22	222	Sets standard pitch for current line and following lines, until SI is received.
Device control 3	DC3	23	223	Disables the printer until DC1 is received.
Device control 4	DC4	24	224	Sets single width for all following characters, until SO is received
Cancel	CAN	30	230	Clears the print buffer if enabled by switch <b>A4</b> .
Escape	ESC	33	233	Starts escape sequences.

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## ESCAPE SEQUENCES

### Vertical Form Handling

Name (Mnemonic)	Sequence	Function
Set vertical pitch (ER8LI)	<b>ESC 0</b> 033 060	Sets vertical pitch to 8 lines per inch.
(ER10LI)	<b>ESC 1</b> 033 061	Sets vertical pitch to 10.3 lines per inch (72/7).
(ERNLI2)	<b>ESC 2</b> 033 062	Sets vertical pitch to the setting specified in a previous ESC A sequence.
(ERNLI1)	<b>ESC A Pn</b> 033 101 ***	Sets vertical pitch to 72/Pn lines per inch. Does not take effect until ESC 2 is sent.
Set form length (ERSFL)	<b>ESC C Pn</b> 033 103 ***	Sets the form length to the number of inches that equal Pn X current pitch.

### Vertical Tabs

Name (Mnemonic)	Sequence	Function
Set vertical tabs (ERSVT)	<b>ESC B Pn1 Pn2 Pn NUL</b> 033 102 *** *** *** 000	Clears vertical tabs, then sets tabs at Pn1, Pn2, and other designated stops. Pn is a character representing the line numbers in ascending order. For example, the character DC2 sets a tab at line 18. You can specify up to 16 tabs in one sequence.

## Horizontal Tabs

Name (Mnemonic)	Sequence	Function
Set horizontal tabs (ERSHT)	<b>ESC D Pn1 Pn2 Pn NUL</b> 033 104 *** *** *** 000	Clears horizontal tabs, then tabs at Pn1, Pn2, and other designated stops. Pn is a character representing the column number of the desired tab. For example, the character DC2 sets a tab at column 18. You can specify up to 16 tabs.

## Paper Fault Handling

Name (Mnemonic)	Sequence	Function
Disable paper out (ERDPO)	<b>ESC 8</b> 033 056	Disables paper-out handling.
Enable paper out (EREPO)	<b>ESC 9</b> 033 057	Enables paper-out handling.

## Printing Modes

Name (Mnemonic)	Sequence	Function
Enable bold (EREBD)	<b>ESC E</b> 033 105	Sets bold printing for all following characters.
Disable bold (ERDBD)	<b>ESC F</b> 033 106	Turns off bold printing for all following characters.
Set high resolution (EREHR)	<b>ESC G</b> 033 107	Enters high resolution mode.
Set low resolution (ERDHR)	<b>ESC H</b> 033 108	Enters low resolution mode.

## EMULATION MODE 2

### IBM/EPSON MX80 PLUS GRAFTRAX

This mode uses two cartridges, the LA10X-AP italic 10 (primary font, ID 011) and LA10X-LC Graftrax (font ID 143). Install the italic cartridge in slot 2 and Graftrax cartridge in slot 4. If another style is desired, install the alternate primary font cartridge in slot 2.

#### SWITCH-SELECTABLE FEATURES

##### Switch A

Switch	Setting	Function
A1	Down	Printer is set to standard horizontal pitch at power-up.
	Up	Printer operates at compressed horizontal pitch.
A2	Up	Sets bottom margin to 1 inch at power-up.
A3	Up	Enables bold printing at power-up.
A4	Up	Enables italic printing at power-up.
A5	Up	Enables slashed zero (Ø) printing at power-up.
A6	Up	Printer performs an automatic line feed when it receives a carriage return (CR) character.
	Down	Printer only performs a carriage return.
A7	Up	When printer receives BELL character, error bell sounds.
	Down	BELL character is ignored.
A8	Up	Selects standard 8-inch paper width at power-up.
	Down	Selects 13-inch paper width.

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**Switch B**

<b>Switch</b>	<b>Setting</b>	<b>Function</b>
B1 to B4	All up	Enables emulation mode.
B5	Down	Selects emulation mode 2.
B6	Up	Selects emulation mode 2.
B7	Up or down	Not used.
B8	Up	Enables 2K buffer.
	Down	Enables 0.13K buffer.

