7. Interfacing

Parallel Interfacing

Communication with a computer is accomplished through a parallel interface based on the Centronics standard.

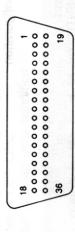
Specifications:

- data transfer speed: 1000 cps minimum
- synchronization: external STROBE pulse
- Iogic levels: TTL
- handshaking: BUSY and ACK signals
- connector type: 57-30360 (AMPHENOL) or equivalent
- cable: use a shielded cable 2 meters or less in length.

When the printer is processing data, the BUSY signal is high. The printer will not accept new data from the computer. After the processing is completed, the BUSY signal goes low. (The BUSY signal is also high when the printer is OFF LINE). When the busy signal occurs, the ACK signal goes low indicating to the computer that the data has been processed and the printer is ready to accept more data. This handshaking routine occurs each time a character is sent to the printer.

	BUSY	SLCT	8	ERROR
ON LINE	LOW	нын	LOW	HIGH
OFF LINE	нівн	LOW	LOW	LOW
PAPER OUT	HIGH	MOT	HIGH	LOW

Printer Status Signals



Note: This is not a 57-30360 connector.

Parallel Interface Connector (Printer side)

Directin Output Output Output Output Output Output Input Input Input Input **AUTO FEED XT** DATA 1 DATA 2 DATA 3 DATA 4 DATA 5 DATA 6 DATA 7 DATA 8 Signal ERROR STB BUSY SLCT PRIME 0 +5 V ACK SG SG E side pin Return 20 21 22 23 24 25 56 27 28 30 pin 4 9 12 13 4 34 15 16 = 32 33 35 N က 4 2 9 œ 0 17 3 36 1

Pin Configuration

- "INPUT" refers to a signal coming into the printer. "OUTPUT" denotes a signal exiting the printer.
 - "RETURN" denotes the return side wire of a twisted pair cable and is connected to signal ground.
 - All interface signals are at TTL levels.

Connector pin signals STB...STROBE

- This is a synchronizing input signal to read data into the printer.
- This signal is normally high. Data is read in when it goes low.
 - The pulse must be low for at least 1 microsecond.

DATA 1-DATA 8

- These are the input signals which carry the 8 data bits of inormation.
- The signal is read in synchronization with the STROBE pulse. A high level indicates a logical "1".
- The signal must be present 0.5 microsecond before and after the STROBE pulse.

ACK...ACKNOWLEDGE

- This is an output signal to the computer indicating that the printer is ready to receive the next block of data. It is sent out when the BUSY signal drops from high to low. Therefore, it can be thought of as a data request pulse.
 - The signal is normally high. When the condition becomes true, the signal goes low.
- The ACK signal is automatically sent whenever the printer is switched ON LINE.

- This output signal indicates the status of the printer. The signal is high when the printer is busy and cannot receive data. The signal is high under the following conditions:
 - 1. receive buffer full
- 2. printer is processing data.
 - printer is OFF LINE e, 4,
- printer is in an error condition

e This is for evaluation only. It should not be used

PO...PAPER OUT

- This output signal indicates that paper out detector detects the absence of paper.
- The signal is normally low and goes high during a "Paper Out" condition.

SLCT...SELECT

- SELECT is an output signal which indicates the ON LINE or OFF LINE state of the printer. The signal is high in the ON LINE state and low when OFF LINE.
 - The printer enters the ON LINE state: 1. when the printer is turned on
 - 2. when PRIME is received
- 3. when the RESET command is received
 - 4. when the ON LINE switch is pressed
- The printer enters the OFF LINE state:
- when the printer is out of paper
 when the printer is switched OFF LINE

AUTO FEED XT (AFXT)

- This input signal determines if a line feed (LF) command will be added to each carriage return (CR).
 - When AFXT is low, CR+LF action occurs. When AFXT is high, only a carriage return is performed.
- DIP SW3 can alter the response by the printer to an AFXT signal. If SW3 is ON, the printer will perform a CR+LF regardless of the level of the incoming signal. When SW3 is OFF, this automatic action is disabled.

