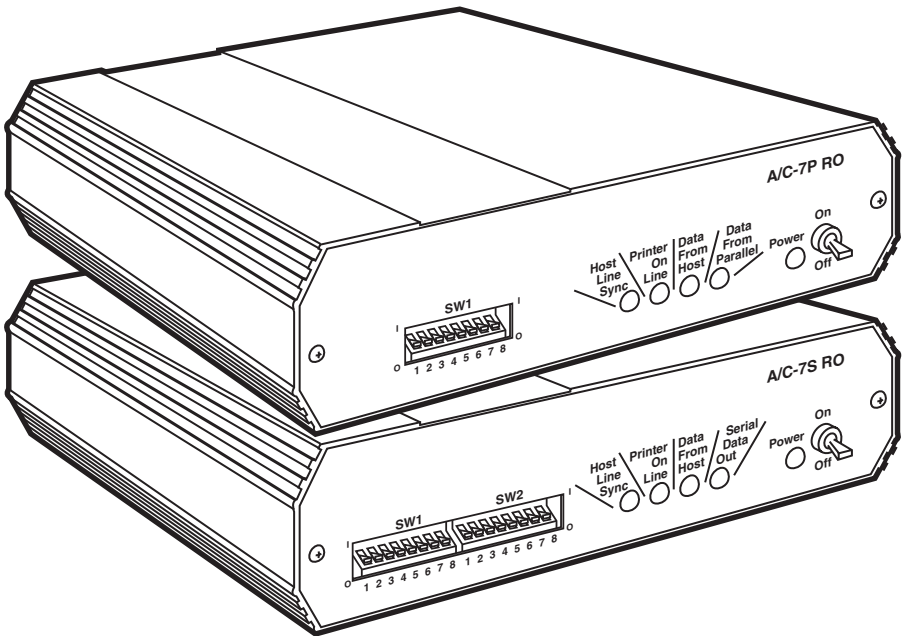




A/C-7P RO

A/C-7S RO



CUSTOMER SUPPORT INFORMATION Order toll-free in the U.S. 24 hours, 7 A.M. Monday to midnight Friday: **877-877-BBOX**
FREE technical support, 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mail order: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: www.blackbox.com • E-mail: info@blackbox.com

**FEDERAL COMMUNICATIONS COMMISSION
AND
INDUSTRY CANADA
RADIO FREQUENCY INTERFERENCE STATEMENTS**

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

**NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT**

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

TRADEMARKS

Centronics® is a registered trademark of GENICOM Corporation.

Epson® is a registered trademark of Seiko Epson Corporation.

IBM®, Proprinter®, and IPDS™ are registered trademarks or trademarks of IBM Corporation.

Hewlett-Packard®, HP®, LaserJet®, and PCL® are registered trademarks of Hewlett-Packard.

OKIDATA® is a registered trademark of Oki America, Inc.

Mannesmann Tally® is a registered trademark of Mannesmann Tally Corporation.

All applied-for and registered trademarks are the property of their respective owners.

Contents

Chapter	Page
1. Specifications.....	9
2. Introduction	10
2.1 Description of Front Panels	11
2.2 About this User's Guide	11
2.3 Unpacking.....	11
3. Installation.....	13
Power On/Off Sequence	15
4. Configuration	20
4.1 A/C-7 RO Configuration	20
4.2 Configuration Switch Settings	21
4.3 Setup Software (does not apply to versions after Feb. 1996).....	26
4.4 Host/PC Download Command Overview.....	27
4.5 Restoring Factory Defaults	57
5. Operation	58
5.1 Printer Sharing	58
5.2 Parallel/Serial Port Initialization	59
5.3 Host Port Initialization.....	59
5.4 Print Position and Page Length.....	59
5.5 Laser Printing	60
5.6 Computer Output Reduction (COR)	61
5.7 Automatic Print Orientation (APO)	62
5.8 Generic Mode	64
6. Advanced Features	66
6.1 Command PassThru	66
6.2 Custom User Strings.....	67
6.3 SCS Mode Transparent Data	67
6.4 Color Printing.....	68
6.5 Printing Bar Codes	68
6.6 I-O Graphics Language	84
6.6.1 I-O Graphics Language Overview	84
6.6.2 Helpful Hints.....	88
6.6.3 Basic Description.....	90

6.7 I-O Graphic Language (IOGL) in Action.....	101
6.7.1 General Steps.....	101
6.7.2 Tutorial.....	101
6.7.3 X- and Y-Axes.....	105
6.8 Linking Graphical Output to a Host Application	106
6.9 Printing Images from the Host.....	107
7. Troubleshooting	109
7.1 Interface Self-Test.....	109
7.2 EBCDIC Hex Dump	110
7.3 ASCII Hex Dump	111
7.4 Problem Resolution Guide	112
Appendix A: Font (FGID) Reference for HP LaserJet Printers	117
Appendix B: Character Sets.....	141
Appendix C: Serial Port Pinnings	144
Appendix D: Parallel Port Pinnings.....	146
Appendix E: Transferring Power to Pin 18	148

1. Specifications

Emulation—IBM® 3812, 4214, 4224, 3287, 3262, and 3268 printers (non-IPDS)

Systems Supported—ASCII printer, IBM® 30XX, 43XX, 937X host, or 3174, 3274, or 3276 controller

Indicators—(5) LEDs: Power, Host line, Sync, Printer Online, Data from Host, Data Out

Connectors—PCD50A, PCD50AE:
(1) BNC, (1) DB25 female,
(1) 36-pin Centronics®;
PCD51A, PCD51AE: (1) BNC,
(1) DB25 female, (1) DB25 male

Power—9 VAC wallmount transformer

Size—6.5"H x 2.1"W x 5.1"D
(16.5 x 5.3 x 13 cm)

Weight—3 lb. (1.4 kg)

2. Introduction

The A/C-7P RO and the AC-7S RO are powerful, yet easy-to-operate external printer interfaces. You can easily set them up through on-board configuration switches or Host/PC download commands.

The A/C-7P RO and A/C-7S RO attach virtually any ASCII printer to an IBM 30XX, 43XX, 937X host, or 3174, 3274 or 3276 controller. They offer reliable emulations of IBM 3812, 4214, 4224, 3287, 3262 and 3268 printers (all non-IPDS™). When connected to a laser printer

operating in PCL® mode, the A/C-7 RO allows Computer Output Reduction (COR) and Automatic Page Orientation (APO). In addition, paper can be pulled from several sources and a multitude of fonts (printer-resident or from optional cartridges) are supported.

The A/C-7P RO comes with a standard parallel sharing port that allows automatic sharing of the attached printer between the host and a PC or LAN. The A/C-7S RO comes with a standard serial sharing port.

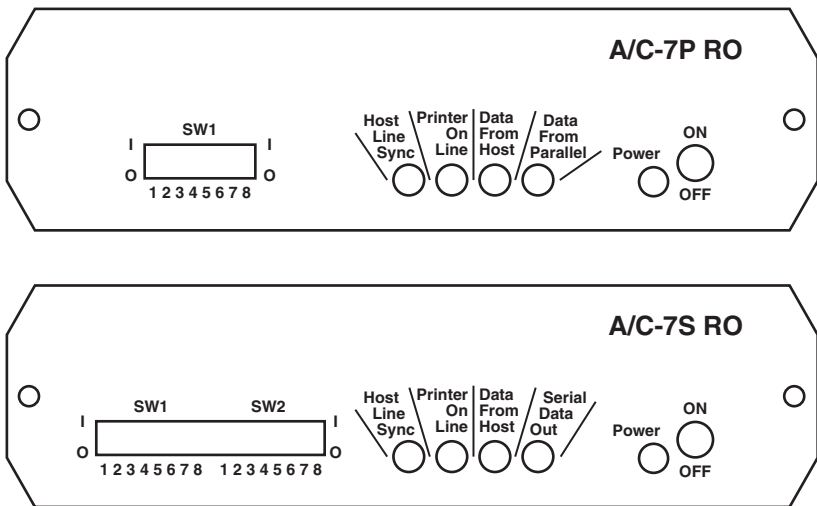


Figure 2-1. Front Panels of the A/C-7 RO.

2.1 Description of Front Panels

CONFIGURATION SWITCHES

The Configuration Switches are used to set the output protocol and to perform the available test and diagnostic functions. While the A/C-7P RO models come with only one bank of switches, the A/C-7S RO comes with two banks of eight switches. The left bank is labeled SW1; the right bank is labeled SW2.

LEDs

The green LED lights indicate the following:

- *Host Line Sync*—Communication lines between the host and the interface are established.
- *Printer Online*—The printer is ready to receive data.
- *Data From Host*—The A/C-7 RO is currently processing data received from the coax host.
- *Data From Parallel/Serial*—The A/C-7 RO is currently receiving data from an attached PC or LAN. PC download commands are processed, other data is transmitted to the printer.

- *Power*—The A/C-7 RO is powered on.

On/Off Switch—The On/Off switch is used to power on or power off the A/C-7 RO. Use this switch when asked to cycle power.

2.2 About This User's Guide

Since this user's guide covers two A/C-7 RO models, including A/C-7P RO and A/C-7S RO.

2.3 Unpacking

Check the packaging for water or physical damage, and notify the carrier immediately if there is any damage.

Keep the original packaging in case you need to move or ship the A/C-7 RO.

A/C-7P RO, A/C-7S RO

The package should include the following:

- A/C-7P RO or A/C-7S RO
- Wallmount transformer (9V AC output)
- Standard parallel cable (for A/C-7P RO only)
- Standard serial cable (for A/C-7S RO only)

3. Installation

Before connecting the A/C-7 RO to the printer, verify that the printer functions properly by performing a printer self-test. Consult the printer's user's guide for instructions on how to start and evaluate the self-test. If the printer functions properly, proceed with the installation of the A/C-7 RO.

WARNING

Electrical current from power lines and cables connecting the A/C-7 RO, printer, and PC can be hazardous. To minimize the danger, follow the instructions below.

NOTE

Do not connect the interface to the coax cable until Step 9.

To install the A/C-7P RO:

1. Power off the printer and PC (if used) and disconnect the power cord(s).
2. Use the configuration switches located on the A/C-7P RO's front panel to select the desired output protocol. Refer to **Table 4.1** for configuration switch settings.
3. Connect the parallel cable from the interface's "Parallel Out" connector to the printer's parallel port.
4. If the sharing port of the A/C-7P RO is used, attach the parallel cable now. Note that a PC or LAN connected to the A/C-7P RO's sharing port should always be powered up when the A/C-7P RO is operating.
5. Connect the wall mount transformer from the outlet to the A/C-7P RO's "9V" connector. Connect the power cord(s) to the printer and PC (if used).
6. Power on the A/C-7P RO, then printer. The A/C-7P RO's green LED lights labeled "Power" and "Printer On Line" should be lit.
7. Print an A/C-7P RO self-test. Power off the A/C-7P RO. Set configuration switch SW1:8 (far right) to the "l" position. Power on the A/C-7P RO. After the self-test prints, set configuration switch SW1:8 back to the "o" position, then cycle the power one more time.
8. Refer to the self-test printouts to determine which configuration parameters need to be altered. Change these parameters by using the Host/PC download commands.
9. With the A/C-7P RO powered off, attach the coax cable from the host to the A/C-7P RO's BNC connector.

NOTE

Whenever the printer is powered off, the A/C-7P RO must also be powered off to ensure they stay in sync with each other.

To install the A/C-7S RO:

1. Power off the printer and PC (if used) and disconnect the power cord(s).
2. Use the configuration switches on the A/C-7S RO's front panel to select the desired output protocol and the serial output parameters for the interface. Refer to **Tables 4.1** and **4.5** for configuration switch settings.
3. Connect the serial cable from the A/C-7S RO's "Serial Out" connector to the printer's serial port.
4. If the sharing port is used, attach a second serial cable to the A/C-7S RO's "Serial In" port. Note that a PC or LAN connected to the A/C-7S's sharing port should always be powered on when the A/C-7S RO is operating. In addition, the PC/LAN and the interface must be using the same serial parameters. Refer to **Section 5.1, Printer Sharing**, for more information.
5. Connect the wall mount transformer from the outlet to the A/C-7S RO's "9V" connector. Connect the power cord(s) to the printer and PC (if used).
6. Power on the A/C-7S RO, then the printer. The A/C-7S RO's green LED lights labeled "Power" and "Printer On Line" should be on. If the sharing port is used and handshaking requirements are met, the LED labeled "PC/LAN Ready" should also be on.
7. Print an A/C-7S RO self-test. Power off the interface, then set configuration switch SW1:8 (far right on the first switch bank) to the "1" position. (If you are operating a label printer, put the printer in ASCII hex dump mode, then power on the A/C-7S RO. If the label printer starts printing, the A/C-7S RO has passed the self-test. To obtain a printout of the current settings, connect the A/C-7S RO to a laser or dot-matrix printer.) Power on the A/C-7S RO. After the self-test prints, set configuration switch SW1:8 back to the "0" position, then cycle the power one more time.
8. Refer to the self-test printouts to determine which configuration parameters need to be altered. Change these parameters by using the Host/PC download commands. Refer **Chapter 4** for further information.

9. With the A/C-7S RO powered off, attach the coax cable from the host to the A/C-7S RO's BNC connector.

NOTE

Whenever the printer is powered off, the A/C-7S RO must also be powered off to ensure they stay in sync with each other.

The self-test printouts in **Figures 3-1** and **3-2** show the default settings for the different A/C-7 RO models. The printout you obtain may differ from the samples, since only the configuration parameters associated with the active output protocol (e.g. HP PCL, IBM PPDS, etc.) are printed. The second page of the self-test printout is the same for both A/C-7 RO models.

POWER-ON/OFF SEQUENCE

Follow the power-on and -off sequences exactly, or the print output may be garbled.

To power on:

1. Turn on the printer.
2. Turn on the A/C-7 RO.

To power off:

1. Turn off the A/C-7 RO.
2. Turn off the printer.

A/C-7P RO, A/C-7S RO

Self-Test Printout - A/C-7P RO

PARALLEL 3270 COAX INTERFACE
COPYRIGHT (c) 1994 SDE Corp
Rom Ok
Ram Ok
Software Version 1.00

ASCII Printer Protocol	:	Generic
#01 - Buffer Size (Characters)	:	2 1920
#02 - Lines Density (LPI)	:	6
#03 - Characters Density (CPI)	:	10
#04 - Line Spacing	:	1 Single (6 or 8 LPI)
#05 - Form Length (MPL)	:	066
#06 - Maximum Print Position (MPP)	:	080
#07 - Print Case	:	1 Dual
#08 - LU1 Language	:	01 English (US)
#12 - FF Before Local Screen Copy	:	0 No
#13 - FF After Local Screen Copy:	0 No	
#14 - LU3 Print Image (Non-SCS Mode):		0 LU3 and Local Copy Null line suppress
#15 - CR at MPP + 1	:	0 Next line
#16 - NL at MPP +1	:	0 Current line + 2
#17 - Valid FF Followed by Data	:	0 2nd PP
#18 - Valid FF at End of Buffer	:	1 Line 1
#19 - FF Valid Location :	0 FF valid at 1st PP or MPP+1	
#20 - Auto Function at End of Job	:	0 NL
#21 - Print Quality (Fast Draft)	:	0 DP=Fast Draft, Text= Draft
#25 - IBM Motion Command	:	0 Use FF
#26 - Suppress Empty Forms	:	0 No
#27 - Form Feed After Time Out :	0 No	
#30 - Override of Formatting Cmds	:	0 Disabled
#31 - Truncate/Wrap select	:	Wrap text beyond MPP
#34 - Interv Required (IR) Timeout	:	120 times 5 seconds
#36 - Suppress IBM Control Codes	:	0 No control codes suppressed
#37 - Vertical Channel Select (VCS)	:	1 3268/4224
#39 - CPT End Delimiter (ASCII)	:	2625 (&%)
#40 - CPT Start Delimiter (ASCII)	:	2625 (&%)
#41 - Command ID Char (ASCII)	:	5A (Z)
#42 - Start/Stop Buffer Hex Dump	:	0 No Action
#45 - SCS TRN Translate	:	1 3287 emulation, SCS code 35
#50 - Sharing Port Timeout	:	08 Seconds
#51 - Host Port Timeout	:	08 Seconds
#65 - Character Set Selection	:	1 Roman 8
#56 - Parallel Port Init String	:	
SP:		
#57 - Host Port Init String	:	
HP		

Figure 3-1. Self-Test Printout for A/C-7P RO.