---

## MODE 2 CHARACTER SET

BITS		COLUMNS		1		2		3		4		5		6		7	
B4	B3	B2	B1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
ROW	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0 0 0 0	0	NUL	0	0	20	SP	40	0	60	@	100	P	120	.	140	p	160
0 0 0 0	1		1	1	21	!	41	1	61	A	101	Q	121	a	141	q	161
0 0 0 1	0		2	2	22	DC2	42	2	62	B	102	R	122	b	142	r	162
0 0 0 1	1		3	3	23	#	43	3	63	C	103	S	123	c	143	s	163
0 0 1 0	0		4	4	24	DC4	44	4	64	D	104	T	124	d	144	t	164
0 0 1 0	1		5	5	25	%	45	5	65	E	105	U	125	e	145	u	165
0 0 1 1	0		6	6	26	&	46	6	66	F	106	V	126	f	146	v	166
0 0 1 1	1	BEL	7	7	27	'	47	7	67	G	107	W	127	g	147	w	167
1 0 0 0	0	BS	8	8	30	(	50	8	70	H	110	X	130	h	150	x	170
1 0 0 0	1		9	9	31	)	51	9	71	I	111	Y	131	i	151	y	171
1 0 0 1	0	HT	10	10	32	*	52	:	72	J	112	Z	132	j	152	z	172
1 0 0 1	1	LF	11	11	33	+	53	;	73	K	113	[	133	k	153	{	173
1 0 1 0	0	VT	12	12	34	,	54	<	74	L	114	\	134	l	154	:	174
1 0 1 0	1	FF	13	13	35	.	55	=	75	M	115	]	135	m	155	~	175
1 0 1 1	0	CR	14	14	36	-	56	>	76	N	116	^	136	n	156	}	176
1 0 1 1	1	SO	15	15	37	/	57	?	77	O	117	_	137	o	157	DEL	177
1 1 0 0	0		16	16	38		58		78		118		138		158		178
1 1 0 0	1		17	17	39		59		79		119		139		159		179
1 1 0 1	0		18	18	40		60		80		120		140		160		180
1 1 0 1	1		19	19	41		61		81		121		141		161		181
1 1 1 0	0		20	20	42		62		82		122		142		162		182
1 1 1 0	1		21	21	43		63		83		123		143		163		183
1 1 1 1	0		22	22	44		64		84		124		144		164		184
1 1 1 1	1		23	23	45		65		85		125		145		165		185
1 1 1 1	1		24	24	46		66		86		126		146		166		186
1 1 1 1	1		25	25	47		67		87		127		147		167		187
1 1 1 1	1		26	26	48		68		88		128		148		168		188
1 1 1 1	1		27	27	49		69		89		129		149		169		189
1 1 1 1	1		28	28	50		70		90		130		150		170		190
1 1 1 1	1		29	29	51		71		91		131		151		171		191
1 1 1 1	1		30	30	52		72		92		132		152		172		192
1 1 1 1	1		31	31	53		73		93		133		153		173		193
1 1 1 1	1		32	32	54		74		94		134		154		174		194
1 1 1 1	1		33	33	55		75		95		135		155		175		195
1 1 1 1	1		34	34	56		76		96		136		156		176		196
1 1 1 1	1		35	35	57		77		97		137		157		177		197
1 1 1 1	1		36	36	58		78		98		138		158		178		198
1 1 1 1	1		37	37	59		79		99		139		159		179		199
1 1 1 1	1		38	38	60		80		100		140		160		180		200

ASCII CONTROL SET

ASCII GRAPHIC CHARACTER SET

## KEY

ASCII CHARACTER	ESC	33	OCTAL
		27	DECIMAL
		1B	HEX



	1 0 0 0	1 0 0 1	1 0 1 0	1 0 1 1	1 1 0 0	1 1 0 1	1 1 1 0	1 1 1 1		
	8	9	10	11	12	13	14	15		
NUL	200 128 80		220 144 90	SP 240 160 AD	0	260 176 80	@ 300 192 C0	P 320 208 D0	T 340 224 E0	p 360 240 F0
£	201 129 81		221 145 91	!	1	261 172 81	A 301 193 C1	Q 321 209 D1	a 341 225 E1	q 361 241 F1
**	202 130 82	DC2	222 146 92	"	2	262 178 82	B 302 194 C2	R 322 210 D2	b 342 226 E2	r 362 242 F2
'	203 131 83		223 147 93	#	3	263 163 83	C 303 195 C3	S 323 211 D3	c 343 227 E3	s 363 243 F3
'	204 132 84	DC4	224 148 94	\$	4	264 164 84	D 304 196 C4	T 324 212 D4	d 344 228 E4	t 364 244 F4
§	205 133 85	⌋	225 149 95	%	5	265 181 85	E 305 197 C5	U 325 213 D5	e 345 229 E5	u 365 245 F5
r	206 134 86	⌋	226 150 96	&	6	266 182 86	F 306 198 C6	V 326 214 D6	f 346 230 E6	v 366 246 F6
BEL	207 135 87	⌋	227 151 97	'	7	267 183 87	G 307 199 C7	W 327 215 D7	g 347 231 E7	w 367 247 F7
BS	210 136 88	T	230 152 98	(	8	270 184 88	H 310 200 C8	X 330 216 D8	h 350 232 E8	x 370 248 F8
HT	211 137 89	L	231 153 99	)	9	271 185 89	I 311 201 C9	Y 331 217 D9	i 351 233 E9	y 371 249 F9
LF	212 138 8A	J	232 154 9A	*	:	272 170 8A	J 312 202 CA	Z 332 218 DA	j 352 234 EA	z 372 250 FA
VT	213 139 8B	ESC	233 155 9B	+	:	273 187 8B	K 313 203 CB	[ 333 219 DB	k 353 235 EB	{ 373 251 FB
FF	214 140 8C	I	234 156 9C	,	<	274 188 8C	L 314 204 CC	\ 334 220 DC	l 354 236 EC	/ 374 252 FC
CR	215 141 8D	-	235 157 9D	-	=	275 189 8D	M 315 205 CD	J 335 221 DD	m 355 237 ED	} 375 253 FD
SO	216 142 8E	J	236 158 9E	.	>	276 174 8E	N 316 206 CE	^ 336 222 DE	n 356 238 EE	~ 376 254 FE
SI	217 143 8F	+	237 159 9F	/	?	277 175 8F	O 317 207 CF	- 337 223 DF	o 357 239 EF	DEL 377 255 FF
ADDITIONAL CONTROL SET			MODE 2 SUPPLEMENTAL CHARACTER SET							

## CONTROL CHARACTERS

### CO Control Characters

<b>Name</b>	<b>Mnemonic</b>	<b>Octal Code</b>	<b>Function</b>
Null	NUL	00	Used in escape sequences.
Bell	BEL	07	Sounds bell if enabled by switch <b>A7</b> .
Backspace	BS	10	Prints buffer's contents, then moves back one character cell. (Moves back two cells if this is first time in double width.)
Horizontal tab	HT	11	Moves to next horizontal tab, if any. Otherwise, takes no action.
Line feed	LF	12	Prints buffer's contents, then advances paper by current line spacing.
Vertical tab	VT	13	Prints buffer's contents, then performs a line feed.
Form feed	FF	14	Advance to next top of form.
Carriage return	CR	15	Prints buffer's contents, then returns to left margin. Performs line feed if enabled by switch <b>A6</b> .