SG...SIGNAL GROUND

 The twisted pair return wires (pins 19-30) are connected to signal ground.

FG...FRAME GROUND

Frame ground is the same as chassis ground.

+5 <

 This is for evaluation only. It should not be used to supply power for external equipment.

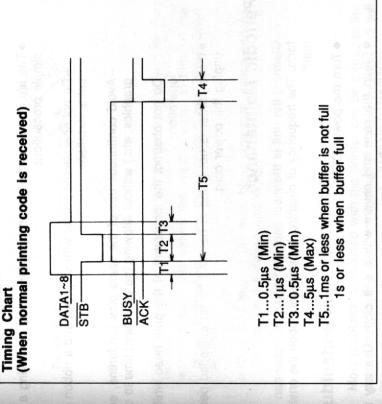
Interfacing

PRIME

 This input signal is used to initialize the printer. The signal is normally high and goes low to reset the printer. It can be received anytime during printer operation.

ERROR

- This output signal is an "error" or "fault" condition. Normally high, this signal goes low when an error occurs. An error condition can be caused by:
 - 1. a "Paper Out" condition
- 2. the printer being OFF LINE



Timing Diagram

The printer does not require any routine maintenance. However, reasonable care of the printer will extend its life. The following

preventive and periodic measures are recommended:

Precautions

- Keep all liquids away from the printer. Accidental spillage of a liquid into the printer can cause severe damage.
- Do not block the air flow around the printer. Do not place books, paper, or other items on top of the printer.
- Special care should be taken to protect the printer if it is used in an unfriendly environment such as a machine shop, a dusty or sandy area, etc.
- The life of the printhead can be extended by observing a few simple precautions.
- -Do not operate the printer without paper and a ribbon cassette installed.
- -Avoid continuous use of the same pins (underline, semigraphics, etc.) without allowing the print head time to cool.
- -Do not obstruct the movement of the print head while in operation.
- If the printer is not going to be used for an extended period, unplug the power cord.

Periodic Maintenance

Cleaning the unit is the most important action the user can perform. The frequency of cleaning is dependent upon the environ-

- Turn the power OFF.
- Clean the case and covers with a soft cloth. Use any mild commercial cleaner.

Maintenance

- dust the inside area of the unit. Be very careful not to damage Remove the top and the smoked plastic covers. Vacuum or the flex ribbon cable and the carriage drive belt.
- The platen should be cleaned with denatured alcohol only.
- The carriage guide bar can be lubricated with a very light oil.

Ribbon Cassette

ters. When the printing starts to fade, gently push the counter spring in the ribbon cassette hole with the tip of a ballpoint pen or other object. Once the ribbon cassette is mounted onto the carriage and printing is performed for a short time, the charac-A single ribbon permits the printing of about 4 million characters become darker.



Re-ink Hole-

- ribbon has too much ink, the characters may smear when Do not push this before the printing starts to fade. If the printed
- · Wear and tear of the print head pins may cause serious damage of the ribbon and printing to fade. the printer needs servicing.

Troubleshooting

Most problems associated with the printer can be traced to improper setup, installation, or cabling. The table on page 8-3 will assist the user in identifying and correcting some of the more common problems. If you need additional help, contact the store from which the unit was purchased.