Self-Test Printout - A/C-7S RO

SERIAL 3270 COAX INTERFACE

COPYRIGHT (c) 1994 SDE Corp

Rom Ok

Ram Ok

Software Version 1.00

ASCII Printer Protocol	:	Generic
Serial Out Baud Rate	:	9600 Baud
Serial Out Parity	:	None
Serial Out Word Length	:	8 Bits
Serial Out Stop Bits	:	1 Bit
#01 - Buffer Size (Characters)	:	2 1920
#02 - Lines Density (LPI)	:	6
#03 - Characters Density (CPI)	:	10
#04 - Line Spacing	:	1 Single (6 or 8 LPI)
#05 - Form Length (MPL)	:	066
#06 - Maximum Print Position (MPP)	:	080
#07 - Print Case	:	1 Dual
#08 - LU1 Language	:	01 English (US)
#12 - FF Before Local Screen Copy	:	0 No
#13 - FF After Local Screen Copy:	0 No	
#14 - LU3 Print Image (Non-SCS Mode)	:	0 LU3 and Local Copy Null line suppress
#15 - CR at MPP + 1	:	0 Next line
#16 - NL at MPP +1	:	0 Current line + 2
#17 - Valid FF Followed by Data	:	0 2nd PP
#18 - Valid FF at End of Buffer	:	1 Line 1
#19 - FF Valid Location	:	0 FF valid at 1st PP or MPP+1
#20 - Auto Function at End of Job	:	0 NL
#21 - Print Quality (Fast Draft)	:	0 DP=Fast Draft, Text=Draft
#25 - IBM Motion Command	:	0 Use FF
#26 - Suppress Empty Forms	:	0 No
#27 - Form Feed After Time Out :	0 No	
#30 - Override of Formatting Cmds	:	0 Disabled
#31 - Truncate/Wrap select	:	Wrap text beyond MPP
#34 - Interv Required (IR) Timeout	:	120 times 5 seconds
#36 - Suppress IBM Control Codes	:	0 No control codes suppressed
#37 - Vertical Channel Select (VCS)	:	1 3268/4224
#39 - CPT End Delimiter (ASCII)	:	2625 (&%)
#40 - CPT Start Delimiter (ASCII)	:	2625 (&%)
#41 - Command ID Char (ASCII)	:	5A (Z)
#42 - Start/Stop Buffer Hex Dump	:	0 No Action
#45 - SCS TRN Translate	:	1 3287 emulation, SCS code35
#50 - Sharing Port Timeout	:	08 Seconds
#51 - Host Port Timeout	:	08 Seconds

Figure 3-2. Self-Test Printout for A/C-7S RO.

A/C-7P RO, A/C-7S RO

```
#65 - Character Set Selection : 1 Roman 8
#76 - Serial In Baud Rate : 2 9600 Baud
#77 - Serial In Word Length : 8 Bits
#78 - Serial In Stop Bits : 1 Bit
#79 - Serial In Parity : 0 None
#56 - Parallel Port Init String:
SP:
#57 - Host Port Init String:
HP:
```

Figure 3-2. Self-Test Printout for A/C-7S RO, Page 1 (continued).

SCS (LU1) EBCDIC to ASCII Translate Table

EBCDIC	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0	456789ABCDEF
0	20	26	2D	D6	D2	B3	F3	5E	7B	7D	5C	30	&-øØ°μ^{\ } \ 0
1	20	C5	2F	DC	61	6A	7E	BB	41	4A	20	31	é / Éaj ~ £AJ 1
2	C0	C1	A2	A4	62	6B	73	BC	42	4B	53	32	âêÂÊbks¥BKS2
3	CC	CD	D8	A5	63	6C	74	F2	43	4C	54	33	äëÄËcIt · CLT3
4	C8	C9	A1	A3	64	6D	75	BE	44	4D	55	34	àèÀÈdmufDMU4
5	C4	D5	E0	E5	65	6E	76	BD	45	4E	56	35	áíÁíenv\$ENV5
6	E2	D1	E1	A6	66	6F	77	F4	46	4F	57	36	âîÂîfow¶FOW6
7	D4	DD	D0	A7	67	70	78	F7	47	50	58	37	âîÂîgpx1/4GPX7
8	B5	D9	B4	E6	68	71	79	F8	48	51	59	38	çìÇìhgy1/2HGY8
9	B7	DE	B6	A9	69	72	7A	F5	49	52	5A	39	ñÑ Ñ ñrz3/4IRZ9
A	BF	21	7C	3A	FB	F9	B8	5B	2D	31	32	33	ç ! ! : « ^a ¡ [_ ¹²³
B	2E	24	2C	23	FD	FA	B9	5D	C2	C3	DF	AE	. \$, # » ^o ¿ ¡ ð ù Ò Ù
C	3C	2A	25	40	E4	D7	E3	B0	CE	CF	DA	DB	<*% @ ð æ Ð - ö ù Ò Ù
D	28	29	5F	27	B2	20	B1	AB	CA	CB	E8	AD	() _ ' ý , Ý ¨ ò ù Ò Ù
E	2B	3B	3E	3D	F0	D3	F1	27	C6	C7	E7	ED	+ ; > = Þ Æ Þ ' ó ú Ò Ù
F	7C	5E	3F	22	FE	BA	20	5F	EA	EF	E9	20	! ^ ? " ± _ ö ý Ò

DSC (LU3) DBC to ASCII Translate Table

DBC	00	10	20	30	40	50	60	70	80	90	A0	B0	0123456789AB
0	00	20	30	26	C8	CC	A1	D8	61	71	41	51	0&ääÄÄaqAQ
1	00	3D	31	2D	C9	CD	A3	A5	62	72	42	52	=1-èèÈÈbrBR
2	00	27	32	2E	D9	DD	E6	A7	63	73	43	53	' 2 . iillcsCS
3	00	22	33	2C	CA	CE	E8	DA	64	74	44	54	" 3 , òòÒÒdtDT
4	00	2F	34	3A	CB	CF	AD	DB	65	75	45	55	/ 4 :üüÜÜeuEU
5	00	5C	35	2B	E2	C0	E1	A2	66	76	46	56	\5+ääÄÄfvFV
6	00	7C	36	5E	EA	C1	E9	A4	67	77	47	57	l6^øèÈÈÉgwGW
7	00	7C	37	B0	EF	D1	59	A6	68	78	48	58	l7-ÿÿYÿhxHX
8	3E	3F	38	B3	C8	C2	41	DF	69	79	49	59	>?8^òòAÓÿlY
9	3C	21	39	00	C9	C3	45	AE	6A	7A	4A	5A	<l9 èùÈÛjzJZ
A	5B	24	DE	5E	C5	C4	45	E0	6B	D7	4B	D3	[\$B^éáEÁkæKÆ
B	5D	BF	BD	7E	D9	C5	49	DC	6C	D6	4C	D2	]ç\$~iéIÉlØLØ
C	29	BB	23	AB	CA	D5	4F	E5	6D	D4	4D	D0	)£#"òíÓÍmÁMÁ
D	28	BC	40	60	CB	C6	55	E7	6E	B5	4E	B4	(¥@'ùóUÓñçNç
E	7D	F2	25	A9	CF	C7	59	ED	6F	3B	4F	3B	} . % ` üúYÚo;O;
F	7B	BA	5F	00	B5	B7	43	B6	70	2A	50	2A	{ _ çñCñP*P*

Figure 3-3. Self-Test Printout, Page 2.

4. Configuration

4.1 A/C-7 RO Configuration

The A/C-7 RO can be configured through its on-board configuration switches or by sending download commands from the host or from a PC/LAN. To ensure proper functioning of your A/C-7 RO, you should review all available parameters.

4.2 Configuration Switch Settings

Use the A/C-7 RO's configuration switches to select the output protocol and to perform the available test and diagnostic functions. Use a pointed object, such as a ball-point pen, to change the switch settings.

When operating, the A/C-7 RO will only recognize EBCDIC Hex Dump and ASCII Dump settings. All other settings are read only at power-up. Whenever you change one of these settings, remember to cycle the power to activate them.

NOTE

If an invalid switch setting is encountered at power-up, all LED lights will blink and the A/C-7 RO cannot operate.

Table 4-1. Configuration Switch Settings.

Output Protocol	SW1:4	SW1:5	SW1:6	SW1:7
Hewlett-Packard® PCL	o	o	|	o
IBM Proprinter	o	|	o	|
IBM PPDS	o	o	o	o
Epson ESC/P1	o	o	o	|
Epson DFX+	o	|	|	|
Epson LQ (24-pin)	o	|	|	o
Epson 9-pin (DFX)	|	o	o	o
Generic	|	o	o	|

Table 4-2. Tests/Diagnostic.

Tests/Diagnostic	SW1:1	SW1:8
Restore Factory Defaults	|	o
Self-Test	o	|
EBCDIC Hex Dump	o	|

Table 4-3. Tests/Diagnostic.

Tests/Diagnostic	SW1:4	SW1:5	SW1:6	SW1:7
ASCII Hex Dump	|	|	|	|

Table 4-4. Operating Mode.

Operating Mode	SW1:1	SW1:4	SW1:5	SW1:6	SW1:7	SW1:8
No Tests	o	Valid Output Protocol				o

The first two test functions (Restore Factory Defaults and Self-Test) are performed only if the configuration switches are set as indicated when the A/C-7 RO is powered on. In the case of the self-test, the A/C-7 RO prints a self-test at power-on and then needs to be powered off. Refer to **Chapter 7** for more information.

The second (right) bank of switches of the A/C-7S RO is used to set up the A/C-7S RO for communication with the printer.

Table 4-5. Serial Out Baud-Rate Switches.

Serial Out Baud Rate	SW2:1	SW2:2	SW2:3
38,400	o	o	o
19,200	o	o	|
9,600	o	|	o
4,800	o	|	|
2,400	|	o	o
1,200	|	o	|
600	|	|	o
300	|	|	|

Table 4-6. Serial Out Word-Length Switch.

Serial Out Word Length	SW2:4
7 Bits	o
8 Bits	|

Table 4-7. Serial Out Stop Bits Switch.

Serial Out Stop Bits	SW2:5
1 Bit	o
2 Bits	|

Table 4-8. Serial Out Parity Switch.

Serial Out Parity	SW2:6	SW2:7
None	o	o
Odd	o	|
Even	|	o

Table 4-9. Serial X-On/X-Off Switch.

Serial X-On/X-Off	SW2:8
Send	|
Don't Send	o

4.3 Setup Software (does not apply to versions after February 1996)

Older versions of the A/C-7 RO included a setup disk. For newer versions (after February 1996), all configuration parameters not already covered through configuration switches can be changed through the host/PC download commands.

NOTE

For a description of the available configuration parameters, refer to the Table 4-11, Host/PC Download Commands.

4.4 Host/PC Download Commands

By sending download commands from the Host/PC to the A/C-7 RO, you can change all configuration parameters not already covered through the configuration switches.

Most Host/PC download commands are placed in a Host/PC document or on the screen. Regardless of whether the incoming print job is a screen print, a spreadsheet, or a word-processing document created on either the host or PC, the A/C-7 RO will recognize the Host/PC download command.

The command itself will not be printed if it was entered correctly. If any part of the command is printed, the A/C-7 RO did not recognize the command because of a problem in the format. Check the syntax of the command and send the command again.

Most Host/PC download commands sent to the A/C-7 RO take effect immediately and stay only in the A/C-7 RO's active memory. To save the changed configuration beyond a power off, send Host/PC download command Z99,0.

Tip: Save the Host/PC download commands in a separate file. If you need to re-configure the A/C-7 RO at a later time, or if you need to configure more than one A/C-7 RO, just "print" the file containing your Host/PC download commands.

Take the following steps to enter a host download command.

1. Type the Command Pass-Thru delimiter &% (or alternate CPT beginning delimiter) in the document at the point where the command is to take effect.
2. Type an upper case “Z” (or the alternate command ID character).
3. Type the command number for the command to be used, as shown in the table.
4. Type a comma.
5. Type the value representing the desired selection. No spaces are allowed. A space or invalid character in a command causes the A/C-7 RO to ignore the command and resume printing from the point the error occurred.
6. A space or control character (NL, LF, CR, or FF) signals the end of the download command.
7. Multiple commands can be chained together by using a slash (/) or backslash (\) to separate the commands (no spaces allowed). For example, to set the Form Length (Command 05) to 64 lines (Value 64), the Buffer Size (Command 01) to 960 characters (Value 1), and the Character Density (Command 03) to 12 CPI (Value 12), type:
&%Z05,64/Z01,1/Z03,12

4.4 Host/PC Download Command Overview

Table 4-10 shows the Coax Host/PC Download commands and their corresponding command numbers in alphabetical order:

Table 4-11. Host/PC Download Commands.

Host/PC Download Command	Command Number
10 CPI Command String	86
12 CPI Command String	88
15 CPI Command String	87
16.7 CPI Command String	89
6 LPI Command String	84
8 LPI Command String	85
Alternate Paper Tray Orientation	63
CPT Ending Delimiter	39
CPT Start Delimiters	40
Automatic Function at End of Job	20
Automatic Print Orientation	61
Buffer Hex Dump	42
CPI	03
Character Set	65
Coax Buffer Size	01

Table 4-11 (continued). Host/PC Download Commands.

Host/PC Download Command	Command Number
Command ID Character	41
CR at MPP + 1	15
Custom User Strings	55
EpsonMatrixFont	09
FF After Time Out	27
FF At End Of Buffer	18
FF After Local Screen Copy	13
FF Before Local Screen Copy	12
Form Length	05
Host Port Init String	57
Host Timeout	51
IBM Motion Command	25
Intervention Required Timeout	34
Laser Paper Size	32
Line Spacing	04

Table 4-11 (continued). Host/PC Download Commands.

Host/PC Download Command	Command Number
LPI	02
LU1 Language	08
Manual Paper Tray Orientation	64
Max Print Position	06
NL at MPP+1	16
Override Format Commands	30
Primary Paper Tray Orientation	62
Paper Path	11
Parallel Port Init String	56
Print Active Configuration Setting	98
Print Quality	21
Print Case	07
Print Image	14
Restore Factory Default	98
Restore Previously Saved Configuration	98

Table 4-11(continued). Host/PC Download Commands.

Host/PC Download Command	Command Number
Save Config in NV Memory	99
SCS Translate =	45
Serial In Baud Rate (serial only)	76
Serial In Parity (serial only)	79
Serial In Stop Bits (serial only)	78
Serial In Word Length (serial only)	77
Serial Port Init String (serial only)	58
Sharing Timeout	50
Suppress Empty Forms	26
Suppress Host	36
Text After FF	17
True LPI Spacing	38
Truncate/Wrap	31
Valid FF Location	19
Vertical Channel Select	37

Asterisks (*) identify factory-default settings. Invalid commands (such as selecting 2 LPI) are ignored. The last valid setting will be unchanged. Examples in this section apply to configuration through Host/PC download only.

COMMAND 1: BUFFER SIZE

Selects logical default buffer size.

<u>VALUE</u>	<u>DESCRIPTION</u>
1	960 characters
*2	1920 characters
3	2560 characters
4	3440 characters
5	3564 characters

NOTES

This command, along with the Z99,0 command, changes the logical buffer size selection in the non-volatile memory of the interface. The logical buffer size is only reported to the host the next time the unit is powered on.

The physical buffer size is permanently set at 4K.

Example: `&%Z1,3` sets logical buffer size to 2560 characters.

COMMAND 2: LINES PER INCH

Selects default LPI.

<u>VALUE</u>	<u>DESCRIPTION</u>
3	3 LPI
4	4 LPI
*6	6 LPI
8	8 LPI

NOTES

This default emulates the front panel selection on an IBM printer.

The IBM host can control the LPI unless Command 36 is used to override the host LPI commands.

Example: `&%Z2,8` sets the printer to 8 LPI default.

COMMAND 3: CHARACTERS PER INCH

Selects default CPI.

<u>VALUE</u>	<u>DESCRIPTION</u>
0	No default sent to printer
*10	10 CPI
12	12 CPI
15	15 CPI
16	16.7 CPI

NOTE

The IBM host can control CPI unless Command 36 is used to select override of host CPI commands.

Example: `&%Z3,15` sets the printer to 15 CPI default.

***Factory-default setting.**

COMMAND 4: LINE SPACING

Selects default Line Spacing.

<u>VALUE</u>	<u>DESCRIPTION</u>
*1	Single Space
2	Double Space

Example: &%Z4,2 sets the printer to double space default.

COMMAND 5: FORM LENGTH

Selects default Form Length (MPL = Maximum Print Lines).

<u>VALUE</u>	<u>DESCRIPTION</u>
000	No form length control
001 to 255	Set form length in number of lines
*066	Factory Default

NOTE

The 000 value enables the front panel selection on the printer to control the form length when Command 25 is set to value 0.

Example: &%Z5,70 sets form length to 70 lines for A4 paper.

COMMAND 6: MAXIMUM PRINT POSITION

Selects current and default Maximum Print Position, the maximum number of characters which can be printed on each line.

<u>VALUE</u>	<u>DESCRIPTION</u>
000	Infinite line length
001 to 254	Set MPP in number of characters
*80	Factory Default

NOTES

Normal values are 80, 132, or 198 characters. This default emulates the front-panel selection on an HP printer.

MPP and the current position will not be changed by changes in CPI.

The infinite line length will place no limits on the number of characters that can be sent to the printer on a single line.

Example: &%Z6,63 sets MPP to 63 characters.

*Factory-default setting.

COMMAND 7: PRINT CASE

Selects default print case.

<u>VALUE</u>	<u>DESCRIPTION</u>
0	Mono case
*1	Dual case

NOTE

This default only affects LU3 printing.