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**C0 Control Characters (Cont)**

<b>Name</b>	<b>Mnemonic</b>	<b>Octal Code</b>	<b>Function</b>
Shift out	SO	16	Sets double width for all following characters, until the next line terminator or DC4 is received.
Shift in	SI	17	Sets compressed pitch for current line and following lines, until DC2 is received.
Device control 2	DC2	22	Sets standard horizontal pitch for current line and following lines, until SI is received.
Device control 4	DC4	24	Sets single width for all following characters, until SO is received.
Escape	ESC	33	Starts escape sequences.

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## C1 Control Characters

Name	Mnemonic	Octal Code	Function
Null	NUL	200	Used in escape sequences.
Pound sign	-	201	*
Umlaut	-	202	*
Opening single quote	-	203	*
Closing single quote	-	204	*
Paragraph	-	205	*
Top level corner	-	206	*
Bell	BEL	207	Sounds bell tone if enabled by switch <b>A7</b> .
Backspace	BS	210	Prints buffer's contents, then moves back one character cell.
Horizontal tab	HT	211	Advances to next horizontal tab stop, if any. Otherwise, takes no action.
Line feed	LF	212	Prints buffer's contents, then advances paper by current line spacing.
Vertical tab	VT	213	Prints buffer's contents, then performs a line feed.
Form feed	FF	214	Advances to next top of form.
Carriage return	CR	215	Prints buffer's contents, then returns to left margin. Performs line feed if enabled by switch <b>A6</b> .

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**C1 Control Characters (Cont)**

<b>Name</b>	<b>Mnemonic</b>	<b>Octal Code</b>	<b>Function</b>
Shift out	SO	216	Sets double width for all following characters, until next line terminator or DC4 is received.
Shift in	SI	217	Sets compressed horizontal pitch for current line and following lines, until DC2 is received.
Device control 2	DC2	222	Sets standard horizontal pitch for current line and following lines, until SI is received.
Device control 4	DC4	224	Sets single width for all following characters, until SO is received.
Top right corner		225	*
Right T		226	*
Left T		227	*
Top T		230	*
Bottom left corner		231	*
Bottom right corner		232	*
Escape	ESC	233	Starts escape sequences.
Vertical line		234	*
Horizontal line		235	*
Bottom T		236	*
Center cross		237	*

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\* Indicates a printable character. See the Mode 2 Character Set for examples of these characters.

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## ESCAPE SEQUENCES

### Vertical Form Handling

Name (Mnemonic)	Sequence	Function
Set vertical pitch (ER8LI)	<b>ESC 0</b> 033 060	Sets vertical pitch to 8 lines per inch.
(ER10LI)	<b>ESC 1</b> 033 061	Sets vertical pitch to 10.3 (72/7) lines per inch.
(ER6LI2)	<b>ESC 2</b> 033 062	Sets vertical pitch to 6 lines per inch.
(ERNLI3)	<b>ESC 3 Pn</b> 033 063 ***	Sets vertical pitch to 216/Pn lines per inch.
(ERNLI5)	<b>ESC A Pn</b> 033 101 ***	Sets vertical pitch to 72/Pn lines per inch.
(ERNLI4)	<b>ESC J Pn</b> 033 112 ***	Prints buffer's contents, then sets vertical pitch to 216/Pn lines per inch for next line feed only.
Set form length (ERSFL)	<b>ESC C Pn</b> 033 103 ***	Sets the form length to the number of inches that equal Pn X current pitch.
(ERSFLI)	<b>ESC C NUL Pn</b> 033 103 000 ***	Sets the form length to Pn inches.
Set bottom margin (ERSBM)	<b>ESC N Pn</b> 033 116 ***	Sets the bottom margin to Pn lines from the bottom of the page.
Clear bottom margin (ERCBM)	<b>ESC O</b> 033 117	Clears the bottom margin. Overrides any margin set by switch <b>A2</b> .

---

## Horizontal Form Handling

Name (Mnemonic)	Sequence	Function
Set right margin (ERSRM)	<b>ESC Q Pn</b> 033 121 ***	Sets right margin to Pn (column number in octal).
Set double-width characters (EREDW)	<b>ESC W &gt;0</b> 033 127 ***	Sets double-width characters for current line and following lines. Any non-zero character as the third character completes this sequence.
Set single-width characters (ERDDW)	<b>ESC W NUL</b> 033 127 000	Sets single-width characters for current line and following lines.

## Horizontal Tabs

Name (Mnemonic)	Sequence	Function
Set horizontal tabs (ERSHT)	<b>ESC D Pn1 Pn2 Pn NUL</b> 033 104 *** *** *** 000 or <b>ESC D Pn1 Pn2 Pn 80H</b> 033 104 *** *** *** 200	Sets horizontal tab stops at Pn1, Pn2, and other designated stops. Pn is a character representing the column number of the desired stop. For example, the character DC2 sets a tab at column 18. You can specify up to 16 tabs.

---

## Paper Fault Handling

<b>Name (Mnemonic)</b>	<b>Sequence</b>	<b>Function</b>
Disable paper out (ERDPO)	<b>ESC 8</b> 033 056	Disables paper- out handling.
Enable paper out (EREPO)	<b>ESC 9</b> 033 057	Enables paper- out handling.

## Unidirectional/Bidirectional Control

<b>Name (Mnemonic)</b>	<b>Sequence</b>	<b>Function</b>
Set one-line unidirectional printing (EREUDI)	<b>ESC &lt;</b> 033 074	Prints current line from left to right.
Set bidirectional printing (ERDUD)	<b>ESC U NUL</b> 033 074 000	Prints lines in bidirectional mode.
Set unidirectional printing (EREUD)	<b>ESC U &gt;0</b> 033 074 ***	Prints lines from left to right only. Any nonzero character as the third character completes this sequence.