A-1

PROBABLE SOLUTION Set paper supply lower Set paper supply lower Press ON LINE switch Secure connection * Set DIP switch SW1, Set DIP switch SW5 as required Set CSF DIP switch as required 6, 7, 8 as required Set Auto LF DIP switch as required Check Power Cord Replace fuse Refer to Section 3.1 Set selector to "F" Set selector to "T" Set to Pgm mode Normal condition. Re-insert ribbon Replace paper than printer than printer incorrectly on printer or Paper feed selector in POSSIBLE CAUSE No reverse tension on No reverse tension on paper * Wrong character set * Cut sheet feeder is ON Printer not ON LINE Interface cable not paper. Selector switch is in 7 bit/8 bit switch set Ribbon not installed FONT and PITCH * Auto LF is ON modes are set No AC Power Out of paper Fuse blown "T" position "F" position connected selected incorrectly interface correctly Printer does not power Printout double-spaced or no spacing Head moves but does characters with code above 127, italic characters printing Paper wrinkles when Power on but printer Printer won't go ON Cannot change form length mode from computer Wrong character set printed Cannot change print Paper slips around Paper bunches up around platen Cannot print ASCII using tractor feed SYMPTOM not printing not print platen

(* Pertains to DIP switch settings.)

8-3

Standard Mode Italic Character Set

Appendix A

F	d	6	,	S	,	ח	>	3	×	y	Z	1	-	1	1	DEL
Ε	•	a	9	O	P	ø	-	9	4	1	j	k	1	ш	u	0
D	Р	O	A	S	7	n	>	N	×	٨	Z	J	-	1	•	
ပ	(a)	A	В	O	0	E	ı	9	H	-	J	X	7	Z	z	0
В	0	1	2	6	4	2	9	7	8	6			V	11	٨	2
A	SP	i	•	#	69	%	∞5))	*	+	5.	ā	3.	1
6	95	DC1	DC2	DC3	DC4	3		4	CAN	EM		ESC	23			4
œ		10		9	9	9		BEL	BS	보	F	5	FF	CR	so	S
7	Ь	Ь	1	s	1	n	>	*	×	y	2	+		-	1	DEL
9		a	q	O	ъ	Ф	-	g	ے	-	1	×	1	Ε	u	0
5	Ь	o	ж	S	۰	n	>	*	×	7	Z	1	/	1	•	
4	a	٧	В	ပ	٥	В	ш	G	I	F	J	×	1	Σ	z	0
3	0	·-	2	က	4	5	9	7	8	6			V		^	~
2	SP	-		#	49	%	~	-	_	1	*	+		1		_
-		DC1	DC2	DC3	DC4	n.			CAN	EM		ESC				
0	NUL			_	(5)			BEL	BS	H	LF	5	FF	CR	so	S
He	0	-	2	3	4	5	9	7	60	6	A	•	c	0	E	4

Standard Mode Graphic Character Set 1

ш	HL	+1	VJ	VI	_	-	+	N				5		2		SP
E	۵	В	L	ĸ	M	р	4	P	0	θ	G	0	8	0	¥	C
٥	Ħ	IF	E	H	ш	ш	E	1	11		L	m		18		
O	H	4	-	1	+	+	Ш	_	-	L	KI.	I¦-	JL	11	7-	HI
8		38888	****			-17		F	п	7	Ë	[F	7	a	п	
A	'n	-	,o	ņ	×	1Z	œ۱	01	~	L	Г	- 0	- 4	3	\ \ \	^
6	3"	DC1	DC2	DC3	DC4	3	>	3	CAN	E	и	ESC		Second		1
8	TA.FR	32	p	0	1 20	0		BEL	BS	노	5	5	Æ	CR	S	S
7	a	ь	٢	s	t	n	>	*	×	×	z	-		-	1	DEL
9	•	æ	q	0	ъ	9	f	9	h	Ŧ	1	¥	Ŧ.	ε	್ಟ	0
2	Ь	o	н	S	Ţ	n	>	>	×	٨	Z	of a	1	-	,	
4	8	A	ω	O	٥	9	ш	g	I	-	٦	¥	٦	Σ	z	0
က	0	-	2	8	4	5	9	7	8	6			~	IL	٨	2
2	SP	-<	• 03	#	49	%	~ಶ	-0	J	-	*	+	1	i.	55	1
-	o	DC1	DC2	DC3	DC4		>	2	CAN	EM	54	ESC		134		
0	NUL	134	o.	0	3	0		BEL	BS	보	LF	5	Ŧ	CR	SO	ਲ
	0	-	2	3	4	5	9	7	8	6	4	8	0	D	E	н