Example: &%Z7,0 sets default to mono case.

COMMAND 8: LU1 LANGUAGE

Selects default LU1 language.

<u>VALUE</u>	<u>DESCRIPTION</u>
* 01	English (U.S.) EBCDIC
03	Austrian/German
04	Belgian
05	Brazilian
06	Canadian (French)
07	Danish/Norwegian
08	Danish/Norwegian (alt.)
09	Finnish/Swedish
10	Finnish/Swedish (alt.)
11	French
12 (same as 11)	French (alt.)
13	Austrian/German (alt.)
14	International Set 5
15	Italian
16	Japanese (English)
19	Spanish
20	Spanish (alt.)
21	Spanish Speaking
22	English (U.K.)

*Factory-default setting.

23 (same as 07)	Norwegian
24 (same as 09)	Swedish
25 (same as 01)	EBCDIC (alt.)
26 (same as 08)	Norwegian (alt.)
27 (same as 10)	Swedish (alt.)
28	Portuguese
29 (same as 06)	Canadian (Bilingual)
30 (same as 11)	French AZERTY (105 character)
31 (same as 14)	Swiss German
32 (same as 14)	Swiss French

NOTES

This command, along with command Z99,0, changes the default LU1 language selection in the permanent memory of the interface.

The command value should match the language number used in IBM CU configuration sequence number 121.

Example: &%Z8,04 sets LU1 language to Belgian.

COMMAND 9: EPSON MATRIX FONT

Selects Epson default font, if supported by the printer.

<u>VALUE</u>	<u>DESCRIPTION</u>
*1	Draft Print Quality
2	Roman, NLQ
3	Sans Serif, NLQ
4	Courier, NLQ
5	Prestige, NLQ
6	Script, NLQ
7	OCR-B, NLQ

Example: &%Z9,2 selects near-letter quality (Roman) as the default.

COMMAND 11: PAPER PATH

Selects default paper path for the Page Presentation Media (PPM) command.

<u>VALUE</u>	<u>DESCRIPTION</u>
0	Ignore the host PPM command and select the paper tray through the printer's front panel.
1	Tractor feed or only one paper source used (ignore the host PPM).
*2	Cut sheet feeding from primary bin is default.
3	Cut-sheet feeding from

*Factory-default setting.

- alternate bin 1 is default (corresponds to PCL escape value 4)
- 4 Envelope feeder default
- 5 Manual sheet feed default
- 6 Manual envelope feed default
- 7 Epson DFX front tray
- 8 Epson DFX rear tray
- 9 Cut sheet feeding from alternate bin 2 is default (corresponds to PCL escape value 5)

NOTES

This command defines the default paper source for the Page Presentation Media (PPM) command in SCS mode. If the PPM command is received from the host, the interface always sends the paper source to the printer unless value 0 or 1 is selected.

The printer ignores the command if it does not have a secondary paper bin or an envelope feeder.

A manual sheet feed

command in the SCS PPM causes the printer to wait for the operator to insert paper in the manual feed tray. This command takes effect immediately if placed on the first position of the page (line 1, position 1); otherwise, it takes effect on the next page.

Example: &%Z11,5 selects manual sheet feed as the default source of paper.

COMMAND 12: FORM FEED BEFORE LOCAL SCREEN PRINT

Specifies whether a form feed is performed before doing local screen print.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	No form feed before local screen print
1	Form feed before local screen print

NOTE

This command only affects the local screen copy function, not the host-initiated local copy printing, and functions only in LU3 (non-SCS) operations.

Example: &%Z12,1 performs a FF before local screen print.

*Factory-default setting.

COMMAND 13: FORM FEED AFTER LOCAL SCREEN COPY

Specifies whether a form feed is performed after a local screen hard copy.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	No Form Feed after local screen dump
1	Form Feed performed after local screen dump

NOTE

To use this function, the RPQ should be:

IBM 3268 RPQ SC9508
 IBM 3287 RPQ MC3750
 IBM 4214 OPT 20=3

This command only affects the local screen copy, not the host-initiated local copy printing, and functions only in LU3 (non-SCS) operations.

Example: &%Z13,1 performs a FF after local screen copy.

COMMAND 14: LU3 PRINT IMAGE (Non-SCS Mode)

Selects Null-Line Suppression or True Screen Image in LU3 printing mode.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	Null line suppression in local copy and non-SCS print

- 1 Null-line suppression in non-SCS print and true screen image in local copy
- 2 True screen image in non-SCS print and null-line suppression in local copy
- 3 True screen image in non-SCS print and true screen image in local copy

NOTES

To use this function, the RPQ should be:

IBM 3268 RPQ SC9505
IBM 3287 RPQ SC3741
IBM 4214 OPT 18=2

Available only in LU3 (non-SCS) operations.

Values 0 and 1 are only functional from CUT terminals.

Example: &%Z14,3 prints true screen image in non-SCS print and local copy.

COMMAND 15: CR at MPP + 1

Sets the printer in accordance with the RPQ installed in the control unit.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	First print position (PP) of next line
1	First PP of current line

*Factory-default setting.

NOTES

To use this function, the RPQ should be:

IBM 3268 RPQ SC9501
IBM 3287 RPQ S30219
IBM 4214 OPT 15=1

Available only in LU3 (non-SCS) operation.

Example: &%Z15,1 prints first PP of current line as the next PP when a CR is received at MPP+1.

COMMAND 16: NL at MPP + 1

Sets the printer in accordance with the RPQ installed in the control unit.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	First PP of current line + 2 lines
1	First PP of next line

NOTES

To use this function, the RPQ should be:

IBM 3268 RPQ SC9502
IBM 3287 RPQ S30219
IBM 4214 OPT 15=1

Available only in LU3 (non-SCS) operation.

Example: &%Z16,1 performs first PP of next line as the next PP when an NL is received at MPP+1.

COMMAND 17: VALID FF FOLLOWED BY DATA

Sets the printer in accordance with the RPQ installed in the control unit.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	Second print position of first line on next form
1	First print position (PP) of first line on next form

NOTES

For the Value 1 selection, the RPQ would be:

IBM 3268 RPQ SC9503
IBM 3287 RPQ N/A
IBM 4214 OPT 16=2

Available only in LU3 (non-SCS) operation.

Example: &%Z17,1 performs first PP of first line on next form as the next PP when a valid FF is not positioned at the end of an IBM print buffer.

COMMAND 18: VALID FF AT END OF PRINT BUFFER

Sets the printer in accordance with the RPQ installed in the control unit

<u>VALUE</u>	<u>DESCRIPTION</u>
0	First PP of second line on next form
*1	First PP of first line on next form

*Factory-default setting.

NOTES

To use this function, the RPQ should be:

IBM 3268 RPQ SC9504
IBM 3287 RPQ SC3749
IBM 4214 OPT 17=2

Available only in LU3 (non-SCS) operation.

Example: &%Z18,1 performs first PP of first line on next form as the next PP when a valid FF is received at the end of an IBM print buffer.

COMMAND 19: FF VALID LOCATION

Sets the printer in accordance with the RPQ installed in the control unit.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	FF is valid only at the first print position or at position MPP+1.
1	FF is valid anywhere it occurs.

NOTES

To use this function, the RPQ should be:

IBM 3268 RPQ SC9506
IBM 3287 RPQ SC3739
IBM 4214 OPT 19=1

Available only in LU3 (non-SCS) operation.

Example: &%Z19,1 makes FF valid anywhere it occurs.

COMMAND 20: AUTOMATIC FUNCTION AT END OF JOB

Sets the printer in accordance with the RPQ installed in the control unit.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	NL is automatically executed after the buffer is completed (unless a FF, NL, or CR was last in the buffer).
1	FF is automatically executed after the print buffer is completed (unless a FF was last in the buffer).

NOTES

To use this function, the RPQ should be:

- IBM 3268 RPQ SC9507
- IBM 3287 RPQ SC3740
- IBM 4214 OPT 20=2

Available only in LU3 (non-SCS) operation.

Do not press the form feed or line feed buttons on the front of the printer. This will cause the host and printer to lose synchronization of paper position. This command reduces the need to advance the paper.

Example: &%Z20,1 sets the printer to issue a FF automatically at the end of the print buffer.

*Factory-default setting.

COMMAND 21: PRINT QUALITY (FastDraft)

Defines default print quality.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	The Page Presentation Media (PPM) commands control the quality: DP Quality (01) = FastDraft and DP Text Quality (02) = normal draft.
1	All DP draft output is printed FastDraft
2	All DP draft output is printer normal draft
3	Value 0 reversed, 01 = normal and 02 = FastDraft
4	All output is Near Letter Quality

Example: &%Z21,1 selects all DP output as FastDraft printing.

COMMAND 25: IBM MOTION COMMANDS

Enables a Form Feed from the host system to be converted to the required number of line feeds (beneficial when forms length is controlled by the interface).

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	Pass FF from host to the printer
1	Count the lines in Command 5 and send multiple line feeds to the printer in place of the host FF
2	Ignore all IBM Motion Commands

Example: &%Z25,1 sets the printer to count the lines specified in Command 5.

COMMAND 26: SUPPRESS EMPTY FORMS

Suppresses blank printout pages caused by form feed commands that occur at the top of a form.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	No, do not suppress empty forms
1	Yes, suppress empty forms

*Factory-default setting.

NOTES

If 1 is selected, the interface ignores form feed commands located at the top of form position.

This command affects printing in both DSC and SCS modes. This differs from the IBM 3287, which suppresses form feed only in DSC mode.

Example: &%Z26,1 sets the interface to suppress empty forms.

COMMAND 27: FF AFTER TIME ELAPSE

Sends a Form Feed if unprinted data remains in the print buffer for the coax-port timeout interval specified in Command 51.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	No extra FF is sent
1	Send FF after timeout value

NOTE

In most cases, the host application generates a termination FF and there is no need to change this command from the default.

Example: &%Z27,1 sends a FF after time delay selected by command 51 (default = 5 sec.) when unprinted data remains in the print buffer.

COMMAND 30: OVERRIDE OF FORMATTING COMMANDS

Enables the printer's front-panel selections to control how a job is printed.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	Normal operation (disabled)
1	Formatting commands are not sent to the printer (enabled)

NOTES

When active, this command overrides the interface's default selections for CPI, LPI, font, orientation, bin selection, paper size, COR, and line compression.

A reset command is sent to the printer before a coax print job in order to restore the printer's front-panel default selections.

This command has no effect on the special features Command Pass-Thru, user strings, initialization strings, and coax host RPQs.

Example: &%Z30,1 sets override of formatting commands.

*Factory-default setting.

COMMAND 31: TRUNCATE/WRAP SELECT

Printers without HP PCL only. Selects whether the interface truncates or wraps the text if the maximum print position is exceeded.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	Allow text to print on next line when maximum print position is exceeded
1	Truncate text beyond the maximum print position

Example: &%Z31,1 causes text that exceeds the maximum print position to be truncated (not printed).

COMMAND 32: PAPER SIZE

HP PCL only. Specifies the paper size used for printing.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	Selects 8 1/2" x 11" letter paper
1	Selects A4 (210mm x 297mm, 8.27" x 11.69") paper
2	Selects 8 1/2" x 14" legal paper
3	Selects 11" x 17" paper
4	Selects A3 size paper
5	Printer selected

Example: &%Z32,1 selects A4 paper.

COMMAND 34: INTERVENTION REQUIRED (IR) TIMEOUT

Sets the time interval before an intervention required signal is sent to the host after a printer error occurs.

VALUE	DESCRIPTION
000	Never send an IR
001 to 255	IR is sent (value *5) seconds after printer error occurs
*120	Default, send IR after ten minutes.

Example: $\&\%Z34,036$ sets IR time interval to 3 minutes $(36 * 5) / 60 = 3$ minutes.

COMMAND 36: SUPPRESS IBM CONTROL CODES

This function is used to select suppression of all or some IBM control codes sent from the host system.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	Obey all IBM control codes
1	Suppress all IBM control codes
2	Suppress LPI, CPI, MPP and MPL control codes
3	Suppress CPI and MPP control codes
4	Suppress LPI and MPL control codes
5	Suppress print quality specified in the PPM command

*Factory-default setting.

NOTES

If this command is set to 1, documents need to be formatted by sending transparent control codes to the printer using Command Pass-Thru or SCS mode transparent data.

If value 2 is selected, the SCS pitch (CPI), line density (LPI), SHF (MPP), and SVF (MPL) commands will be suppressed (not sent to the printer).

Example: $\&\%Z36,2$ no LPI, CPI, MPP or MPL commands are sent to the printer. The document prints using the printer's defaults.

COMMAND 37: VERTICAL CHANNEL SELECT (VCS)

Specifies vertical channel select (VCS) emulation. Functions similarly to a vertical tab, except the 3287 does LF only.

VALUE	DESCRIPTION
0	3287 VCS emulation
*1	3268/4214/4224 VCS emulation

Example: $\&\%Z37,0$ selects 3287 VCS emulation.

COMMAND 38: TRUE LPI SPACING

HP PCL only. Because laser printers have a non-printable border around the edge of single-sheet pages, 6 LPI and 8 LPI spacing is compressed slightly to enable 66 lines and 88 lines to be printed on 11-inch long paper. This can occasionally cause a problem, especially when using preprinted forms that must align precisely. Command 38 enables a user to override the laser-printer LPI compression.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	Compress the vertical LPI spacing
1	Print using true 6 and 8 LPI spacing

NOTE

If true LPI is selected, the user needs to adjust the document formats to allow for the reduced number of lines that can be printed per page, or the extra lines may print onto another sheet of paper.

Example: &%Z38,1 specifies that vertical spacing prints using true 6 and 8 LPI.

*Factory-default setting.

COMMAND 39: CPT ENDING DELIMITER CHARACTERS

Specifies the two characters to be used for the ending delimiter characters for Command Pass-Thru.

<u>VALUE</u>	<u>DESCRIPTION</u>
XXYY	XX is the ASCII hexadecimal value of the first character and YY is the ASCII hexadecimal value of the second character.

NOTES

If an ending delimiter is not selected with this command, the delimited selected with Command 40 will be used as a default.

The default delimiter will no longer be active if the command is used to change it. If Command 39 and Command 40 are both entered, Command 39 must be sent after Command 40 to be active.

One delimiter character can be specified instead of two by entering the hex code for the character followed by two zeros (for example, &%Z39,2500 selects & as the delimiter).

A hex code that starts with 00 is invalid.

Example: &%Z39,253F specifies the %? characters as the alternate ending delimiter characters (% ASCII hex value is 25 and ? ASCII hex value is 3F).

COMMAND 40: CPT START DELIMITER CHARACTERS

Specifies the two characters to be used for the beginning delimiter characters for Command Pass-Thru.

<u>VALUE</u>	<u>DESCRIPTION</u>
XXYY	XX is the ASCII hexadecimal value of the first character and YY is the ASCII hexadecimal value of the second character

NOTES

Host download commands use the CPT beginning delimiter characters as well. The new character(s) replace the &% in front of the Z.

If you do not select an ending delimiter with Command 39, the delimiter selected with this command will be used as the default ending delimiter.

The default beginning delimiter will no longer be active if you use this command to change it.

One delimiter character can be specified instead of two by entering the hex code for the character followed by two zeros (for example, &%Z40,2500 selects & as the delimiter).

A hex code that starts with 00 is invalid.

*Factory-default setting.

Example: &%Z40,253F specifies the %? characters as the beginning delimiter characters (% ASCII hex value is 25 and ? ASCII hex value is 3F).

COMMAND 41: COMMAND ID CHARACTER

Specifies the character that is used for the command identifier that follows the delimiter characters.

<u>VALUE</u>	<u>DESCRIPTION</u>
00	Deletes the previously selected character
ZZ	ZZ is the ASCII hex value of the command ID character

NOTE

The character selected must be a hex value (L, P, or U).

Example: &%Z41,59 specifies "Y" as the command ID character.

COMMAND 42: START AND STOP EBCDIC HEX DUMP

After receiving a start command the coax interface, starting with the next buffer received, sends all host data directly to the printer as hexadecimal printing until a stop command is received or the printer is powered off.

VALUE	DESCRIPTION
*0	No action taken
1	Start EBCDIC hex dump
2	Stop EBCDIC hex dump

NOTES

This command enables the user to print only the section of the document that is in question in buffer hex dump format.

Hex printing starts with the buffer after the start command and stops with the buffer after the stop command.

Examples: &%Z42,1 starts buffer hex dump printing; &%Z42,2 stops buffer hex dump printing.

*Factory-default setting.

COMMAND 45: SCS TRN TRANSLATE

Specifies how transparent data sent using SCS code 35 is handled.

VALUE	DESCRIPTION
0	Binary Transparent
*1	Emulate IBM 3287 Printer

NOTES

Value 1 causes valid graphic characters to be printed normally (i.e., converted from EBCDIC to ASCII), while control codes and invalid graphics are printed as hyphens, and normal page formatting is maintained.

Value 0 causes the 8-bit binary codes to be sent directly to the printer just as they are received from the host.

SCS code 36 functions the same as code 35.

Available in SCS (LU1) mode only.