---



## Character Set Mapping

When you install a primary cartridge other than the italic cartridge in slot 2, all references to the italic set in the following table apply to the character set of the installed primary cartridge.

Switch A4 Setting	Escape Sequence	C0	GL	C1	GR
Down (normal)	None	C0	ASCII	C1	Italic ASCII
Up (italic)	None	C0	Italic ASCII	C1	Italic ASCII
Down (normal)	ER8BS	C1	Italic ASCII	C1	Italic ASCII
Down (normal)	ER8BC	C0	ASCII	C0	ASCII
Up (italic)	ER8BS	C1	Italic ASCII	C1	Italic ASCII
Up (italic)	ER8BC	C0	Italic ASCII	C0	Italic ASCII

Name (Mnemonic)	Sequence	Function
Retain eighth bit (ER8BU)	<b>ESC #</b> 033 043	Keeps 8th bit unchanged. Use current character set.
Clear eighth bit (ER8BC)	<b>ESC =</b> 033 075	Clears 8th bit (sets to 0). Maps the default GL and C0 character set to the C1 and GR range.
Set eighth bit (ER8BS)	<b>ESC &gt;</b> 033 076	Sets 8th bit. Maps the default C1 and GR character set to the C0 and GL range.

## Printing Modes

Name (Mnemonic)	Sequence	Function
Enable bold (EREBD)	<b>ESC E</b> 033 105	Sets bold printing for all following characters.
Disable bold (ERDBD)	<b>ESC F</b> 033 106	Turns off bold printing for all following characters.

## Printing Modes (Cont)

Name (Mnemonic)	Sequence	Function
Set high resolution (EREHR)	<b>ESC G</b> 033 107	Enters high resolution mode.
Set low resolution (ERDHR)	<b>ESC H</b> 033 108	Enters low resolution mode. and resets the script setting.
Set underline (EREUL)	<b>ESC - &gt;0</b> 033 045 ***	Underlines all following characters. Any nonzero character as the third character completes this sequence.
Reset underline (ERDUL)	<b>ESC - NUL</b> 033 045 000	Turns off underlining for all following characters.
Select italic (EREIL)	<b>ESC 4</b> 033 064	Selects italic ASCII set as GL.
Select nonitalic (ERDIL)	<b>ESC 5</b> 033 065	Selects nonitalic ASCII set as GL.
Enable superscript (ERESCR)	<b>ESC S NUL</b> 033 123 000	Prints all following characters in superscript mode.
Enable subscript (ERESCR)	<b>ESC S &gt;0</b> 033 123 ***	Prints all following characters in subscript mode. Any non-zero character as the third character completes this sequence.
Reset script and directional printing (ERDSCR)	<b>ESC T</b> 033 124	Resets script setting to no script and resets printing mode to bidirectional.

## Graphics Mode

Name (Mnemonic)	Sequence	Function
60 DPI graphics (ERGR6)	<b>ESC K Pn1 Pn2</b> 033 113 *** ***	<p>Enter 60 dots per inch for the next n bytes. Pn1 and Pn2 together specify the number of bytes according to the formula</p> $n=(256 \times Pn2) + Pn1$ <p>The total must be less than the remainder of bytes in the line buffer. If the buffer is empty, the total must be less than 480 (8-inch paper selected) or less than 780 (13-inch paper selected).</p>
132 DPI graphics (ERGR12)	<b>ESC L Pn1 Pn2</b> 033 114 *** ***	<p>Enter 132 dots per inch for the next n bytes. Pn1 and Pn2 together specify the number of bytes according to the formula</p> $n=(256 \times Pn2) + Pn1$ <p>The total must be less than the remainder of bytes in the line buffer. If the buffer is empty, the total must be less than 960 (8-inch paper selected) or less than 1740 (13-inch paper selected).</p>

## Reset

<b>Name (Mnemonic)</b>	<b>Sequence</b>	<b>Function</b>
Reset (ERRIS)	<b>ESC</b> @ 033 100	Resets all features (previously set by escape sequences) to their initial default settings.

## Mode 2 Default Settings (Restored by Reset)

<b>Feature</b>	<b>Setting</b>
GL character set	Set to current setting of switch <b>A4</b> . (GL is not italic if <b>A4</b> is set to down position.)
8-bit operations	Leave 8th bit unchanged.
Print direction	Set to bidirectional.
Script	Set to no superscript or subscript.
Character width	Set to single width.
Underline	Set to no underlining.
Paper fault	Enabled.
Vertical tab	Set to every line.
Horizontal tab	Set every eight columns (1, 9, 17, . . .).
Form length	Set to 11 inches.
Bottom margin	Set to current setting of switch <b>A2</b> (either no bottom margin or 1-inch margin).
Vertical pitch	Set to 6 lines per inch.
Paper width	Set to current setting of switch <b>A8</b> (either 8 inches or 13 inches).
Right margin	Set to the current paper width selected by switch <b>A8</b> .
Resolution	Set to low resolution.
Bold	Set to current setting of switch <b>A3</b> .
Horizontal pitch	Set to current setting of switch <b>A1</b> (either standard or compressed).

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## EMULATION MODE 3 IBM GRAPHICS PRINTER

This mode uses two cartridges, the LA10X-LA line drawing (font ID 139) and LA10X-LD foreign style (font ID 141). You can install these cartridges in slot 2 or 4.