Standard Mode Graphic Character Set 2

	0	1	2	3	4	5	9	7	8	6	A	8	0	0	E	L
0	NUL							BEL	BS	H	LF	5	FF	CR	SO	S
-		DC1	DC2	DC3	DC4				CAN	EM		ESC				
2	SP	İ		#	€9	%	≪		()	*	+	•	1		`
9	0	-	2	က	4	2	9	7	8	6			٧	11	٨	5
4	a	4	В	ပ	٥	ш	ш	g	Ι	-	ſ	У	٦	Σ	z	0
2	۵	σ	В	S	-)	>	8	×	>	Z	100	1	1	•	0
9		a	q	o	ס	Φ	-	б	ų	-	1	×	: I	E	_	0
7	۵	ь	4	ø	+		^	W	×	χ	2	-		+	ı	DEL
8	O	o	é	æ	:02	æ	æ	ڻ.	ė	:0	è	1	ı	_	÷	Ą
6	·ш	88	Æ	o	:0	0	0	Û	ÿ	:0	Ð	4	43	*	盂	f
<	à	'-	Ó	Ü	×	žZ	ıه.	01	٠,	L	Γ	- 0	- 4	7	V V	^
8		388886	****	6.3	1	T	Ŧ	F	ा	7.		[\neg	7	-	-
O		-	H	+	1	+	Ш		7	L	1	-	1	11	7	HI
٥	Ħ	11-	F		-11	Ш	E	#	+		ட					
ш	ø	Ф	L	K	M	0	3.	2	Ф	θ	G	8	8	Ø	y	C
4	111	+1	VI	VI	_	-	+	11	۰	•	•	>	c	8		SP

A-2

A-3

IBM Mode Character Set 1

L	111	+1	ΛΙ	VI	_	-	+	n	٠	•	•	5	c	2		SP
В	ø	8	L	K	M	0	Ħ	1	0	θ	G	8	8	0	ω	C
0	Ħ	11-	F	H	ىد	Ш	E	=	++-	\neg	_					
O	7	-	-	1	1	+	Ш		7	L	31	11-		11	카는	H
8		****	****	5.0			_	F	п	7		F	7	F	П	-
4	'n	'-	ò	ū	ĭ	žZ	BI	01	.>	L	Г	- 0	- 4	2	V	^
6	07	DC1	DC2	8	DC4	2	5	3	CAN		и	ESC		- In-		
8			0	0		0	484	BEL	BS	눞	F	5	FF	CR	SO	S
7	р	ь	-	S	t	_	>	*	×	>	2	-	_	-	1	
9	•	В	q	ပ	p	Ф	ţ	б	٩	.=	-	×	_	Ε	_	0
5	А	ø	В	S	F	ח	>	>	×	>	7	1	1	1		-1
4	(a)	A	В	ပ	٥	ш	ш	G	I	-	ſ	×	_	Σ	z	0
3	0	99 - 8	2	ဗ	4	2	9	7	80	6			V	1	^	c
2	SP	1		#	49	%	≪	•	Y	1	*	+	- 1	1		1
-		DC1	DC2		DC4				CAN		T	ESC				
0	NUL	100	Earl	15	M	0	77	BEL	BS	보	7	5	표	CR	SO	S
	0	-	2	3	4	5	9	7	8	6	4	В	O	D	E	4