Example: &%Z45,0—All SCS Code 35 data is sent to the printer as binary codes without translation.

COMMAND 50: SHARING PORT TIMEOUT

Selects the time interval that the interface waits for receipt of additional data from the alternate (PC/LAN) host before automatically switching to check for data from the coax host.

VALUE	DESCRIPTION
04 to 63	Time interval in number of seconds
*08	Factory default is 8 seconds

NOTES

The interface sends a reset command to the printer and restores the coax host defined format commands (i.e., LPI, PI, MPL, MPP) prior to printing data from the coax host after having printed data from the shared parallel port. Because the printer is being shared between the parallel port and the 3270 host, careful attention should be paid to setting up the PC so that jobs are not automatically terminated because the printer is busy.

This problem may be helped by setting the PC timer "off" by writing "mode 1pt1:,,;" (in case of an LPT1 printer) in DOS.

*Factory-default setting.

Use of the DOS PRINT command or a spooling program for the PC is recommended.

If your printer supports Intelligent Emulation Switching (IES), make sure the printer's IES timeout period is less than the command 51 timeout setting.

Example: &%Z50,10 sets the timeout interval to 10 seconds

COMMAND 51: HOST PORT TIMEOUT

Selects the time interval that the interface waits for receipt of additional data from the coax host before automatically switching to check for data from the alternate (PC/LAN) host.

VALUE	DESCRIPTION
04 to 60	Time interval in number of seconds
*08	Factory default is 8 seconds

NOTES

The alternate (PC/LAN) host is responsible for sending any needed format commands required by the printer prior to sending printable data.

If your printer supports Intelligent Emulation Switching (IES), make sure the printer's IES timeout period is less than the command 50 timeout setting.

COMMAND 55: CUSTOM USER STRINGS

Allows the user to define up to six custom user strings, of up to 25 bytes each, which are stored in the memory of the interface and sent to the printer whenever the character delimiter, letter U, and number of the string appears in the text of the document (for example, &%U3).

VALUE	DESCRIPTION
0-5(max. 25 bytes of ASCII hex code)	Defines the custom user string
0-5()	Deletes custom user string

NOTES

To aid in readability, a single space is allowed between hex bytes, but is not included in the string.

The strings could specify a special font-selection command or other custom command to be sent directly to the printer.

This command, if placed as the first printable data at the top of the page (position 1, line 1), will be sent to the printer prior to the data.

To change a custom user string, simply input the new custom user string values; the old string is automatically erased.

Example: &%Z55,3(1B01)
Defines the &%U3 custom user string to send an "Escape and SOH" (1B and 01 hex) to the printer, which is the double wide command.)

COMMAND 56: PARALLEL PORT INITIALIZATION STRING

Allows the user to define an initialization string of up to 25 bytes, which is stored in the memory of the interface and is sent to the printer at the beginning of any printing received from the parallel port.

VALUE	DESCRIPTION
1(max. 25 bytes of ASCII hex code)	Defines the parallel port init string
1()	Deletes the parallel port init string

NOTES

To aid in readability, a single space is allowed between hex bytes but is not included in the string.

The string could specify a special font-selection command or other custom command to be sent directly to the printer prior to the data that is received from the parallel shared port.

To change the initialization string, simply input the new command values. The entire old string is automatically erased.

To delete the initialization string from the NV memory, simply put nothing between the parentheses.

Example: &%Z56,1() deletes from NV memory any hex string that had been previously defined for the parallel-port initialization string.

COMMAND 57: HOST PORT INITIALIZATION STRING

Allows the user to define an initialization string of up to 25 bytes, which is stored in the memory of the interface and is sent to initialize the printer for host printing after shared-port printing has occurred. The interface also restores the host page-format parameters after sending this string and prior to host printing. The initialization string is sent at the beginning of each page.

<u>VALUE</u>	<u>DESCRIPTION</u>
1(max. 25 bytes of ASCII hex code)	Defines the host-port init string
1()	Deletes the host-port init string

NOTES

To aid in readability, a single space is allowed between hex bytes but is not included in the string.

The host-port initialization string is only sent to the printer when you turn the printer on and after printing by the shared parallel port has occurred.

Host SCS commands and download commands have priority over the initialization string instructions.

To change the initialization string, simply input the new command values. The old string is automatically erased.

To delete the initialization string from the permanent memory, simply type the parentheses with nothing between them.

Example: `&%Z57,1()` deletes from permanent memory any hex string that had been previously defined for the host-port initialization string

COMMAND 58: SERIAL-PORT INITIALIZATION STRING

Allows the user to define an initialization string of up to 25 bytes, which is stored in the memory of the interface and is sent to the printer at the beginning of any printing received from the serial port.

<u>VALUE</u>	<u>DESCRIPTION</u>
1(max. 25 bytes of ASCII hex code)	Defines the serial-port init string
1()	Deletes the serial-port init string

NOTES

To aid in readability, a single space is allowed between hex bytes but is not included in the string.

The string could specify a special font-selection command or other custom command to be sent directly to the printer prior to the data that is received from the serial shared port.

To change the initialization string, simply input the new command values. The entire old string is automatically erased.

To delete the initialization string from the NV memory, simply put nothing between the parentheses.

Example: &%Z58,1() deletes from NV memory any hex string that had been previously defined for the serial port initialization string.

COMMAND 61: AUTOMATIC PRINT ORIENTATION (APO)

HP PCL only. Laser printers have the ability to automatically control page orientation if the user decides to activate Auto Print Orientation (APO). Refer to the APO flowchart (Figure 5-1) in Section 5.3.

<u>VALUE</u>	<u>DESCRIPTION</u>
0	APO is NOT ACTIVE. Print orientation is controlled by the orientation selections specified in Commands 62, 63, and 64.
*1	APO is ACTIVE. The page dimensions of a document are checked to determine if the data should be printed in landscape because the width is greater than the length.

NOTE

APO active is the recommended selection. A user can manipulate the page dimensions using SCS commands to control the orientation of the printing as long as the page size required is 8 1/2 x 11" or smaller.

Example: &%Z61,1 enables APO

COMMAND 62: PRIMARY PAPER TRAY ORIENTATION

HP PCL only. The SCS (LU1) PPM command specifying the source for the paper can have a printing orientation assigned to the paper tray that is assigned. Refer to the APO flowchart (Figure 5-1) in Section 5.7. This command duplicates the IBM 3812 and 4028 printer's feature with the additional selection of option 3 below.

<u>VALUE</u>	<u>DESCRIPTION</u>
*0	Computer Output Reduction (COR) Mode is active when paper is specified to be selected from the primary tray
1	Prints PORTRAIT orientation using the active font when the primary tray is specified
2	Prints LANDSCAPE orientation using the active font when the primary tray is specified

3 User Defined mode. Documents are printed using the fonts and orientation that the user specifies through use of the &% font ID commands.

Example: &%Z62,3 specifies that the document is printed as formatted when the primary paper tray is specified as the paper source.

COMMAND 63: ALTERNATE PAPER TRAY ORIENTATION

HP PCL only. This command functions identically to Command 62 except it controls the orientation for printing that specifies the alternate tray for the paper source.

Even if the printer does not have an alternate paper tray, the SCS (LU1) host specifies the alternate tray, and the interface prints the document in accordance with the selection in Command 63.

Values are the same as Command 62 except substitute “alternate tray” for “primary tray” in the descriptions.

NOTE

The value 3 is an excellent choice when COR is not required, since the user can decide the fonts and orientation he desires by using &% font ID commands.

Example: &%Z63,2 specifies that landscape orientation will be used for all printing in which the SCS (LU1) PPM code specifies the alternate paper tray be used.

COMMAND 64: MANUAL FEED TRAY ORIENTATION

HP PCL only. This command functions identically to Command 62 except it controls the orientation for printing when the PPM Command specifies the manual feed tray for the paper source.

Values are the same as Command 62 except substitute “manual feed tray” in place of “primary tray” in the descriptions.

NOTE

The laser printer will, upon receipt of the manual feed tray command, not print until paper is placed into the manual feed slot. This allows the user to insert special forms, letter head, or colored paper into the manual feed slot.

***Factory-default setting.**

Example: &%Z64,1 specifies that all printing using paper from the manual feed slot will be printed in portrait orientation.

COMMAND 65: CHARACTER SET SELECTION

Enables the user to select the ASCII character set that is used in the conversion from EBCDIC (SCS/LU1) or DSC (LU3) to ASCII. This selection automatically changes to match the output protocol selected through the interface's configuration switches if HP, PPDS, or Proprinter II modes are chosen. The other selections require the user to manually select the appropriate character set.

<u>VALUE</u>	<u>DESCRIPTION</u>
1	Roman 8 character set (HP PCL)
2	Code Page 850 character set (IBM PPDS, Epson ESC/P2, Generic)
3	IBM PC Extended (Code Page 437) and Epson Graphics (PC Set 2)

NOTES

The character-set substitutions defined in Commands 70 and 71 must be adjusted if the ASCII character set is changed.

All previously defined substitutions are lost from NV memory when the

character-set selection is changed.

Refer to the character set summary tables at the end of the self test to confirm which ASCII character is printed for each of the 3270 hex codes. Both the EBCDIC and DSC tables are provided.

Example: &%Z65,2 selects the Code Page 850 character set.

COMMAND 70: OVERWRITE EBCDIC (SCS/LU1) TRANSLATION TABLE

Custom substitutions defined by this command and stored in permanent memory are written into the EBCDIC (SCS/LU1) to ASCII translation table.

<u>VALUE</u>	<u>DESCRIPTION</u>
XX	The EBCDIC character to be changed (in hex)
YY	The substitute ASCII character for the EBCDIC character above

NOTES

Previously stored substitutions are automatically changed to the new selection when the same hex location is specified in the EBCDIC table.

Previously stored substitutions are cancelled if an ASCII hex sequence of 00 is specified.

Command Z99,0 must be used to store the substitutions in permanent memory for them to be effective when the printer is next turned on.

The active EBCDIC (SCS/LU1) translation table prints out at the end of the interface self-test summary.

Example: &%Z70,7B,40/Z99,0 prints a 40 ASCII hex (a @ symbol) when the interface receives an EBCDIC 7B (a # symbol). The command is followed by a command Z99,0 which stores the active setup selections in permanent memory.

COMMAND 71: OVERWRITE DSC (LU3) TRANSLATION TABLE

Custom substitutions defined by this command, and stored in the permanent memory, are overwritten into the DSC (LU3) to ASCII translation table.

NOTES

This command functions similarly to Command 70 except the substitutions are applicable to the DSC (LU3) translation table. Refer to the Command 70 instructions.

The active DSC (LU3) translation table prints out at the end of the interface self-test summary.

COMMAND 76: SERIAL-IN BAUD RATE

Selects the Baud Rate for data received at the serial-in port. A new setting will not be effective immediately. To activate the new setting, cycle power on the interface.

VALUE	DESCRIPTION
0	38,400 baud
1	19,200 baud
*2	9,600 baud
3	4,800 baud
4	2,400 baud
5	1,200 baud
6	600 baud
7	300 baud

Example: &%Z76,0 sets the receiving baud rate to 38,400

COMMAND 77: SERIAL-IN WORD LENGTH

Selects the Word Length of data received at the serial-in port. A new setting will not be effective immediately. To activate the new setting, cycle power on the interface.

VALUE	DESCRIPTION
7	7 Bits
*8	8 Bits

Example: &%Z77,7 sets the word length to 7 bits

COMMAND 78: SERIAL-IN STOP BITS

Selects the number of Stop Bits of a data stream received at the serial-in port. A new setting will not be effective immediately. To activate the new setting, cycle power on the interface.

VALUE	DESCRIPTION
*1	1 Bit
2	2 Bits

Example: &%Z78,2 sets the number of Stop Bits to 2

COMMAND 79: SERIAL-IN PARITY

Selects the Parity of a data stream received at the serial-in port. A new setting will not be effective immediately. To activate the new setting, cycle power on the interface.

VALUE	DESCRIPTION
*0	None
1	Odd
2	Even

Example: &%Z79,2 sets the parity to even.

COMMAND 84: 6 LPI STRING

Used when operating in Generic output protocol. Defines the 6 LPI string the interface sends to the printer when the host sends a 6 LPI command.

<u>VALUE</u>	<u>DESCRIPTION</u>
1 (max. 25 bytes of ASCII hex code)	Defines the 6 LPI string
1 ()	Deletes the 6 LPI string

*Factory-default setting.

NOTES

This string represents the printer-specific command to set the printer to 6 LPI. Consult your printer's manual for the appropriate hex value representing the 6 LPI command.

Example: &%Z84,1(1B 32) stores the 6 LPI command for an Epson LQ-2500 printer (hex value 1B 32) as the 6 LPI string.

COMMAND 85: 8 LPI STRING

Used when operating in Generic output protocol. Defines the 8 LPI string the interface sends to the printer when the host sends an 8 LPI command.

<u>VALUE</u>	<u>DESCRIPTION</u>
1(max. 25 bytes of ASCII hex code)	Defines the 8 LPI string
1()	Deletes the 8 LPI string

NOTES

This string represents the printer-specific command to set the printer to 8 LPI. Consult your printer's

manual for the appropriate hex value representing the 8 LPI command.

Example: &%Z85,1(1B 30) stores the 8 LPI command for an Epson LQ-2500 printer (hex value 1B 30) as the 8 LPI string.

COMMAND 86: 10 CPI STRING

Used when operating in Generic output protocol. Defines the 10 CPI string the interface sends to the printer when the host sends a 10 CPI command.

<u>VALUE</u>	<u>DESCRIPTION</u>
1(max. 25 bytes of ASCII hex code)	Defines the 10 CPI string
1()	Deletes the 10 CPI string

Example: &%Z86,1(1B 50) stores the 10 CPI command for an Epson LQ-2500 printer (hex value 1B 50) as the 10 CPI string.

*Factory-default setting.

COMMAND 87: 15 CPI STRING

Used when operating in Generic output protocol. Defines the 15 CPI string the interface sends to the printer when the host sends a 15 CPI command.

<u>VALUE</u>	<u>DESCRIPTION</u>
1(max. 25 bytes of ASCII hex code)	Defines the 15 CPI string
1()	Deletes the 15 CPI string

Example: &%Z87,1(1B 67) stores the 10 CPI command for an Epson LQ-2500 printer (hex value 1B 67) as the 15 CPI string.

COMMAND 88: 12 CPI STRING

Used when operating in Generic output protocol. Defines the 12 CPI string the interface sends to the printer when the host sends a 12 CPI command.

<u>VALUE</u>	<u>DESCRIPTION</u>
1(max. 25 bytes of ASCII hex code)	Defines the 12 CPI string
1()	Deletes the 12 CPI string

Example: &%Z88,1(1B 4D) stores the 10 CPI command for an Epson LQ-2500 printer (hex value 1B 4D) as the 12 CPI string.

COMMAND 89: 16.7 CPI STRING

Used when operating in Generic output protocol. Defines the 16.7 CPI string the interface sends to the printer when the host sends a 16.7 CPI command.

<u>VALUE</u>	<u>DESCRIPTION</u>
1(max. 25 bytes of ASCII hex code)	Defines the 16.7 CPI string
1()	Deletes the 16.7 CPI string

Example: &%Z89,1(1B 10) stores the 16.7 CPI command for an Epson LQ-2500 printer (hex value 1B 10) as the 16.7 CPI string.

COMMAND 98: RESTORE DEFAULTS OR PRINT CONFIGURATION

Restores the factory default configuration selections, prints out a copy of the active configuration selections, or restores the permanent memory selections to the active setup status.

<u>VALUE</u>	<u>DESCRIPTION</u>
0	Restores the factory setup
1	Prints out the active setup selections
2	Restores the setup selections stored in the permanent memory to active status

NOTES

If a document is printed using temporary host download commands (commands not stored using the Z99,0 command), value 2 will restore the permanent memory selections.

Put a &%Z98,2 at the end of the document to restore the standard setup parameters for the next user of the printer.

The active setup and permanent memory setup selections are the same after a Command Z99,0 or a Command Z98,2 is sent to the printer.

Example: &%Z98,1 prints out the active setup selections for review.

COMMAND 99: STORE CONFIGURATION IN PERMANENT MEMORY

Send this command after all desired host download configuration commands have been sent to the interface. It stores the active setup in the permanent memory of the interface so it will be in effect whenever the printer is powered on. Otherwise, active configuration commands are lost when the printer is turned off.

<u>VALUE</u>	<u>DESCRIPTION</u>
0	To complete the command, the value 0 must be used

NOTES

Host download selections followed by a Command Z99,0 will be stored in permanent memory and active when the printer is turned on.

Only use Command Z99,0 when the host download selection needs to be permanently stored in the memory of the interface.

Example: &%Z99,0 stores the currently active setup selections in the permanent memory of the interface.