### SWITCH-SELECTABLE FEATURES

#### Switch A

Switch	Setting	Function
A1, A2	Up or down	Not used.
A3	Up	When line buffer is full, printer prints line and advances to next line.
	Down	When line buffer is full, printer drops characters.
A4	Up	Cancel (CAN) character clears line buffer.
	Down	CAN character is ignored.
A5	Up	Delete (DEL) character clears line buffer.
	Down	DEL character is ignored.
A6	Up	Printer performs an automatic line feed when it receives a carriage return (CR) character.
	Down	Printer only performs a carriage return.
A7	Up	When printer receives BELL character, error bell sounds.
	Down	BELL character is ignored.
A8	Up	Selects standard 8-inch paper width at power-up.
	Down	Selects 13-inch paper width.

#### Switch B

Switch	Setting	Function
B1 to B4	All up	Enables emulation mode.
B5, B6	Up	Selects emulation mode 3.
B7	Up or down	Not used.
B8	Up	Enables 2K buffer.
	Down	Enables 0.13K buffer.

---

# MODE 3 CHARACTER SET 1

88 87 BITS 84 83 82 81 ROW	0 0 0 0		0 0 0 1		0 0 1 0		0 0 1 1		0 1 0 0		0 1 0 1		0 1 1 0		0 1 1 1	
	COLUMN		1		2		3		4		5		6		7	
	O		1		2		3		4		5		6		7	
0 0 0 0	0	NUL	0	20	SP	40	0	60	@	100	P	120	,	140	p	160
			16	10		32		48		64		80		96		112
			0			20		30		40		50		60		70
0 0 0 1	1		1	21	!	41	1	61	A	101	Q	121	a	141	q	161
			17	11		33		49		65		81		97		113
			1			21		31		41		51		61		71
0 0 1 0	2		2	22	"	42	2	62	B	102	R	122	b	142	r	162
			2			34		50		66		82		98		114
			2			12		22		32		42		52		62
0 0 1 1	3		3	23	#	43	3	63	C	103	S	123	c	143	s	163
			3			19		35		51		67		83		99
			3			23		33		43		53		63		73
0 1 0 0	4		4	24	\$	44	4	64	D	104	T	124	d	144	t	164
			4			36		52		68		84		100		116
			4			14		24		34		44		54		64
0 1 0 1	5		5	25	%	45	5	65	E	105	U	125	e	145	u	165
			5			37		53		69		85		101		117
			5			15		25		35		45		55		65
0 1 1 0	6		6	26	&	46	6	66	F	106	V	126	f	146	v	166
			6			38		54		70		86		102		118
			6			26		36		46		56		66		76
0 1 1 1	7	BEL	7	27	/	47	7	67	G	107	W	127	g	147	w	167
			7			39		55		71		87		103		119
			7			17		27		37		47		57		67
1 0 0 0	8		8	30	(	50	8	70	H	110	X	130	h	150	x	170
			8			40		56		72		88		104		120
			8			18		28		38		48		58		68
1 0 0 1	9	HT	9	31	)	51	9	71	I	111	Y	131	i	151	y	171
			9			41		57		73		89		105		121
			9			19		29		39		49		59		69
1 0 1 0	10	LF	10	32	*	52	:	72	J	112	Z	132	j	152	z	172
			10			42		58		74		90		106		122
			10			2A		3A		4A		5A		6A		7A
1 0 1 1	11	VT	11	33	+	53	:	73	K	113	[	133	k	153	{	173
			11			43		59		75		91		107		123
			11			1B		2B		3B		4B		5B		6B
1 1 0 0	12	FF	12	34	,	54	<	74	L	114	\	134	l	154	;	174
			12			44		60		76		92		108		124
			12			2C		3C		4C		5C		6C		7C
1 1 0 1	13	CR	13	35	-	55	=	75	M	115	]	135	m	155	}	175
			13			45		61		77		93		109		125
			13			1D		2D		3D		4D		5D		6D
1 1 1 0	14	SO	14	36	.	56	>	76	N	116	^	136	n	156	~	176
			14			46		62		78		94		110		126
			14			1E		2E		3E		4E		5E		6E
1 1 1 1	15	SI	15	37	/	57	?	77	O	117	_	137	o	157		177
			15			47		63		79		95		111		127
			15			1F		2F		3F		4F		5F		6F