IBM Mode Character Set 2

F	111	+1	٨١	VI	_	-	+	u		•	•	5	c	2	•	SP
В	b	9	L	ĸ	M	0	3.	2	0	θ	G	S	8	0	ω	C
٥	H	11-	F	3	ш	ш	E	-	+	7						
O		H	-	1	1	+	Ш			L	41	I¦-		11	7-	HI
8		*****	****			11	=	F	п	7		F	一一	7	П	_
4	'æ	ij.	ó	û	Æ	iz	œ.	01	٠,	L	F	- 0	- 4	-	V	^
6	·m	88	Æ	o	ю	Q	ū	Ú	ý	:0	ΞD	÷	3	≯ +.	£	f
8	O	ū	é	å	:03	ø	æ	ဟ	ø	:0	ø	ï	' –	-	: «	·A
7	Ь	ь	y	s	-	э	>	>	×	>	2	-	_	-	1	g
9	0	ß	q	ပ	ъ	Ф	ţ	6	٩	-	-	×	-	ε	_	0
5	۵	ø	В	S	-	ח	>	>	×	>	7]	-	_	£.	
4	a	V	В	ပ	٥	ш	ч	G	I	-	7	¥	٦	Σ	z	0
3	0	-	2	က	4	2	9	7	8	6			V	п	^	٥.
2	SP			#	49	%	∘ఠ		_	_	*	+		1		_
-		DC1	DC2		DC4	တ		. 19	CAN			ESC				
0	NUL			•	٠	+	•	BEL	BS	HT	F.	VT	FF	CR	So	S
	0		2	3	4	5	9	7	8	6	A	В	O	0	E	ш

Note: In NLQ mode, the printer prints Pts for Pt.

A-5

Appendix A

IBM Mode All Character Set

	0	-	2	3	4	2	9	7	8	6	A	8	O	D	E	L
0	0	0	•	•	٠	+	•	•	•	0	0	ď	ð	4	Ľ	۰
-	•	•	*	Ŧ:	-	S		₩	10	+	1	1	ר	\$	•	•
2	SP	i		#	8	%	∞		·)	*	+		Ļ		1
3	0	· .	2	က	4	2	9	7	8	6	-:-	1:	V		٨	2
4	@	A	В	ပ	D	Е	ч	g	Ι	-	ſ	¥	٦	Σ	z	0
2	۵	σ	œ	S	٠	n	>	*	×	+	Z]	1	1	· ·	-
9	0	B	q	O	р	θ,	ţ	g	ų	i	į	k	-	ш	_	0
7	а	ь	-	S	t	n	>	*	×	^	2	}	-	-	1.	0
8	O.	o	, a	ď	:00	ø	•α	Ď	e	:Ф	Φ	7	(-	-	٠	Ā
6	·Ш	88	Æ	o	:0	Ó	o	ņ	ÿ	:0	ΞD	÷	c)	*	盂	f
4	'n	-	,o	ú	ĭ	ìΖ	αı	01	٠.	L	Γ	- 0	- 4	-	V	^
8		****	***	-10	-	П	T	F	п	7		[-	7]	7	П	٦
0	-	H	-		+	+	-11			L		1-		11	7	H
٥	且	1	F		س	ш	E	+	++	\neg	_					
ш	ø	9	L	ĸ	M	D	3	1	Ф	θ	G	8	8	Ø	ω	C
4	111	+1	۸I	VI		7	4	11	۰	•		>	c	2		00

Note: In NLQ mode, the printer prints Pts for Pt.

International Character Set

	-	35 ₀	36 ₀	64° 40 ^H	91 ₀ 5Вн	920	93 _р 5Dн	94 ₀ 5Ен	96 _D	123 ₀ 7B _H	124 ₀ 7CH	125° 7DH	126° 7EH
USA	0	#	49	0	1	1	1			-		-	
FRANCE	-	#	69	à		5	con			é	ō.	ė	1
GERMANY	2	#	↔	တ	: V	ō	D			:00	0	Ü	ß
ENGLAND	က	3	\$	(9)]	/	-			-		_	
DENMARK I	4	#	49	(8)	Æ	0	Ą			8	0	-62	1 10 50
SWEDEN	2	#	¤	'n	×	:0	Ą	ıЭ	é	zn:	:0	-62	0
ITALY	9	#	69	0		/	·o		ņ	æ	Ó	é	- 10
SPAIN I	2	Pt	€9	(9)	-	žZ	.>		,		ĭ	-	
JAPAN	80	#	69	0	J	*				_		-	1
NORWAY	6	#	¤	Ė	Æ	0	Ą	ņ	φ	8	0	-a	ņ
DENMARK II	10	#	69	щ	Æ	0	Ą	:0	ė	8	0	-a	0
SPAIN II	-==	#	49	à	61 at	Z	2	Φ.		-	ž	o	ņ
LATIN AMERICA	12	#	49	70	F 47	ız	.,	,o	ū	-	×	9	Ü