4.5 Restoring Factory Defaults

The factory-default configuration can be restored either by sending Host/PC Download Command “Z98,0” or by taking the following steps:

1. Power off the printer and the A/C-7 RO.
2. Disconnect the host and PC sharing cables from the interface.
3. Set configuration switch SW1:1 (far left) to the “1” position, and switch SW1:8 (far right of the first bank of switches) to the “o” position if it is not already there.
4. Power on the A/C-7 RO. The factory defaults are restored. The LED lights labeled “Host Ready” and “Printer Ready” will blink continuously, indicating the A/C-7 (RO) is not in operating mode.
5. Power off the A/C-7 RO and return configuration switch SW1:1 (on the first bank of switches) to the “o” position. Switch SW1:8 should be in the “o” position as well.

5. Operation

5.1 Printer Sharing

The A/C-7P RO and A/C-7S RO allow the printer to be shared automatically between an attached PC/LAN and an IBM coax host. Simply connect the PC/LAN printer server to the parallel/serial port. The A/C-7P RO can supply external devices attached to its parallel sharing port with 5V up to 350 mA. See **Appendix E** for instructions on how to transfer power to pin 18 on the A/C-7P RO. The A/C-7 RO uses a timeout after each print job before it honors print jobs from another port.

At the end of a host print job, the A/C-7P RO waits for the specified Host Port Timeout period before it honors data streams coming in through the parallel port. The Host Port Timeout period is set through Host/PC download command 51.

After a parallel or serial print job is completed, the A/C-7 RO will again wait for a period of time before it honors host print jobs. The Sharing Port Timeout is set through Host/PC download command 50.

If the PC print job is sent while a host job is printing, the printer responds as “busy” to the PC print request. The print job can be spooled through a spool program, sent to the printer when the host job is finished or if the PC’s printer port is set for infinite retry through the DOS “Configure Printer” command (described in the DOS manual), the print job waits for the printer to be available to receive the data.

By default, the A/C-7S RO sends data at 96N81 (9,600 baud; parity = none; word length = 8 bits; stop bits = 1). Make sure that the printer and the A/C-7S RO are using the same serial parameters. The A/C-7S RO’s Serial-Out parameters can be changed using the second (right) bank of switches located on the front panel.

Also make sure that the A/C-7S RO’s Serial-In settings are the same as those of the PC/LAN. Note that when printing from the share por, the slowest baud rate (Serial-In, Serial-Out) will determine the print speed.

The A/C-7S RO’s Serial In parameters can be changed through Host/PC download commands 76 through 79.

PC printing longer than 10 to 20 minutes (depending on host configuration) may cause the 3270 host to drop communication with the printer (“go to sleep”).

The output protocol specified in the A/C-7S RO’s configuration (through configuration-switch settings) is irrelevant for printing from the shared port. For PC/LAN printing, select the appropriate printer driver on the PC/LAN printer server.

5.2 Parallel/Serial-Port Initialization

If you want to change the printer’s configuration for shared printing (e.g. set it to PostScript mode), use the parallel- or serial-port initialization string (Host/PC download command 56 for parallel; command 58 for serial). Consult the printer’s user’s guide for the ASCII hex values representing the desired configuration commands. Then store these commands in the A/C-7 RO’s memory using Host/PC download commands 56 or 58.

After the host printing is completed and before the print job from the shared port is sent to the printer, the A/C-7 RO will send this initialization string to the printer and configure it according to your instructions. However, it is possible that the print job coming through the parallel or serial shared port contains other printer instructions, thus overriding the parallel initialization string.

5.3 Host Port Initialization

After shared printing, the A/C-7 RO reconfigures the printer according to the active configuration settings. If you want to further modify the printer configuration (e.g. select a different font for all host printing) take advantage of the host port initialization string. Unlike the parallel- or serial-port initialization string, which is usually overridden by commands coming with the PC/LAN print job, the host-port initialization string is not sent to the printer until after the A/C-7 RO has reconfigured the printer for host printing. The initialization string is sent at the beginning of each printed page.

5.4 Print Position and Page Length

Table 5-1 outlines the PMPP (Physical Maximum Print Position) and PMPL (Physical Maximum Page Length) for letter, legal, and A4 size paper.

Table 5-1. PMPP and PMPL.

Paper Size	PMPP at			PMPL at			True LPI	True LPI
	10 CPI	12 CPI	15 CPI	17.1 CPI	6 LPI	8 LPI		
Letter								
Portrait	80	96	120	136	66	88	63	84
Landscape	105	126	157	178	50	87	48	84
COR	136	154	201	201	66	89	—	—
Legal								
Portrait	80	96	120	136	84	112	81	108
Landscape	135	162	202	230	50	67	48	64
A4								
Portrait	78	93	117	133	70	93	67	89
Landscape	112	134	167	191	49	66	47	62

5.5 Laser Printing

SELECTING FONTS

You can select a printer-resident font or a font from an optional font cartridge in the printer by entering a font change command in the document. The font change commands take the following format:

&%[P or L][font ID]

The &% (or the alternate beginning delimiter selected with command 40) is the delimiter that signals the A/C-7 RO that the information following is a command. The letter “P” or “L” controls the orientation of the printing: P for portrait and L for landscape printing. The font ID number selects the font to be used for printing. The font ID should be five digits in length. Refer to **Appendix A** for a list of fonts and their font IDs available for the printer.

For example:

&%L00086 selects a Prestige 12 CPI font in landscape orientation.

The font ID number must select a font available in the printer or in the installed cartridge. If the proper cartridge is not installed, or the font does not exist on the cartridge, then the printer will automatically select an alternate font for printing.

Multiple font changes can be made in a document as long as all fonts are in the same orientation. Changes in orientation (portrait or landscape) automatically eject the page. A font ID that changes the orientation from the previous page must be on the first line and first position of the page or a blank page will be ejected. A blank page at the first of a print job is often caused by a change in orientation. Command 61 must be set to "1" (APO Disabled), Commands 62-64 must be set to "3" (User Defined).

5.6 Computer Output Reduction (COR)

Computer Output Reduction (COR) is an IBM printer feature that automatically rotates data processing reports to landscape orientation and compresses the text to fit 198 columns x 66 lines on the page. COR is enabled by doing the following:

1. Select APO active with command 61 (value 0).
2. Select COR for the paper source with commands 62-64 (value 0).

When COR is enabled, the following format changes are automatically made to data processing reports:

- The page is printed in landscape orientation.
- Vertical line height is 70% of that specified.
- A 0.5-inch blank area is provided on the top and left edge of the paper.
- The selected pitch is changed: 10 pitch to 13.3 pitch; 12 pitch to 15 pitch; 15 pitch to 19 pitch.

A combination of control codes in the printer data stream and the settings in the configuration are used to determine page orientation when processing DSC, DSE, or LU1 (SCS) data streams.

Some applications will not allow you to insert the data stream commands required to select orientation and format. Where the insertion of the required data stream commands is not possible, you can select the orientation and format desired by using the printer configuration settings. Use of the Write Control Character (WCC) in the DSC/DSE data streams for orientation and format selection is not recommended.

5.7 Automatic Print Orientation (APO)

When Automatic Print Orientation (APO) is activated (command 61, value 1), the A/C-7 (RO) notes the format of the print image and calculates the required print dimensions. **Figure 5-1** shows how the page size determines the orientation for coax COR.

If a calculated paper size is larger than 8 1/2" x 11", the paper-tray orientation selection (commands 62-64) determines the orientation.

In LU3 (DSC/DSE) mode, the values used in the calculations are specified by the A/C-7 RO's active

configuration selections. In LU1 (SCS) mode, the values are specified in the data stream by the SCS controls. If a value has not been set in the SCS data stream, the A/C-7 RO's active configuration is used instead.

The APO feature also uses the calculated print width and length to determine the print orientation when the dimensions are less than 8 1/2" x 11". When the width is greater than the length and APO is active, the document prints in landscape, even if the font is specified as portrait.

The following steps describe printing with the APO feature (refer to **Figure 5-1**).

1. If APO is not active (command 61, value 0), the A/C-7 RO uses the paper source selections (commands 62-64) to control orientation in the active font. If APO is active, the report continues to block 2.
2. The A/C-7 RO calculates the page size. If the page size is more than 8 1/2" x 11" the interface uses the paper source selections to control the orientation in the active font. If the report is less than 8 1/2" x 11" it continues to block 3.
3. At block 3, the interface checks the length and width. If the report is longer than it is wide, it prints in portrait. If the report is wider than it is long, the report prints in landscape.

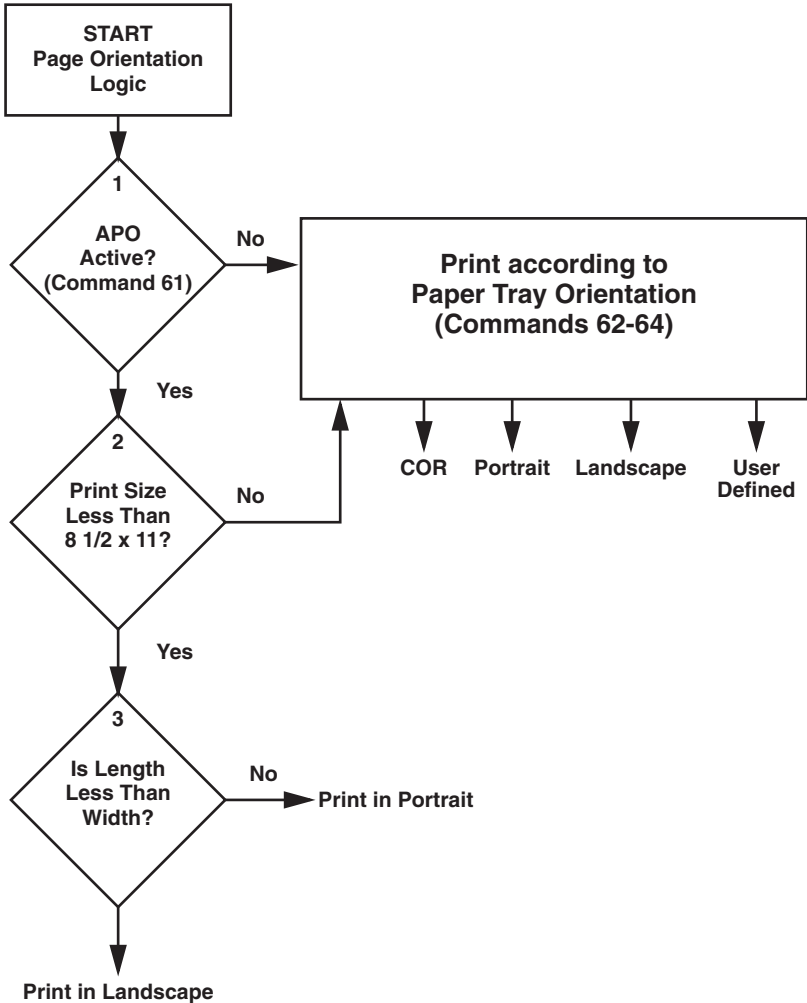


Figure 5-1. Printing with the APO Feature.

5.8 Generic Mode

The Generic output protocol should be used when the other output protocols of the A/C-7 RO are inappropriate. This could be the case with printers such as certain barcode label printers or embossers, but also with printers from Okidata®, Mannesmann-Tally®, etc. Refer to the printer's user's guide to find out if the printer operates with one of the output protocols of the A/C-7 RO.

In Generic mode, the A/C-7 RO does not pass on the LPI and CPI commands from the host. Rather, it allows you to match the printer specific CPI or LPI command with the CPI or LPI command from the host (through Host/PC download commands 84-89).

For example, the printer protocol a printer requires is not available on the A/C-7 RO. To change the printer to 10 CPI, the printer's user's guide provides the hexadecimal value of 1B 50. Use the Host/PC download command 88 to assign the value 1B 50 to the 10 CPI string: type **&%Z88,1(1B 50)**. From now on, when the interface receives a request for 10 CPI from the host, it will send the value 1B 50 to the printer and thereby set it to 10 CPI.

If nothing is assigned to the CPI or LPI string, the A/C-7 RO will send nothing to the printer—it will ignore the CPI or LPI command from the host.

The A/C-7 RO stores commands for the following CPI and LPI values:

- 6 LPI—Host/PC download command 84
- 8 LPI—Host/PC download command 85
- 10 CPI—Host/PC download command 86
- 15 CPI—Host/PC download command 87
- 12 CPI—Host/PC download command 88
- 16.7 CPI—Host/PC download command 89

Other Printer Commands

You can also enter commands into your document that allow you to control true LPI and response to host commands. These commands (shown in **Table 5-2**) are similar to font-change commands.

Table 5-2. Commands.

Command	Function
-E	Sends an ASCII ESC command to the printer
-TY	Enables true LPI printing
-TN	Disables true LPI printing
-I	Ignores all host formatting commands
-S	Stops ignoring host formatting commands

The -E command allows you to send an escape command to the printer to control the printing. For example, -E(s3B would begin bold printing (see your printer's manual for a list of the printer or escape commands).

The printer may compress line spacing to fit 66 lines onto the page. This may be undesirable, as when using pre-printed forms that must align correctly. In these cases, the -TY command prevents the printer from compressing the line spacing.

Use the -I and -S commands to remove unwanted host commands from a print file. For example, when printing with forms-generating software, the files are recognized by the host as text files and formatted with unwanted carriage returns and line feeds.

Placing the -I at the end of a line and -S at the front of the next line causes the interface to remove the host carriage-return and line-feed commands and send only the data to the printer.

6. Advanced Features

There are several advanced features in the A/C-7 RO for accessing special functions of the printers, which are not normally available on the IBM system printers:

- Command Pass-Thru™
- Custom User Strings
- SCS Mode Transparent Data
- Bar Code Printing
- Color Printing
- I-O Graphics Language™

Each of these features is described below.

6.1 Command Pass-Thru™

The Command Pass-Thru feature allows access to all of the built-in features of your printer, even if these features aren't normally available through the host software.

Command Pass-Thru lets you place printer-specific command sequences into the data sent to the printer. The A/C-7 RO recognizes these special sequences and "passes the command through" to the printer. The steps below describe how to use Command Pass-Thru.

1. Find the command for the print feature in the printer's user's guide.
2. Convert the printer command to hexadecimal.
3. Place the beginning delimiter `&%` (or the custom delimiter as defined with command 40) in the document at the point you want the feature to take effect. This signals the start of the print feature. Enter the beginning printer command, then enter the ending delimiter `&%` (or the custom delimiter as defined with command 39). No spaces are allowed.
4. Move the cursor to the point in the text where you want to end the print feature. Enter the delimiter followed by the ending printer command and then the delimiter again, into the document.

For example:

The command ESC `&d0D` begins underlining and ESC `&d@` ends underlining. First convert the start command to the hexadecimal `1B 26 64 30 44` and the ending command to `1B 26 64 40`. And, if the delimiter is the default `&%` (hex `50 6C`), then enter the commands as follows:

This is an
 &%1B26643044&%word&%1
 B266440&% word.

to print on the printer as:

This is an word.

NOTES

Only numbers or the upper case letters A–F are allowed.

Errors in the Command Pass-Thru sequence will cause the A/C-7 RO to ignore the command and resume printing at the point the error occurred.

Command Pass-Thru may change the horizontal spacing.

6.2 Custom User Strings

Host download command 55 allows you to define up to six (0 through 5) custom user strings. A user string can be a font ID, a form feed, or another printer command that is frequently used.

After the custom user string is defined, the string is activated by placing the delimiter (&% or the beginning delimiter defined with command 40), a capital letter U, and the number of the desired custom user string into the text of a document.

For example, use command 55 to define user string number 3 to send a form feed as follows (FF = 0C in hex):

```
&%Z55,3(0C)
```

Then, to send a form feed at the end of a print job, enter the following at the end of the document:

```
&%U3
```

Print the document, and the interface will send the 0C, or form feed, command to the printer when it encounters the &%U3 code.

6.3 SCS Mode Transparent Data

SCS transparent mode (SCS TRN code 35) provides a method for transparent data transmission when operating in LUI mode. To use this method, you must be connected to a system using SNA protocol and be operating as a Logical Unit Type 1.

An SCS TRN sequence begins with a one-byte binary count immediately following the TRN code. The count indicates the number of bytes, not including the count byte, of transparent data to follow. Up to 256 bytes of transparent data can be sent in each sequence.

SCS TRN data is user-defined and is not scanned for SCS control codes. However, to emulate the characteristics of the IBM 3287, non-printable characters (control characters) are converted to hyphens. Data is translated to ASCII with undefined characters printed as hyphens. The A/C-7 RO offers a configurable option to emulate the IBM 3287 or to pass the data without translation. Refer to command 45, SCS TRN translate, on page for more detailed information.

6.4 Color Printing

The A/C-7 RO allows printing of color on the HP Color LaserJet or DeskJet 1200C printers. Simply insert the color command in front of the text you want to colorize. Return to the “normal” black color by inserting `_C00`. The color commands are:

- C00 - Black
- C01 - Blue
- C02 - Red
- C03 - Magenta
- C04 - Green
- C05 - Turquoise/Cyan
- C06 - Yellow
- C07 - White
- C08 - Black
- C09 - Dark Blue
- C10 - Orange _C15 - Grey
- C11 - Purple _C16 - Brown
- C12 - Dark Green
- C13 - Dark Turquoise
- C14 - Mustard

For example, to print the word “red” in the color red in the following sentence, type:

This prints `-C02red-C00` in red.