ASCII CONTROL SET

ASCII GRAPHIC CHARACTER SET

### KEY

ASCII CHARACTER	ESC	33	OCTAL
		27	DECIMAL
		1B	HEX

1 0 0 0		1 0 0 1		1 0 1 0		1 0 1 1		1 1 0 0		1 1 0 1		1 1 1 0		1 1 1 1			
8		9		10		11		12		13		14		15			
NUL	200	220	á	240	260	300	320	340	360	DC2	222	242	262	302	322	342	
	128	144	160	176	192	208	208	224	240		210	194	178	194	210	226	242
	80	90	AD	80	C0	DO	DO	E0	F0		D1	C2	B1	C2	D2	E2	F2
201	221	241	261	301	321	341	361	DC4	224	244	264	304	324	344	364		
129	145	161	177	193	209	225	241		211	195	179	195	211	227	243		
81	91	A1	81	C1	D1	E1	F1		D3	C3	B3	C3	D3	E3	F3		
202	222	242	262	302	322	342	362	CAN	226	246	266	306	326	346	366		
130	146	162	178	194	210	226	242		212	197	181	197	213	229	245		
82	92	A2	82	C2	D2	E2	F2		D4	C4	B4	C4	D4	E4	F4		
203	223	243	263	303	323	343	363	HT	228	248	268	308	328	348	368		
131	147	163	179	195	211	227	243		214	198	182	198	214	230	246		
83	93	A3	83	C3	D3	E3	F3		D6	C6	B6	C6	D6	E6	F6		
204	224	244	264	304	324	344	364	VT	230	250	270	310	330	350	370		
132	148	164	180	196	212	228	244		216	200	184	200	216	232	248		
84	94	A4	84	C4	D4	E4	F4		D8	C8	B8	C8	D8	E8	F8		
205	225	245	265	305	325	345	365	LF	232	252	272	312	332	352	372		
133	149	165	181	197	213	229	245		218	202	186	202	218	234	250		
85	95	A5	85	C5	D5	E5	F5		DA	CA	BA	CA	DA	EA	FA		
206	226	246	266	306	326	346	366	FF	234	254	274	314	334	354	374		
134	150	166	182	198	214	230	246		220	204	188	204	220	236	252		
86	96	A6	86	C6	D6	E6	F6		DC	CC	BC	CC	DC	EC	FC		
207	227	247	267	307	327	347	367	CR	236	256	276	316	336	356	376		
135	151	167	183	199	215	231	247		222	206	190	206	222	238	254		
87	97	A7	87	C7	D7	E7	F7		DD	CD	BD	CD	DD	ED	FD		
210	230	250	270	310	330	350	370	SO	238	258	278	318	338	358	378		
136	152	168	184	200	216	232	248		224	208	192	208	224	240	256		
88	98	A8	88	C8	D8	E8	F8		DE	CE	BE	CE	DE	EE	FE		
211	231	251	271	311	331	351	371	SI	240	260	280	320	340	360	380		
137	153	169	185	201	217	233	249		226	210	194	210	226	242	258		
89	99	A9	89	C9	D9	E9	F9		DF	CF	BF	CF	DF	EF	FF		
212	232	252	272	312	332	352	372	ADDITIONAL CONTROL SET		MODE 3 SUPPLEMENTAL CHARACTER SET 1							
138	154	170	186	202	218	234	250										
8A	9A	AA	8A	CA	DA	EA	FA										
213	233	253	273	313	333	353	373										
139	155	171	187	203	219	235	251										
8B	9B	AB	8B	CB	DB	EB	FB										
214	234	254	274	314	334	354	374										
140	156	172	188	204	220	236	252										
8C	9C	AC	8C	CC	DC	EC	FC										
215	235	255	275	315	335	355	375										
141	157	173	189	205	221	237	253										
8D	9D	AD	8D	CD	DD	ED	FD										
216	236	256	276	316	336	356	376										
142	158	174	190	206	222	238	254										
8E	9E	AE	8E	CE	DE	EE	FE										
217	237	257	277	317	337	357	377										
143	159	175	191	207	223	239	255										
8F	9F	AF	8F	CF	DF	EF	FF										

# MODE 3 CHARACTER SET 2

BITS		0 0 0 0		0 0 0 1		0 0 1 0		0 0 1 1		0 1 0 0		0 1 0 1		0 1 1 0		0 1 1 1			
ROW		COLUMN		1		2		3		4		5		6		7			
84	83	82	81	0		1		2		3		4		5		6		7	
0	0	0	0	0	NUL	0	20	SP	40	0	60	@	100	P	120	'	140	p	160
0	0	0	1	1	1	21	16	!	41	1	61	A	101	Q	121	a	141	q	161
0	0	1	0	2	2	22	17	"	42	2	62	B	102	R	122	b	142	r	162
0	0	1	1	3	3	23	18	#	43	3	63	C	103	S	123	c	143	s	163
0	1	0	0	4	4	24	19	\$	44	4	64	D	104	T	124	d	144	t	164
0	1	0	1	5	5	25	20	%	45	5	65	E	105	U	125	e	145	u	165
0	1	1	0	6	6	26	21	&	46	6	66	F	106	V	126	f	146	v	166
0	1	1	1	7	7	27	22	'	47	7	67	G	107	W	127	g	147	w	167
1	0	0	0	8	8	28	23	(	48	8	68	H	110	X	130	h	150	x	170
1	0	0	1	9	9	29	24	)	49	9	69	I	111	Y	131	i	151	y	171
1	0	1	0	10	10	30	25	*	50	:	70	J	112	Z	132	j	152	z	172
1	0	1	1	11	11	31	26	+	51	:	71	K	113	[	133	k	153	{	173
1	1	0	0	12	12	32	27	,	52	<	72	L	114	\	134	l	154		174
1	1	0	1	13	13	33	28	-	53	=	73	M	115	]	135	m	155	}	175
1	1	1	0	14	14	34	29	.	54	>	74	N	116	^	136	n	156	~	176
1	1	1	1	15	15	35	30	/	55	?	75	O	117	_	137	o	157		177

ASCII CONTROL SET

ASCII GRAPHIC CHARACTER SET

### KEY

ASCII CHARACTER	ESC	33 27	OCTAL DECIMAL
		1B	HEX



1 0 0 0	1 0 0 1	1 0 1 0	1 0 1 1	1 1 0 0	1 1 0 1	1 1 1 0	1 1 1 1
8	9	10	11	12	13	14	15
Ç 200 128 80	È 220 144 80	Á 240 160 80	260 176 80	300 192 60	320 208 60	340 224 60	360 240 60
Û 201 129 81	Ë 221 145 81	Â 241 161 81	261 177 81	301 193 61	321 209 61	341 225 61	361 241 61
É 202 130 82	Ï 222 146 82	Ó 242 162 82	262 178 82	302 194 62	322 210 62	342 226 62	362 242 62
Ä 203 131 83	Ï 223 147 83	Ô 243 163 83	263 179 83	303 195 63	323 211 63	343 227 63	363 243 63
Å 204 132 84	Ï 224 148 84	Õ 244 164 84	264 180 84	304 196 64	324 212 64	344 228 64	364 244 64
Ä 205 133 85	Ï 225 149 85	Ö 245 165 85	265 181 85	305 197 65	325 213 65	345 229 65	365 245 65
Ä 206 134 86	Ï 226 150 86	Û 246 166 86	266 182 86	306 198 66	326 214 66	346 230 66	366 246 66
Ç 207 135 87	Û 227 151 87	Ü 247 167 87	267 183 87	307 199 67	327 215 67	347 231 67	367 247 67
È 210 136 88	Û 230 152 88	Ý 250 168 88	270 184 88	310 200 68	330 216 68	350 232 68	370 248 68
È 211 137 89	Û 231 153 89	Û 251 169 89	271 185 89	311 201 69	331 217 69	351 233 69	371 249 69
È 212 138 90	Û 232 154 90	Û 252 170 90	272 186 90	312 202 70	332 218 70	352 234 70	372 250 70
Ï 213 139 91	Û 233 155 91	¼ 253 171 91	273 187 91	313 203 71	333 219 71	353 235 71	373 251 71
Ï 214 140 92	£ 234 156 92	½ 254 172 92	274 188 92	314 204 72	334 220 72	354 236 72	374 252 72
Ï 215 141 93	¥ 235 157 93	¾ 255 173 93	275 189 93	315 205 73	335 221 73	355 237 73	375 253 73
Ä 216 142 94	ƒ 236 158 94	« 256 174 94	276 190 94	316 206 74	336 222 74	356 238 74	376 254 74
Ä 217 143 95	ƒ 237 159 95	» 257 175 95	277 191 95	317 207 75	337 223 75	357 239 75	377 255 75