Proportional Spacing Tables

ASCII Characters Standard Mode Characters

				_			60	4	2	9	7	00	6	•	1	_	•	^		@	4	8	0	_	ш	ш.	0	_	-	7	<u> </u>		2	2 (0 0	. (_	S	_	_	_	_
4	45	46	47	48	49	20	51	25	23	24	22	26	24	28	29	9	61	62	63	64	9	99	67	89	69	2	7	72	73	74	12	9 !		8 5	2 8	8 8	5 6	85	83	84	82	98	
					Ť					A				Ö	-									k				1	100					0	1		1						
Ξ	1	=	Ξ	80	8	12	10	Ξ	12	12	12	15	15	=	=	12	=	12	12	12	=	6	12	12	12	=	=	12	12	= :	12	12	10	0 9	7 .	= \$	77	77	S	00	00	12	,
12	12	=	0	8	8	12	2	12	12	=	12	12	12	12	=	0	=	12	12	12	12	80	12	12	12	12	9	=	12	12	12	12	0	æ (2 0	7 .	2 9	12	'n	9	9	12	,
40	0	0	۰	-		4	-	,	z	E	ŭ	₫.	4	40	5	so.	8	Æ	88	0	0		4	0	0	10	0		ш	•	*	¥.			‡ 6	9 3	2	8		_	-	*	
0	-	2	3	4	2	9	7	80	6	10	=	12	13	14	15	16	17	18	19	20	21	22	23	24	52	56	27	28	53	30	31	35	33	8 8	200	9 6	3/	8	38	9	41	45	,
	0 a 12 11 44	0 a 12 11 44 14 12 11 45	0 a 12 11 44 1 e 12 11 45 2 û 11 11 46	1 e 12 11 44 2 0 11 11 45 3 0 10 11 11 46	1 0 a 12 11 44 45 12 0 11 11 11 46 45 10 10 11 46 47 47 48 10 11 11 46 48 10 11 48 10 11 48 10 11 48 10 11 48 10 11 48 10 11 48 10 11 48 10 11 48 10 11 48 10 11 11 11 11 11 11 11 11 11 11 11 11	2 1 1 1 1 1 4 4 5 3 0 0 1 1 1 1 1 1 1 4 4 5 4 4 4 4 4 4 4 4 4 4	2 0 11 11 45 2 0 11 11 46 3 0 0 10 11 46 4 i 8 8 8 49 6 E 12 12 12 50	2 0 11 14 45 2 0 11 11 11 46 45 3 0 10 11 11 46 47 47 47 1 8 8 8 4 49 6 6 6 6 7 1 5 10 5 10 5 10	12 12 12 13 14 15 15 15 15 15 15 15 15 15 15 15 15 15	2 2 1 2 8 8 8 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 8 8 2 2 2 2 1 1 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 1 2 2 8 8 2 2 2 1 2 2 2 2 2 2 2 2 2	2 2 1 2 8 8 8 2 5 1 2 2 1 2 2 2 2 2 8 8 8 1 5 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 1 2 8 8 8 2 5 2 1 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	4 4 7 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	44 9 9 0 3 3 \ X \ E \ X \ 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	# # # # # # # # # # # # # # # # # # #	4 4 0 0 0 - 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 4 0 0 0 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	4 4 3 0	# # # # # # # # # # # # # # # # # # #	4 4 0 0 0 0 0 5 IN F A 4 4 5 8 8 8 8 8 8 8 8 1 1 1 1 1 1 1 1 1 1 1	4 4 0 0 0 3 3 × × × × × × × × × × × × ×		# # # # # # # # # # # # # # # # # # #	4 4 0 0 · 0 3 X C R X 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	4 4 0 0 3 3 × × × × × × × × × × × × ×	### ### ##############################	4 4 0 0 • 3 - 2 × E E E 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	** ** ** ** ** ** ** ** ** ** ** ** **	P	SPACE SP	SPA¢ € € € € € € € € € € € € € € € € € € €	SP × ← F F − 0 0 8	** * * * * * * * * * * * * * * * * * *	SPA ← F F O C B C C C S M P S S C A A A P R R S C A A A P R R R S C A A A P R R R R R R R R R R R R R R R R	SP × 6	SPACE SP	SPACE COOP : 00 8 A P P P P P P P P P P P P P P P P P P	A	2