6.5 Printing Bar Codes

Using the bar-code feature, the following bar codes can be easily printed:

Table 6-1. Bar Codes.

Type	Bar Code
1	Code 3 of 9
2	Code 128
3	Interleaved 2 of 5
4	POSTNET
5	UPC A
6	EAN 8
7	EAN 13

To print any of these bar codes, use the following format:

`-B<type>,<height>,<width>,<hr>,<chkd>,<ast>,<data>-B`

The bar-code command string must contain all of these parameters, even if the parameter is irrelevant for the type of bar code being printed. For example, POSTNET comes in only one size, so, any height or width specifications are ignored. But the parameters for height and width must be included anyway.

-B: Identifies the strings as a bar code command string. _B must be placed at the beginning and at the end of the string.

<type>: Specifies the bar code type according to the table shown on the previous page.

<height>: Specifies the height of the bar code. When using a PCL laser printer driver, height is expressed in multiples of 2.5 mm (approximately 1/10 inch). When operating in Epson or IBM Proprinter mode, height is expressed in multiples of 3.175 mm (1/8 inch). The height of the bar code can range from 1 (laser = 2.5 mm, dot-matrix = 3.175 mm) to 9 (laser = 22.5 mm, dot-matrix = 28.575 mm) inclusive.

Height values are ignored if a POSTNET bar code is being printed, since POSTNET uses one standard height. However, a valid value (1-9) must be entered for the height parameter to ensure the bar-code command string is complete.

<width>: Specifies the width of a bar code module. A module is defined as a specific combination of bars and spaces used to represent a human-readable character.

By changing the width parameter, you can determine the width of the module and the thickness of the bars and spaces.

Width parameters can range from 1 to 9 when printing to a PCL printer. When printing to an Epson or Proprinter mode dot-matrix printer, the width parameters can range from 1 to 3.

To determine the total length of the bar code, simply multiply the module length (found in the table on the following page) by the number of bar-code characters.

NOTE

Be aware that the table gives rounded values only.

Example: Using Code 3 of 9, you want to bar code the word "PRINTERS." Assume the interface also generates a check digit and the start/stop characters. Setting the width parameter to 2 will yield a total bar code length of approximately 4 cm or about 1.5 inches.

Number of characters: 11 (8 letters (PRINTERS) + 2 start/stop characters + 1 check digit)

A/C-7P RO, A/C-7S RO

Module width (from **Table 6-2**):
3.6 mm (0.14 inches)

Calculation: $11 \times 3.6 \text{ mm} = 39.6$
mm = 3.96 cm; or
 $11 \times .14 \text{ in} = 1.54 \text{ inches}$

Table 6-2. Module Width in mm (inches): PCL Laser.

Width	1	2	3	4	5	6	7	8	9
Code 3 of 9	2.6 (.1)	3.6 (.14)	4.5 (.18)	5.5 (.22)	6.5 (.25)	7.5 (.29)	8.4 (.33)	9.4 (.37)	10.4 (.41)
Code 128	2.2 (.09)	3.1 (.12)	3.9 (.15)	4.7 (.19)	5.6 (.22)	6.4 (.25)	7.3 (.29)	8.1 (.32)	8.9 (.35)
Inter- leaved 2 of 5	2.3 (.09)	3.2 (.12)	4 (.16)	4.9 (.19)	5.8 (.23)	6.6 (.26)	7.5 (.3)	8.4 (.33)	9.3 (.36)
Postnet	5.7 (.23)								
EAN-13	1.5 (.06)	2 (.08)	2.5 (.1)	3.1 (.12)	3.6 (.14)	4.2 (.16)	4.7 (.18)	5.2 (.20)	5.8 (.23)
EAN-8	1.7 (.07)	2.3 (.09)	2.9 (.11)	3.6 (.14)	4.2 (.16)	4.8 (.19)	5.4 (.21)	6.1 (.24)	6.7 (.26)
UPC A	1.6 (.06)	2.2 (.08)	2.8 (.11)	3.4 (.13)	4 (.16)	4.6 (.18)	5.2 (.2)	5.8 (.23)	6.4 (.25)

**Table 6-3. Module width in mm (inches): Epson
or IBM Proprinter Dot-Matrix.**

Width	1	2	3
Code 3 of 9	2.7 (.11)	5.4 (.22)	8.1 (.32)
Code 128	2.5 (.1)	5 (.2)	7.6 (.3)
Interleaved 2 of 5	2.2 (.9)	4.4 (.18)	6.6 (.26)
POSTNET		6.5 (.25)	
EAN 13	1.5 (.06)	3.1 (.12)	4.6 (.18)
EAN 8	1.8 (.07)	3.6 (.14)	5.5
UPC A	1.8 (.07)	3.6 (.14)	5.5 (.21)

Width parameters are ignored when printing POSTNET bar codes, since POSTNET uses one standard width. However, a valid value (1-9) must be entered for the width parameter to ensure the bar code command string is complete.

<hr>: Identifies whether human-readables are printed or not. Human-readables are printed underneath the bar code. Valid values are:

0 = Do not print human readables.
1 = Print human readables.

<chkd>: Indicates whether the A/C-7 RO automatically calculates and causes a check digit to be printed. The following bar codes require a check digit, so, the A/C-7 RO automatically generates and adds a check digit to the bar-code data: Code 128, POSTNET, UPC A, EAN 8, EAN 13

If any of the bar codes listed above has been selected, the <chkd> selection is ignored by the A/C-7 RO. However, one of the following values must be entered to ensure the bar code command string is complete and valid. The options for the <chkd> parameter are:

0 = Do not calculate and add a check digit.
1 = Calculate and add a check digit to the bar code data.

<ast>: Specifies whether start/stop characters are automatically generated or manually added. This parameter only applies to bar code type Code 3 of 9. For all other bar code types, the start/stop characters are automatically generated by the A/C-7 RO and input for the <ast> parameter is ignored. However, one of the following values must be entered to ensure the bar code command string is complete and valid. The options for the <ast> parameter are:

0 = Do not automatically add start/stop characters.
1 = Automatically add start/stop characters.

NOTE

If value 0 is selected, you must manually enter start/stop characters (asterisks) together with the data. Failure to add the asterisks will cause an invalid bar code to be printed (i.e. a bar code without start/stop characters). If human readables are being printed, the asterisks will also print as human readables.

If value 1 is selected, you must not add asterisks as start/stop characters to the data. Failure to omit asterisks will cause an invalid bar code to be printed (i.e. a bar code with a start/stop character pair in the beginning and a start/stop character pair in the end.)

<data>: The data to be printed as a bar code. Some bar codes require a certain number of characters. Others only allow alphanumeric or numeric characters. Before the A/C-7 RO processes the data string, it will check the complete data string and verify that it is valid. This is why the -B at the end is so important. If an invalid data string has been entered, the A/C-7 RO will print "Invalid Data" in the place of the bar code.

NOTES

1. Valid values must be entered for each of the parameters specified above, even if the parameter is irrelevant for the type of bar code being printed.

2. If an invalid parameter value (other than invalid data) has been entered, the A/C-7 RO will process the bar-code command up to that point and then reject any information it receives after the incorrect value.

For example, a bar-code command string has been entered, however, an invalid <hr> value of 3 has been specified.

-B2,6,6,3,0,0,code128_B

The A/C-7 RO would cause all characters after the invalid value 3 to be printed:

,0,0,code128

This helps quickly identify

where the mistake occurred.

3. Spaces in the bar-code command string are invalid and will lead to the same result as mentioned in Step 2.

4. If invalid data (either too many characters or the wrong type of characters) is entered, the A/C-7 RO will print the error message: ** Invalid Data **

5. Allow for sufficient vertical spacing when printing text data beneath the bar code.

For example, when the bar code command string is entered on line 1 of the document with a bar code height specified as 5 (approximately 1/2 inch or 3 lines at 6 LPI), and text is then entered on line 2 as follows,

-B5,7,1,0,0,0,1234567890-B
This data overrun by barcode

this will cause the bar code to overlap the text in the second line:



Figure 6-1. Bar Code Overlapping Text.

To avoid overlapping bar codes with text, always allow for sufficient vertical line spacing (by adding line feeds, for example) to accommodate the height of the bar code.

6. When text data is entered to the right of the bar code command sting, the printed text will appear immediately to the right of where the bar-code print ends.

OVERVIEW AND EXAMPLES

The examples shown on the following pages give an overview of the supported bar code types. Note that the “maximum number of data characters” does not include start/stop characters and check digits.

Code 3 of 9

Maximum number of data characters:	30
Valid numeric characters:	0-9
Valid alphanumeric characters:	A-Z
Valid other characters:	space ! “ # \$ % & ‘ () + , - . / : ; < = > ? @

Example: -B1,4,1,1,1,1,0123456789-B



Figure 6-2. Code 3 of 9.

POSTNET

Maximum number of data characters:	30
Valid numeric characters:	0-9
Valid alphanumeric characters:	N/A
Valid other characters:	N/A

Example: -B4,1,1,1,1,0,0123456789-B



Figure 6-3. POSTNET.

UPC A

Required number of data characters:	10
Valid numeric characters:	0-9
Valid alphanumeric characters:	N/A
Valid other characters:	N/A

Example: -B5,5,1,1,1,0,0123456789-B



Figure 6-4. UPC A.

EAN 8

Required number of data characters:	7
Valid numeric characters:	0-9
Valid alphanumeric characters:	N/A
Valid other characters:	N/A

Example: -B6,3,1,1,1,0,1234567-B



Figure 6-5. EAN 8.

EAN 13

Required number of data characters:	12
Valid numeric characters:	0-9
Valid alphanumeric characters:	N/A
Valid other characters:	

Example: -B7,3,1,1,1,0,012345678912-B



Figure 6-6. EAN 13.

Interleaved 2 of 5

Maximum number of data characters:	30
Valid numeric characters:	0-9
Valid alphanumeric characters:	N/A
Valid other characters:	N/A

Example: -B3,3,1,1,1,0,0123456789-B



Figure 6-7. Interleaved 2 of 5.

NOTE

Since Interleaved 2 of 5 symbols are created from data-character pairs, the number to be encoded must have an even number of digits. If an odd number of data characters (including the optional check digit) is entered, the A/C-7 RO adds an "0" to the beginning of the bar code. If an even number of data characters (including the optional check digit) is entered, the A/C-7 RO prints the bar code exactly as it is input.

Code 128

Code 128 has three unique character subsets (code A, B, and C) shown in the table on the following pages. When entering data representing Code 128 bar code, follow these two steps:

1. Define which code set you want to use: type "A" to represent code A; type "B" to represent Code B; and type "C" to represent code C.
2. If you are using code set B, enter the data characters directly. The ~ character and other special characters are represented by the Symbol Character Value found in the left column of **Table 6-4**.

If you are using code set A or C, enter the Symbol Character Value found in the left column of the table. Each character is represented by two digits or a ~ followed by a digit. For example, to bar code the character "&" using Code Set A, type 06.

Maximum number of data characters: 30 (includes special characters)
 Valid characters: Differs with selected code set, see **Table 6-4**.

Example: -B2,3,2,1,1,0,ABCDEFGHIJKLMNPOQRSTUVWXYZ-B



Figure 6-8. Code 128.

To show how multiple character sets are used, study the following data string. Height, width and other parameters were omitted in this example to focus your attention on the data string. Please note that this example is for illustration purposes only, and is not a recommended way of bar coding. The following data string is a fairly complex way of bar coding "10A/C-7(RO)10".

~B2,...,A1716~6A/C-7(RO)~510~B

- A: selects code set A
- 17: selects the number "1" from code set A
- 16: selects the number "0" from code set A
- ~6: switches from code set A to code set B
- A/C-7 (RO): selects the characters "A/C-7 (RO)" from code set B
- ~5: switches from code set B to code set C
- 10: selects the number "10" from code set C

Table 6-4. Symbol Character Value and Data Character.

Symbol Character Value	Code A	Data Character Code B	Code C
00	SP	SP	00
01	!	!	01
02	"	"	02
03	#	#	03
04	\$	\$	04
05	%	%	05
06	&	&	06
07	'	'	07
08	(	(	08
09	)	)	09
10	*	*	10
11	+	+	11
12	.	.	12
13	-	-	13
14	.	.	14
15	/	/	15
16	0	0	16
17	1	1	17
18	2	2	18
19	3	3	19
20	4	4	20
21	5	5	21
22	6	6	22
23	7	7	23
24	8	8	24
25	9	9	25
26	:	:	26
27	;	;	27

Table 6-4 (continued). Symbol Character Value and Data Character.

Symbol Character Value	Code A	Data Character Code B	Code C
28	<	<	28
29	=	=	29
30	>	>	30
31	?	?	31
32	@	@	32
33	A	A	33
34	B	B	34
35	C	C	35
36	D	D	36
37	E	E	37
38	F	F	38
39	G	G	39
40	H	H	40
41	I	I	41
42	J	J	42
43	K	K	43
44	L	L	44
45	M	M	45
46	N	N	46
47	O	O	47
48	P	P	48
49	Q	Q	49
50	R	R	50
51	S	S	51
52	T	T	52
53	U	U	53
54	V	V	54
55	W	W	55

Table 6-4 (continued). Symbol Character Value and Data Character.

Symbol Character Value	Code A	Data Character Code B	Code C
56	X	X	56
57	Y	Y	57
58	Z	Z	58
59	[	[	59
60	\	\	60
61	]	]	61
62	^	^	62
63	_	_	63
64	NUL	`	64
65	SOH	a	65
66	STX	b	66
67	ETX	c	67
68	EOT	d	68
69	ENQ	e	69
70	ACK	f	70
71	BEL	g	71
72	BS	h	72
73	HT	i	73
74	LF	j	74
75	VT	k	75
76	FF	l	76
77	CR	m	77
78	So	n	78
79	SI	o	79
80	DLE	p	80
81	DC1	q	81
82	DC2	r	82
83	DC3	s	83

Table 6-4 (continued). Symbol Character Value and Data Character.

Symbol Character Value	Code A	Data Character Code B	Code C
84	DC4	t	84
85	NAK	u	85
86	SYN	v	86f
87	ETB	w	87
88	CAN	x	88
89	EM	y	89
90	SUB	z	90
91	ESC	{	91
92	FS	|	92
93	GS	}	93
~0	RS	~	94
~1	US	DEL	95
~2	FNC3	FNC3	96
~3	FNC2	FNC2	97
~4	SHIFT	SHIFT	98
~5	CODE C	CODE C	99
~6	CODE B	FNC4	CODE B
~7	FNC4	CODE A	CODE A
~8	FNC1	FNC1	FNC1

6.6 I-O Graphics Language™

The I-O Graphics Language™ (IOGL™) allows printing of graphical elements and charts on PCL5 compatible printers. IOGL is independent of other I-O features, such as internally generated bar codes or font change commands. This means that if an I-O font change command is followed by an IOGL command to rotate text, the text would print in the specified font. IOGL is also independent of regular text data. This allows text data to be overlaid by a graphical element, such as a shaded box.

6.6.1 I-O GRAPHICS LANGUAGE™ OVERVIEW

Table 6-5 is an overview of the I-O Graphics Language™ (IOGL) command strings and a brief description of the parameters used in the IOGL strings.

Table 6-5. IOGL Graphics Language.

Graphical Element	IOGL Command String
Line	-GL<line width>;<x start>;<y start>;<x end>;<y end>
Box	-GB<line width>;<x start>;<y start>;<x end>;<y end>;<% shading>
Circles	-GC<line width>;<x center>;<y center>;<radius>;<% shading>
Arc	-GA<line width>;<x start>;<y start>;<x center>;<y center>;<angle of rotation>
Shading/Color	-GS<# of values>;<color 1>;<% shading 1>;<color 2>;<% shading 2>;...
Pie Chart	-GP<line width>;<x center>;<y center>;<radius>;<# of segments>;<segment value 1>;<segment value 2>;...
Bar Chart (Histogram)	-GH<line width>;<x start>;<y start>;<x increment>;<y increment>;<bar width>;<# of entries>;<value 1>;<value 2>;...
Run (Line) Chart	-GR<line width>;<x start>;<y start>;<x increment>;<y increment>;<# of entries>;<value 1>;<value 2>;...
Text Rotation	-GT<x start>;<y start>;<angle of rotation>;<'text'>
Comments	-GX<'text'>

Table 6-5. IOGL Graphics Language.

Parameter	Description	Units of Measurement	Valid Values
'text'	text to be rotated or to be included in the IOGL program as a comment	N/A	any printable character
% shading	percentage of shading	percentage	0-100, integers
# of segments	number of segments to be printed in pie chart	each	1 to 9, integers
# of entries	number of values to be printed in bar or run (line) chart	each	1 to 12, integers
angle of rotation	angle of rotation of arc or text	degrees	arc: 0 to 360, integers text: 0, 90, 180, 270
bar width	width of a bar in a bar chart	n/300 inch	positive integers
color n	color code to select color of pie or bar chart segments	color command numbers	00 to 16
line width	width of any printed line (in line, box, arc, circle, chart)	mm	any positive number

Table 6-5 (continued). IOGL Graphics Language.