MODE 3 SUPPLEMENTAL CHARACTER SET 2

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## CONTROL CHARACTERS

### C0 and C1 Control Characters (Set 1)

Name	Mnemonic	Octal Code		Function
		C0	C1	
Null	NUL	00	200	Used in escape sequences.
Bell	BEL	07	207	Sounds bell tone if enabled by switch <b>A7</b> .
Horizontal tab	HT	11	211	Advances to next horizontal tab, if any. Otherwise, takes no action.
Line feed	LF	12	212	Prints buffer's contents, then advances paper by current line spacing.
Vertical tab	VT	13	213	Prints buffer's contents, then performs line feed.
Form feed	FF	14	214	Advances to next top of form.
Carriage return	CR	15	215	Prints buffer's contents, returns to left margin, and performs line feed if enabled by switch <b>A6</b> .
Shift out	SO	16	216	Sets double width for all following characters, until next line terminator or DC4 is received.
Shift in	SI	17	217	Sets compressed horizontal pitch for current line and following lines, until DC2 is received.
Device control 2	DC2	22	222	Sets standard horizontal pitch for current line and following lines, until SI is received.

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**C0 and C1 Control Characters (Set 1) (Cont)**

Name	Mnemonic	Octal Code		Function
		C0	C1	
Device control 4	DC4	24	224	Sets single width for all following characters, until SO is received.
Cancel	CAN	30	230	Clears print buffer if enabled by switch <b>A4</b> .
Escape	ESC	33	233	Starts escape sequences.

**C0 Control Characters (Set 2)**

Name	Mnemonic	Octal Code	Function
Null	NUL	00	Used in escape sequences.
Heart	-	03	Prints a heart symbol.
Diamond	-	04	Prints a diamond symbol.
Clubs	-	05	Prints a club symbol.
Spade	-	06	Prints a spade symbol.
Bell	BEL	07	Sounds bell tone if enabled by switch <b>A7</b> .
Horizontal tab	HT	11	Advances to next horizontal tab, if any. Otherwise, takes no action.
Line feed	LF	12	Prints buffer's contents, then advances paper by current line spacing.
Vertical tab	VT	13	Prints buffer's contents, then performs line feed.
Form feed	FF	14	Advance to next top of form.

---

**C0 Control Characters (Set 2) (Cont)**

<b>Name</b>	<b>Mnemonic</b>	<b>Octal Code</b>	<b>Function</b>
Carriage return	CR	15	Prints buffer's contents, then returns to left margin. Performs line feed if enabled by switch <b>A6</b> .
Shift out	SO	16	Sets double width for all following characters, until the next line terminator or DC4 is received.
Shift in	SI	17	Sets compressed horizontal pitch for current line and following lines, until DC2 is received.
Device control 2	DC2	22	Sets standard horizontal pitch for current line and following lines, until SI is received.
Device control 4	DC4	24	Sets single width for all following characters, until SO is received.
Paragraph	-	25	Prints paragraph symbol.
Cancel	CAN	30	Clears print buffer if enabled by switch <b>A4</b> .
Escape	ESC	33	Starts escape sequences.

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## ESCAPE SEQUENCES

### Vertical Form Handling

Name (Mnemonic)	Sequence	Function
Set vertical pitch (ER8LI)	<b>ESC 0</b> 033 060	Sets vertical pitch to 8 lines per inch.
(ER10LI)	<b>ESC 1</b> 033 061	Sets vertical pitch to 10.3 lines per inch (72/7).
(ERNLI2)	<b>ESC 2</b> 033 062	Sets vertical pitch to the setting specified in a previously issued ESC A sequence. If none was set, sets pitch to 6 lines per inch.
(ERNLI1)	<b>ESC A Pn</b> 033 101 ***	Sets vertical pitch to 72/Pn lines per inch. Does not take effect until ESC 2 is sent.
(ERNLI3)	<b>ESC 3 Pn</b> 033 063 ***	Sets vertical pitch to 216/Pn lines per inch.
(ERNLI4)	<b>ESC J Pn</b> 033 112 ***	Prints buffer's contents and sets vertical pitch to 216/Pn lines per inch for next line feed only.
Set form length (ERSFL)	<b>ESC C Pn</b> 033 103 ***	Sets the form length to the number of inches that equal Pn X current pitch.
(ERSFLI)	<b>ESC C NUL Pn</b> 033 103 000 ***	Sets the form length to Pn inches.