Unit: 1/120 inch (0.21 mm)

IBM Mode Characters

ASCII	8	96	96	97	86	66	100	101	102	103	104	105	106	107	108	109	2 :	= ;	7 .	2 :	1 1	116	117	118	119	120	121	122	123	124	125	126	127										
		à		.6		- 26					6				49										Ŷ	à			I.											8	ä	55	
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Unit: 1/120 inch (0.21 mm)

IBM Graphic Characters Standard Mode Characters

Appendix B

		700		10.7	38	33	1	99	×	32	31																								130							
ASCII	epoc	171	172	173	174	175	224	225	226	227	228	229	230	231	232	233	234	236	237	238	239	240	241	242	243	246	248	249	250	251	252	253	462	883	12 12							
	10000					-													_	5					3 14		0	100						6								
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ASCII	code	21	128	129	130	131	132	133	134	135	136	137	138	139	140	141	143	144	145	146	147	148	149	150	151	153	154	155	156	157	158	159	161	162	163	164	165	166	167	168	169	170

Unit: 1/120 inch (0.21 mm)

IBM Mode Characters

NIG	12	12	12	12	12	12	12	12	12	12	12	12	-	12	12	12	12	-	12	12	12	12	12	12	10	12	12	12	10	10	12	=	8	9	9	12	10	80	8					
Char.	0	ņ	æ	10	·L	٢	- 01	+	· > >	^	ø	8	ľ	ĸ	Z	0	п	1	0	θ	G	8	8	*	3	C	III	+1	۸۱	V	+	n		•	•	5	c	2	•	1				
ASCII	162	163	166	167	169	170	171	172	174	175	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	246	247	248	249	250	251	252	253	254					
			_	_			_	1							_		_				100								-			9	-	1000								_		-
Width	12	12	12	12	10	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	6	10	11	12	11	12	12	12	12
Char.	0	0	•	•	•	+	•	•		. 0	0	0	0+	4	E,	0	•	•	+	=	•	1	**	•	-	1	1	7	1	4	•	Q	o	-42	ø	-		0	0	۸	. 0	,	. «	, -
ASCII	0	-	2	က	4	2	9	7	8	6	10	11	12	13	14	15	16	17	18	19	20	22	23	24	25	92	27	28	59	30	31	127	128	131	136	139	140	147	150	152	155	159	160	191

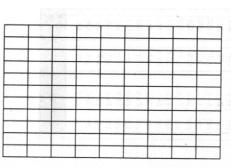
Unit: 1/120 inch (0.21 mm)

B-4

Appendix C

Download Character Matrix Blanks: Draft

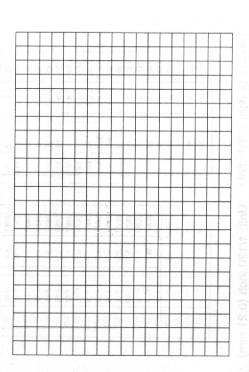
1 × 0



	-							
	(5)	\$5.0K						
\neg								
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\neg	180	155					-	
\neg		200	0.0	9-6	中心	W 16.7	101 0	
\forall	- 100							
\top	100	100						
\forall	1500	100	_				_	_
+	- 200		15.00		200			
\rightarrow	- 100	530×000			-		-	

Download Character Matrix Blanks: NLQ

18×23



Then use blank matrices to design your down line load Make copies of this page first. characters.