Parameter	Description	Units of Measurement	Valid Values
radius	radius of a circle or pie chart	n/300 inch	positive integers
segment value n	value to be represented by a pie chart segment	integer	0 to 100
value n	a value to be represented by a bar in a bar chart or a point in a line chart	any positive integer	any positive integer
x start	x coordinate of start position for lines and boxes	n/300 inch	positive integers; incl. 0
x end	x coordinate of end position for lines and boxes	n/300 inch	positive integers; incl. 0
x center	x coordinate of center point of circle, arc, or pie chart	n/300 inch	positive integers; incl. 0
x increment	horizontal movement before next bar (bar chart) or value (run chart) is printed	n/300 inch	positive integers; incl. 0
y center	y coordinate of center point of circle, arc, or pie chart	n/300 inch	positive integers; incl. 0

Table 6-5 (continued). IOGL Graphics Language.

Parameter	Description	Units of Measurement	Valid Values
y start	y coordinate of start position for lines and boxes	n/300 inch	positive integers; incl. 0
y end	y coordinate of end position for lines and boxes	n/300 inch	positive integers; incl. 0
y increment	height of one unit of the value to be printed in bar or run (line) chart	n/300 inch	positive integers; incl. 0

6.6.2 HELPFUL HINTS

1. All xy values (start, end, center, increment) are measured in n/300 of an inch. The origin of the xy coordinate system is the top left hand corner of the printable area of the page (see **Figure 6-9**).

The printable area of the page may vary with the printer model and paper size being used. Refer to your printer's user's guide for specific information.

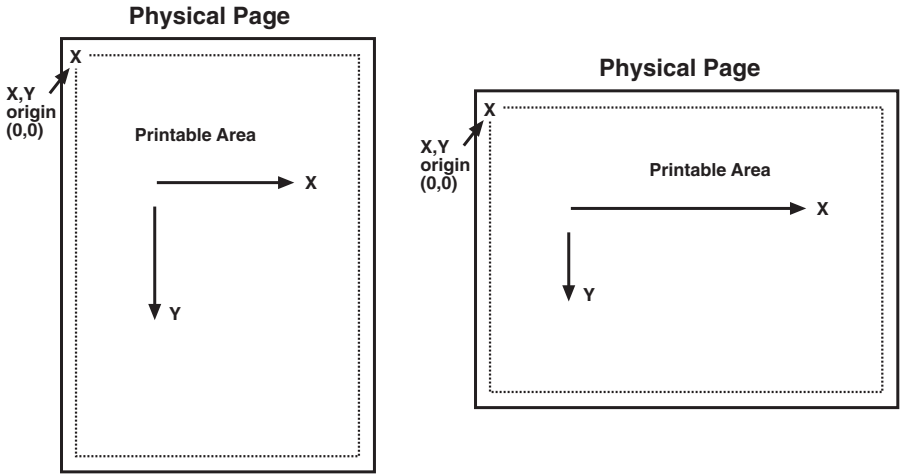


Figure 6-9. XY Coordinate System on the Page.

- The complete command string must be entered as shown below. Incomplete command strings and command strings with invalid values (such as spaces) will cause the A/C-7 RO to print the string at the place where the error occurred.

For example, a line command string has been entered. However, an invalid `<x start>` value has been specified.

```
-GL30;A;1;1;600
```

The A/C-7 RO would cause all characters, including the invalid value "A" to be printed:

```
A;1;1;600
```

- As an alternative to using the

semi-colon ";" as a separator between parameters, you may also enter a comma "," or a forward slash "/".

- Do not enter numeric values with commas (for example, 50,000). The printer interface will interpret the "," to be the end of the parameter (so that 50,000 would be interpreted as two values: value 1 = 50, value 2 = 000).

International users should also be aware that a decimal value used to specify line width (in mm) such as "1,5" (i.e. 1 1/2) is also interpreted as two separate values (i.e. value 1 = 1, value 2 = 5). To enter a valid decimal line width use the period "." (i.e. 1.5 mm).

6.6.3 BASIC DESCRIPTION

Lines—`-GL<line width>;<x start>;<y start>;<x end>;<y end>`

Draws a line from the specified xy start to xy end. <Line width> is specified in mm.

For example: `-GL2;100;0;100;600` draws a 2 mm wide, vertical (<x start> = <x end>) line of 2 inches in length (<y-end> - <y-start> = $600/300'' = 2''$) (**Figure 6-10**)

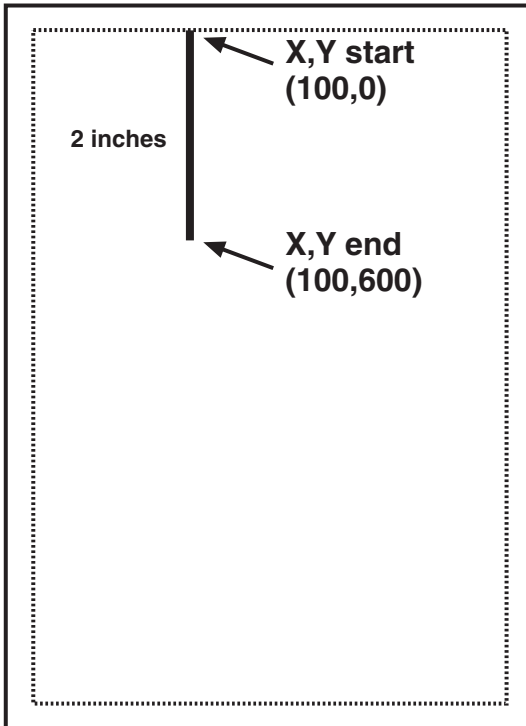


Figure 6-10. Example of Line.

Boxes— \rightarrow GB<line width>;<x start>;<y start>;<x end>;<y end>;<% shading>6

Draws a box from the specified xy start to the xy end. The box cannot be rotated.

<line width> is specified in mm; <% shading> can range from 0 to 100.

For example:

\rightarrow GB2;300;300;600;600;30 draws a box with 2 mm wide border and 30% shading (**Figure 6-11**).

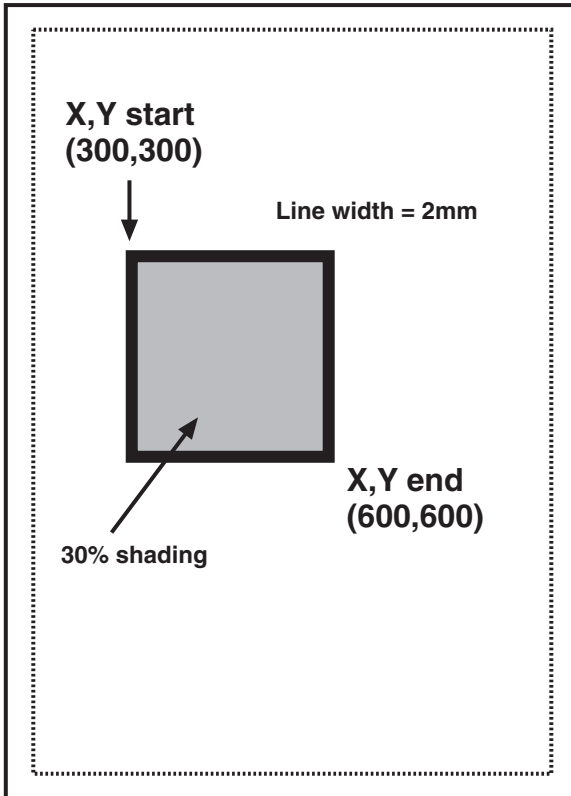


Figure 6-11. Example of Box.

Circle— \neg GC<line width>;<x center>;<y center>;<radius>;<% shading>

Draws a circle with the specified radius (in n/300 inches) and line width (in mm) around the xy center.

For example: \neg GC2;900;2400;300;70 draws a circle with a radius of 1 inch (300/300 inches) (**Figure 6-12**)

NOTE

To avoid cutting off part of the circle, make sure that the radius and the x,y center values are such that the complete circle will fit into the printable area of the page.

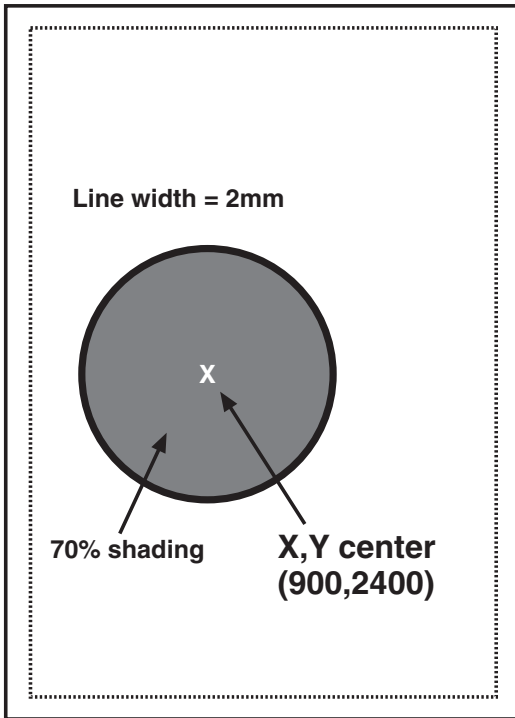


Figure 6-12. Example of Circle.

Arc—-GA<line width>;<x start>;<y start>;<x center>;<y center>;<angle of rotation>

Draws an arc around the xy center, starting at xy start and ending when the angle of rotation is completed. (Angle is measured from theoretical line xy center to xy start and rotates clockwise.)

For example:
-GA1;500;900;900;900;180 draws an arc (semi-circle since rotation is 180 degrees) (**Figure 6-13**)

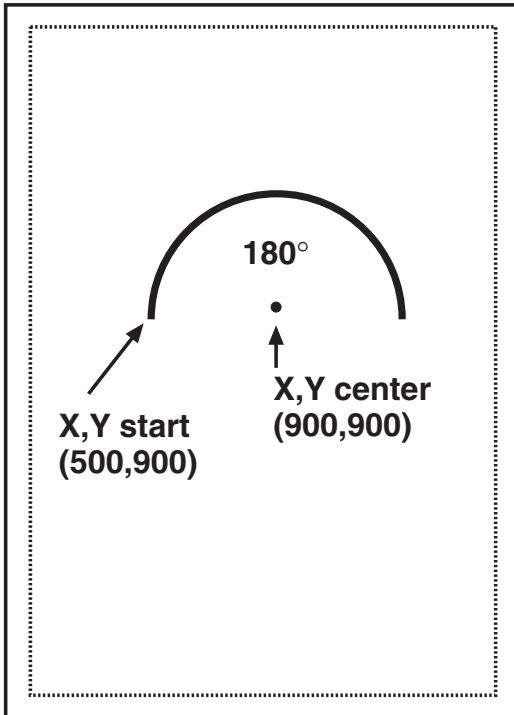


Figure 6-13. Example of Arc.

Color/Shading—`GS<# of values>;<color 1>;<% shading 1>;<color 2>;<% shading 2>;...`

Defines the color and shading of the pie-chart and bar-chart segments. The first value entered in the pie and bar chart commands will be printed in color 1 with shading 1. The second value entered in the pie and bar chart commands will be printed in color 2 with shading 2.

Colors are entered as numeric values 0-16 (corresponding to color command scheme). Shading is entered as a numeric value from 0-100 (% of shading). If the attached printer is not capable of recognizing PCL color commands, all printing will be black. Refer to pie and bar charts for an example.

Pie Chart—`GP<line width>; <x center>;<y center>;<radius>;<# of segments>;<segment value 1>;<segment value 2>;...`

Draws a pie chart around the xy center with the specified radius (in n/300 inches), number of segments (maximum of 9), and segment values. Segment values are entered as numerics and converted to percentages. Segment values can range from 0 to 100.

Each segment will have the color and/or shading as specified in the shading command (pie chart value 1 will get color/shading value 1,...). `<line width>` is specified in mm. The first pie segment starts at "9 o'clock," meaning on the far left of the circle (**Figure 6-14**).

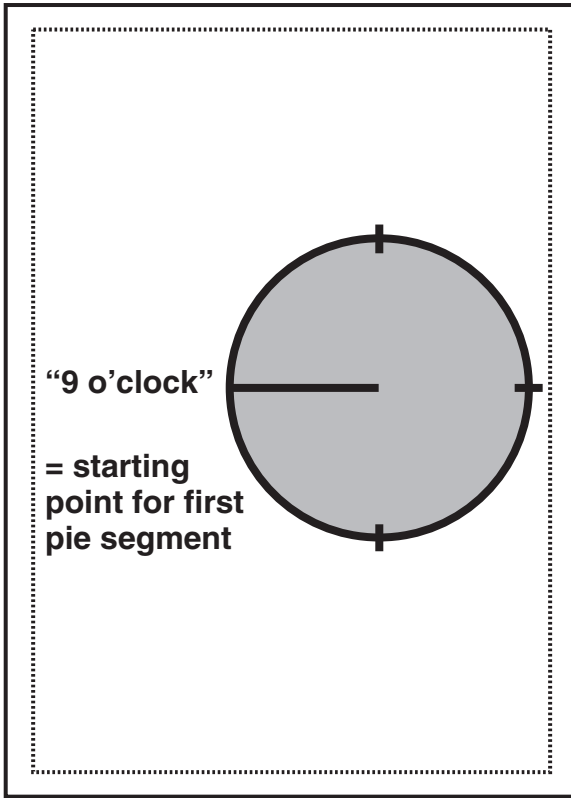


Figure 6-14. Color/Shading and Pie Chart.

For example:

-GS3;01;20;02;50;04;80

-GP5;900;2400;600;3;10;20;30 draws a three-segment pie chart. If the attached printer is a PCL color printer, the first segment will be blue (01), the second segment will be red (02), and the third segment will be green (04). The segments will be shaded at 20%, 50%, and 80% respectively.

The first segment (value 10) will be 1/6 of the complete circle ($10/(10+20+30)=10/60=1/6$), the second segment (value 20) will be 2/6 of the complete circle ($20/60$), and the third segment will be 3/6 of the complete circle (**Figure 6-15**).

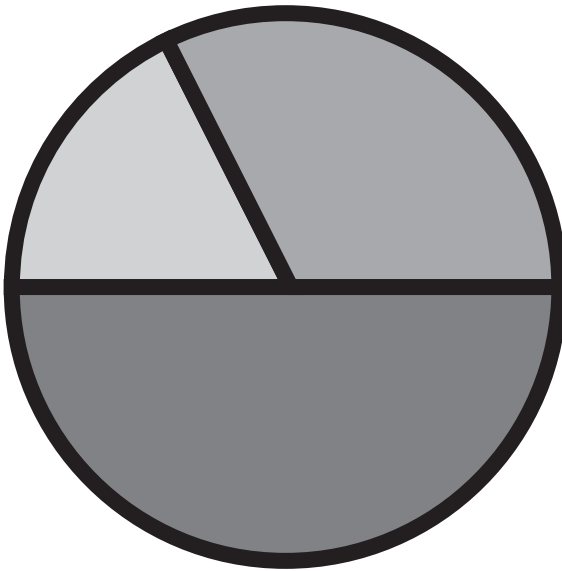


Figure 6-15. Segment of Circle.

Bar Chart (Histogram)—`-GH<line width>;<x start>;<y start>;<x increment>;<y increment>;<bar width>;<# of entries>; <value 1>;<value 2>; ...`

Draws a bar chart. `xy start` specifies the bottom left hand corner of the first bar (the origin on the chart's `xy` scale). The `x increment` specifies the horizontal movement before the next bar is printed. The `y increment` (in `n/300` inches) determines the height of the bar (multiplied by the value). The `bar width` (in `n/300` inches) specifies the width of the bar. Bar chart values can range from 0 to 3,000. Each bar will have the color and/or shading as specified in the shading command (bar 1 is color/shading value 1,...). A maximum of 12 bars can be printed.

For example:

`-GS3;01;20;02;50;04;80`

`-GH1;100;2400;300;1;100;3;500;600;800` draws three bars. If the attached printer is a PCL color printer, the first bar will be blue, the second red, and the third green. The bars will be shaded 20%, 50%, and 80% respectively (**Figure 6-16**).

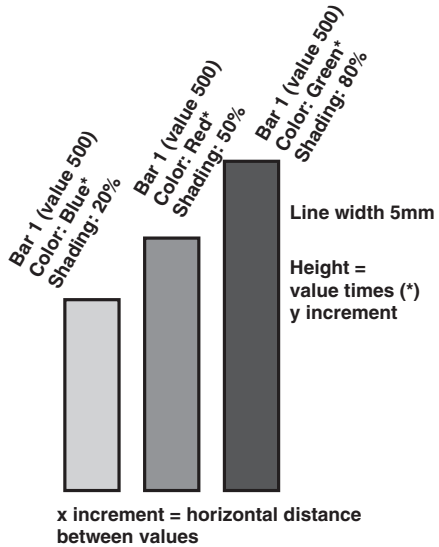
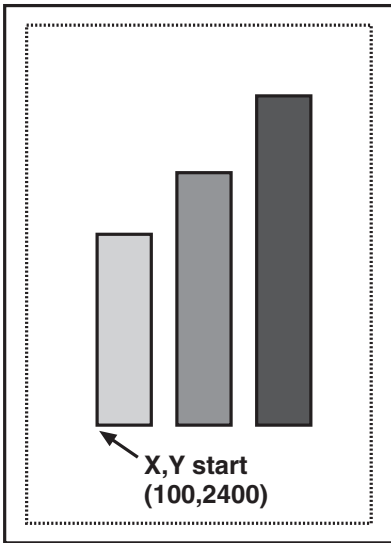


Figure 6-16. Bar Chart (Histogram).