## Vertical Form Handling (Cont)

<b>Name (Mnemonic)</b>	<b>Sequence</b>	<b>Function</b>
Set bottom margin (ERSBM)	<b>ESC N Pn</b> 033 116 ***	Sets the bottom margin to Pn lines from the bottom of the page.
Clear bottom margin (ERCBM)	<b>ESC O</b> 033 117	Clears the bottom margin.

## Horizontal Form Handling

<b>Name (Mnemonic)</b>	<b>Sequence</b>	<b>Function</b>
Set double-width characters (EREDW)	<b>ESC W &gt;0</b> 033 127 ***	Sets double-width characters for current line and following lines. Any non-zero character as the third character completes this sequence.
Set single-width characters (ERDDW)	<b>ESC W NUL</b> 033 127 000	Sets single-width characters for current line and following lines.
Carriage return (PCR1)	<b>ESC &lt;</b> 033 074	Performs carriage return without performing line feed, regardless of current switch setting.

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## Horizontal Tabs

Name (Mnemonic)	Sequence	Function
Set horizontal tabs (ERSHT)	<b>ESC D Pn1 Pn2 Pn NUL</b> 033 104 *** *** *** 000	Sets horizontal tab stops at Pn1, Pn2, and other designated stops. Pn is a character representing the column number of the desired stop. For example, the character DC2 sets a tab at column 18. You can specify up to 16 tabs.

## Paper Fault Handling

Name (Mnemonic)	Sequence	Function
Disable paper out (ERDPO)	<b>ESC 8</b> 033 056	Disables paper-out handling.
Enable paper out (EREPO)	<b>ESC 9</b> 033 057	Enables paper-out handling.

## Unidirectional/Bidirectional Control

Name (Mnemonic)	Sequence	Function
Set bidirectional printing (ERDUD)	<b>ESC U NUL</b> 033 074 000	Prints lines in bidirectional mode.
Set unidirectional Printing (EREUD)	<b>ESC U &gt;0</b> 033 074 ***	Prints lines from left to right only. Any nonzero character as the third character completes this sequence.

## Alternate Character Set Mapping

<b>Name (Mnemonic)</b>	<b>Sequence</b>	<b>Function</b>
Select set 2 (ERC02)	<b>ESC 6</b> 033 066	Selects the alternate character set (set 2).
Select set 1 (ERC01)	<b>ESC 7</b> 033 067	Selects character set 1. (This character set is the default set when the printer is powered on.)

## Printing Modes

<b>Name (Mnemonic)</b>	<b>Sequence</b>	<b>Function</b>
Enable bold (EREBD)	<b>ESC E</b> 033 105	Sets bold printing for all following characters.
Disable bold (ERDBD)	<b>ESC F</b> 033 106	Turns off bold printing for all following characters.
Set high resolution (EREHR)	<b>ESC G</b> 033 107	Enters high resolution mode.
Set low resolution (ERDHR)	<b>ESC H</b> 033 108	Enters low resolution mode.
Set underline (EREUL)	<b>ESC - &gt;0</b> 033 045 ***	Underlines all following characters. Any nonzero character as the third character completes this sequence.
Reset underline (ERDUL)	<b>ESC - NUL</b> 033 045 000	Turns off underlining for all following characters.

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## Printing Modes (Cont)

Name (Mnemonic)	Sequence	Function
Enable superscript (ERESCR)	<b>ESC S NUL</b> 033 123 000	Prints all following charac- ters in super- script mode.
Enable subscript (ERESCR)	<b>ESC S &gt;0</b> 033 123 ***	Prints all following charac- ters in subscript mode. Any non- zero character as the third charac- ter completes this sequence.
Reset script and direc- tional printing (ERDSCR)	<b>ESC T</b> 033 124	Resets script setting to no script and resets printing mode to bidirectional.

## Graphics Mode

Name (Mnemonic)	Sequence	Function
60 DPI graphics (ERGR6)	<b>ESC K Pn1 Pn2</b> 033 113 *** ***	Enter 60 dots per inch for the next n bytes. Pn1 and Pn2 together specify the number of bytes according to the formula $n=(256 \times Pn2) + Pn1$ The total must be less than the remainder of bytes in the line buffer. If the buffer is empty, the total must be less than 480 (8-inch paper selected) or less than 780 (13-inch paper selected).

## Graphics Mode (Cont)

Name (Mnemonic)	Sequence	Function
132 DPI graphics (ERGR12)	<b>ESC L Pn1 Pn2</b> 033 114 *** **	<p>Enter 132 dots per inch for the next n bytes. Pn1 and Pn2 together specify the number of bytes according to the formula</p> $n=(256 \times Pn2) + Pn1$ <p>The total must be less than the remainder of bytes in the line buffer. If the buffer is empty, the total must be less than 960 (8-inch paper selected) or less than 1740 (13-inch paper selected).</p>
132 DPI graphics (ERGS12)	<b>ESC Y Pn1 Pn2</b> 033 131 *** **	<p>Enter 132 dots per inch for the next n bytes. Pn1 and Pn2 together specify the number of bytes according to the formula</p> $n=(256 \times Pn2) + Pn1$ <p>The total must be less than the remainder of bytes in the line buffer. If the buffer is empty, the total must be less than 960 (8-inch paper selected) or less than 1740 (13-inch paper</p>

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## Graphics Mode (Cont)

Name (Mnemonic)	Sequence	Function
220 DPI graphics (ERGD24)	<b>ESC Z Pn1 Pn2</b> 033 132 *** **	<p>selected). ESC Y prints every other dot.</p> <p>Enter 220 dots per inch for the next n bytes. Pn1 and Pn2 together specify the number of bytes according to the formula</p> $n=(256 \times Pn2) + Pn1$ <p>The total must be less than the remainder of bytes in the line buffer. If the buffer is empty, the total must be less than 1920 (8-inch paper selected) or less than 2895 (13-inch paper selected). ESC Z prints one dot in any three consecutive positions.</p>

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