Appendix D

1. Continuous paper

A list of the paper which may be used with this unit is provided

Width: 4~10 inches (102~254 mm).

Quality and number of sheets:	ber of sh	eets:	* only	only for the last sheet	ast shee
		0.000	We	Weight	
Type of paper	Sheets	sql ui	lbs	in g	in g/m²
AND THE PERSON AND THE	180.00 84	rear	bottom	rear	bottom
Fine-quality paper	18.10	16~24	16~24 16~22	06~09	60~83
Non-carbon	2~4	11~14 (17*)	(17*)	41~53 (64*)	3 (64*)
Multi-layered with	2	11~14	11~14 (17*)	41~53	41~53 (64*)

 For optimum paper handling, when using some types of thick-er multi-part continuous paper, we suggest the use of the bottom feed paper path.

 When using multi-part continuous paper in environments which have very high or low temperature and/or humidity, we recommend the use of the bottom feed to optimize paper

In multi-layered paper with carbon, the carbon is equivalent to handling and print quality.

"Weight in pounds" represents the weight of 500 [17x22 inches (432×559 mm)] sheets. a sheet of paper.

2. Single Sheet

Width: 4~11.7 inches (102~297 mm)

Height: 5~14.3 inches (127~363 mm)

Weight in pounds (g/m²): 14~24 (53~90 g/m²)

The printer will handle multi-part papers up to 0.013 inch (0.32 mm) thick. Up to 4 copies of 14 lb. chemical release paper can be used.

Paper should be within operating temperature and humidity ranges at least 24 hours prior to use.

3. Envelope

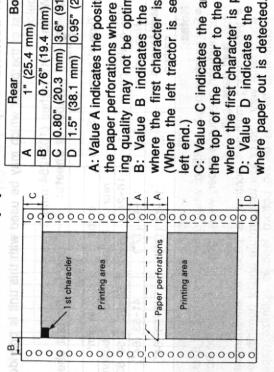
#10 size envelope is recommended. Since envelopes vary in size, paper weight and construction, we cannot guarantee print quality and paper handling for all types.

5

Appendix E

Printing Area

1. Continuous paper



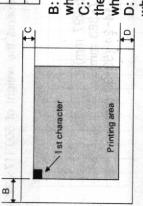
700	Rear Bottom
	1" (25.4 mm)
1000	0.76" (19.4 mm)
1000	0.80" (20.3 mm) 3.6" (91.5 mm)
100	1.5" (38.1 mm) 0.95" (24.1 mm)

A: Value A indicates the positions near the paper perforations where the printing quality may not be optimum.

(When the left tractor is set on the B: Value B indicates the position where the first character is printed. left end.)

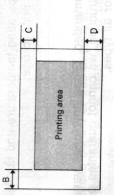
D: Value D indicates the position C: Value C indicates the area from the top of the paper to the position where the first character is printed.

2. Single Sheet



B: Value B indicates the position C: Value C indicates the area from the top of the paper to the position D: Value D indicates the position where the first character is printed. where the first character is printed. where paper out is detected.

Envelope



1	(50.7 11111)
-	0.80" (20.3mm)
	1" (25.4 mm)

Index

Software commands of Standard mode and IBM mode descriptions are not indexed here. For page references for commands see pages 6-1 through 6-9 in section 6.

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TECHNICAL SUPPORT

Call the office nearest to you between 8:30 a.m. and 5:00 p.m.

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OPTIONS and SUPPLIES

RS-232C/Current Loop Serial Interface Board Auto Cut Sheet Feeder (Single bin) 32K Buffer Chip Ribbon Cassette (Black) KX-P19 KX-P37 KX-P43 KX-P115