Each bar is $1/3$ inch wide ($100/300$ inch). The distance from the left side of one bar to the left side of the next bar is one inch ($300/300$). This allows other bars to be added through a separate command.

Bar 1 will be $1\ 2/3$ inches ($500 \times 1/300$ inch) high, bar 2 will be two inches high ($600 \times 1/300$ inch), and bar 3 will be $2\ 2/3$ inches high ($800 \times 1/300$ inch).

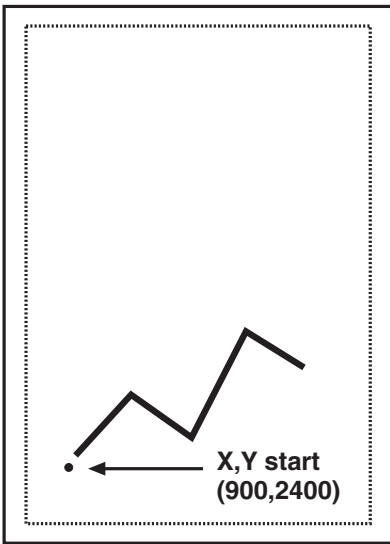
NOTE

The y-increment determines the scaling. Only integers (1, 2, 3, 4, etc.) are valid. If you are charting sales figures in thousands of dollars, the y-increment should be small (for example, 1). If you are charting the number of customer complaints per period, the y-increment should be high (for example, 100 or more). Be aware that the bar height must not exceed the total printable area of the page.

Run Chart—-GR<line width>;<x start>;<y start>;<x increment>;<y increment>;<# of entries>;<value 1>;<value 2>; ...

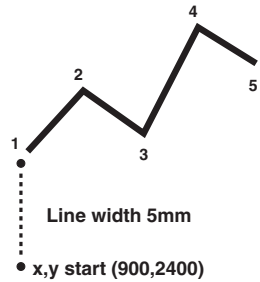
For example:
-GR3;900;2400;150;1;5;100;300;200;500;400 draws a run (line) chart (Figure 6-17).

Draws a run (line) chart. The xy start specifies the origin of the chart's xy scale (xy axes are not drawn). The x increment specifies the horizontal movement before the next value is printed. The y increment determines the height of the line (multiplied by the value).



- Value 1 = 100
- Value 2 = 300
- Value 3 = 200
- Value 4 = 500
- Value 5 = 400

1/3 inch = 100
(value) x 1
(y increment)
÷ 300/inch



x increment = horizontal distance between values

Figure 6-17. Run (Line) Chart.

NOTE

The y-increment determines the scaling. Only integers (1, 2, 3, 4, etc.) are valid. If you are charting sales figures in thousands of dollars, the y-increment should be small (for example, 1). If you are charting the number of customer complaints per period the y-increment should be high (for example, 100 or more).

Text—`-GT<x start>;<y start>;<angle of rotation>;<'text'>`

Prints the text (“text”) in the active font, with the specified rotation and specified xy start. Text will be rotated counterclockwise.

For example:
`-GT1000;1000;90;'TEXT'` prints the word 'TEXT' in the active font with 90 degree rotation (Figure 6-18).

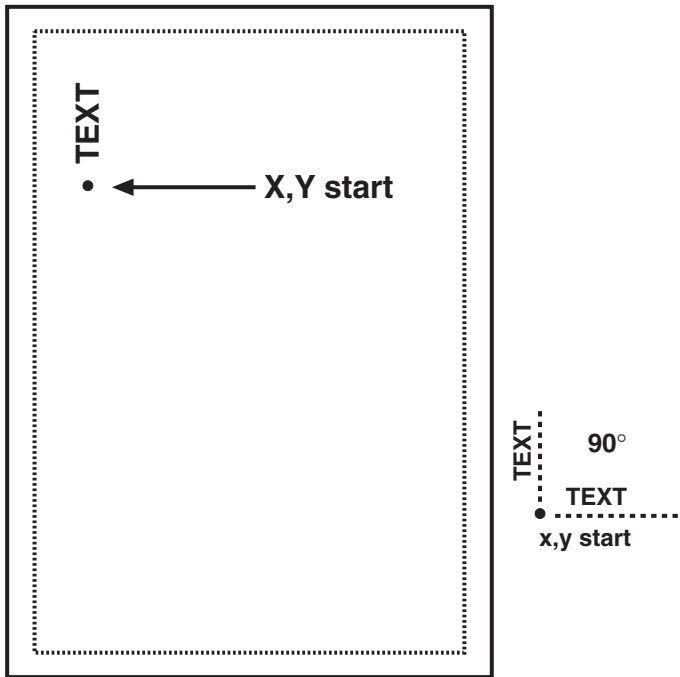


Figure 6-18. Text.

Comments—`→GX<'text'>`

Allows text to be added to IOGL commands for documentation. Comments will not print out.

For example: `→GX'Pie chart with 3 elements'` can be used to document an IOGL pie chart command.

6.7 I-O Graphics Language™ (IOGL) in Action

6.7.1 GENERAL STEPS

I-O Graphics Language™ (IOGL) can be used in many different ways. It can enhance the appearance of standard host reports through a few simple graphical elements such as lines, boxes, and circles; or it can be used to present pertinent data through charts. IOGL can even be used to create sophisticated electronic forms. However, programming with IOGL always follows the same general steps:

1. Determine which IOGL elements are needed to create the desired output (the bar chart shown below uses four different IOGL elements.)

2. Determine the printable area of the page.
3. Determine the positioning of the graphical elements relative to the top left-hand corner of the printable area.
4. PCL color printer only: Determine the order in which to print the graphical elements. The lines of the last IOGL element will overlap (and cover) the previous IOGL elements.
5. Design the graphical output, one element at a time.
6. Link the graphical output with your host application.

6.7.2 TUTORIAL

The following example (**Figure 6-19**) shows how multiple IOGL elements interact to create a bar chart.

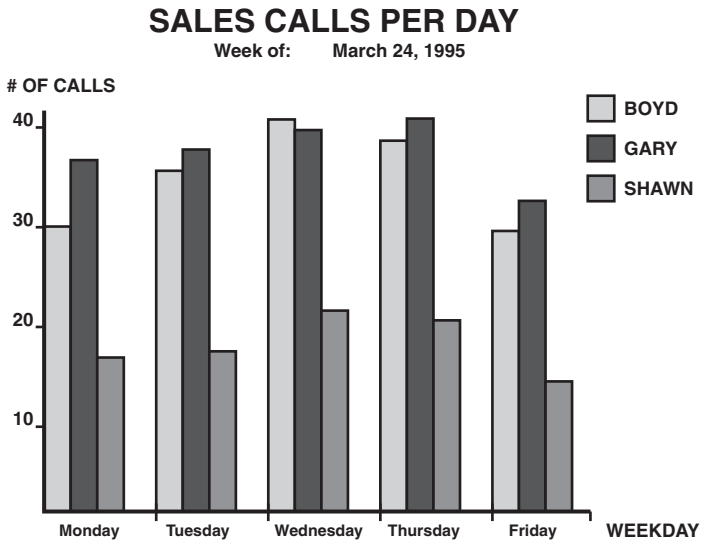


Figure 6-19. Bar Chart.

1. Following the above mentioned general steps, we first determined the makeup of this bar chart. The example consists of four IOGL elements: bar charts, lines, boxes, and text.
2. To determine the printable area of the paper, we printed a box using 0;0 as the x;y starting coordinates. This was done by typing `-GB1;0;0;300;300;50` on the screen and sending it to the printer. The top left corner of the printed box marks the top left corner of the printable area of the page. For reference, we drew the printable area on the blank sheet of paper. All references to distances are made in respect to the printable page, not the actual physical page. Refer to **Figure 6-9**.

3. Determine where the chart should be placed (always in relation to the top left-hand corner of the printable area). In the example, the bar chart is on the bottom half of a letter-size page. The origin of the chart is one inch away from the left margin and 10 inches away from the top margin (**Figure 6-20**).

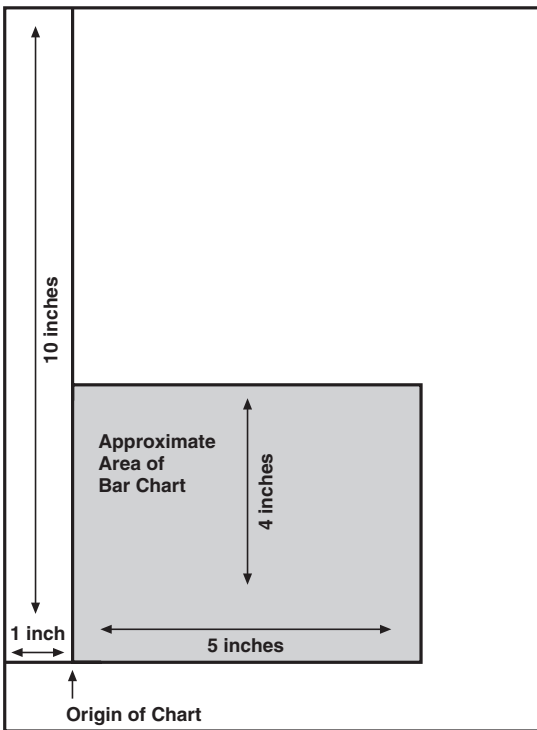


Figure 6-20. Placement of Bar Chart.

Next, determine the approximate maximum height and width of the chart. In the example, 40 was the expected maximum number of calls. We chose to represent 10 calls by one inch, resulting in a total maximum height of four inches (not including the title and subtitle.) Similarly, each day was represented by one inch, resulting in a total maximum width of five inches (not including the space needed for the label "WEEKDAY").

- If the chart is being printed on a black-and-white PCL printer, the order in which these elements are created is irrelevant. However, if you are printing on a PCL color printer, the lines of the last element will always overlay (and cover) the element previously printed. In the example, the elements creating the x- and y-axes should be entered last when printing on a PCL color printer.
- Create the separate IOGL elements based on the order determined in Step 4. In the example, the bar charts were created first. Recall the IOGL formula for the bar chart and the preceding shading/color command string:

```
-GS<# of values>;<color 1>;<% shading 1>;<color 2>;<% shading 2>;...
```

```
-GH<line width>;<x start>;<y start>;<x increment>;<y increment>;<bar width>;<# of entries>;<value 1>;<value 2>; ...
```

The bar chart shown in **Figure 6-16** was created using the following parameters:

Bar Chart Boyd

Shading/Color: Boyd's calls were plotted for each day of the business week, so the number of values is five. Since we printed to a black-and-white laser printer, the color parameters were irrelevant. The shading was set to 10%.

Bar Chart (Histogram): The line width was set to 1 mm. The x;y-start parameters defined the bottom left corner of the bar which is identical with the origin of the chart. Remember that the origin was one inch from the left margin, and 10 inches from the top margin of the printable area. The resulting values were 300 (=1 inch x 300/inch) for <x start> and 3000 (= 10 inches x 300/inch) for <y start>.

The bar representing Boyd's calls for Tuesday was to be printed one inch to the right of Monday's bar. The resulting <x increment> was 300 (= 1 inch x 300/inch). Since the maximum height of a bar was specified at four inches, the resulting value for <y increment> was 30 (= 4 inches/40 max. calls x 300/inch).

To aid in readability, extra space was left between the last bar of day

one and the first bar of the next day. To determine the <bar width>, divide the available one inch (<x increment>) into four equal sections (three bars and one space). The resulting value was 75 (= 300/4). Next, count the <# of entries> (5) and enter the respective values. The parameters are:

```
-GX'bar chart Boyd'
-GS5;01;10;01;10;01;10;01;10
-GH1;300;3000;300;30;75;5;30;34;39;
37;28
```

Bar Chart Gary

The bars representing Gary's calls were to be printed directly to the right of Boyd's. The resulting horizontal start value <x start> was:

$$\begin{array}{r} 300 \quad (\text{Boyd's}) \\ + 75 \quad (\text{Bar width}) \\ \hline 375 \end{array}$$

With the exception of the actual calls, the other parameters for Gary's bar chart were identical to Boyd's. The parameters are:

```
-GX'bar chart Gary'
-GS5;02;75;02;75;02;75;02;75;02;75
-GH1;375;3000;300;30;75;5;35;36;38;
39;31
```

Bar Chart Shawn

Shawn's bar chart was to be printed directly to the right of Gary's. The resulting horizontal starting position <x start> was:

$$\begin{array}{r} 375 \quad (\text{Gary's}) \\ + 75 \quad (\text{Bar width}) \\ \hline 450 \end{array}$$

The parameters are:

```
-GX'bar chart Shawn'
-GS5;04;50;04;50;04;50;04;50;04;50
-GH1;450;3000;300;30;75;5;15;16;21;
20;13
```

6.7.3 X- AND Y-AXES

The x-axis (Weekday) and the y-axis (# of calls), along with the increments, were created through a series of separate lines. Notice that the line width of the axis is the same as the line width of the bars. The parameters are shown below:

```
-GX'X-Axis with increments'
-GL1;300;3000;1850;3000
-GL.5;600;3000;600;3019
-GL.5;900;3000;900;3019
-GL.5;1200;3000;1200;3019
-GL.5;1500;3000;1500;3019
-GL.5;1800;3000;1800;3019

-GCY-Axis with increments'
-GL1;300;3000;300;1750
-GL.5;281;2700;300;2700
-GL.5;281;2400;300;2400
-GL.5;281;2100;300;2100
-GL.5;281;1800;300;1800
```


6.7.4 LABELS/TITLE/SUBTITLE/LEGEND

All text was created through text rotation command strings. Text was always printed in the selected font. In the example, Universe Medium was used in different point sizes (-Q...). The legend consists of three separate boxes followed by text rotation commands. The parameters are shown below:

```
-GX'Font Change Command'  
-Q4808  
-GX'Labels X-Axis'  
-GT300;3100;0;'Monday'  
-GT600;3100;0;'Tuesday'  
-GT900;3100;0;'Wednesday'  
-GT1200;3100;0;'Thursday'  
-GT1500;3100;0;'Friday'  
-GT1800;3100;0;'WEEKDAY'
```

```
-GX'Labels Y-Axis'  
-GT200;2700;0;'10'  
-GT200;2400;0;'20'  
-GT200;2100;0;'30'  
-GT200;1800;0;'40'
```

```
-GX'Legend (boxes with text)'  
-GT200;1650;0;# OF CALLS'  
-GB1;1700;1650;1750;1700;10  
-GT1760;1700;0;' = BOYD'  
-GB1;1700;1750;1750;1800;75  
-GT1760;1800;0;' = GARY'  
-GB1;1700;1850;1750;1900;50  
-GT1760;1900;0;'= SHAWN'
```

```
-GX;'Font Change Command'  
-Q4813  
-GX'Title'  
-GT500;1500;0;'SALES CALLS PER  
DAY'
```

```
-GX'Font Change Command'  
-Q4808  
-GX'Subtitle'  
-GT600;1550;0;'Week of.'  
-GT900;1550;0;'March 24, 1995'
```

6.8 Linking Graphical Output to a Host Application

There are several ways to link the graphical output to a host application. One method is to simply add the IOGL commands to the application code. This means that whenever the application is used and sent to the printer, the IOGL commands are also sent.

Another method is to design a separate subroutine that sends the IOGL output to the printer as a macro. The IOGL macro will only be sent to the printer once and resides in the printer's active memory until the printer is powered down. The application code requires only a macro call and does not require the complete graphic to be downloaded when a report is printed.

To store the IOGL output as a printer macro, begin the IOGL routine with a PCL command that begins a macro by typing: -E&f#y0X

For the # symbol, substitute a number that identifies the macro. Make sure this command precedes all IOGL commands. Also, be aware that PCL is case-sensitive.

At the end of the IOGL routine, stop the macro and save it permanently (until the printer is powered down) in the printer's memory. To end the macro, type: `-E&f#y1X`

To save the macro permanently (until the printer is powered down) type: `-E&f#y10X`. Store this macro in the printer's memory by "printing" it.

A call for this macro can be used in your application by embedding the following PCL command in the application code: `-E&f#y3X`

Another command that can be used to prevent overloading the printer's memory is `-E&f#y8X`. This command deletes the macro ID # that currently resides in the printer's memory.

6.9 Printing Images From The Host

It is often advantageous to include images such as company logos or signatures with printed output. Logos and other images can be stored on printer cartridges or "Flash" SIMMs, offered through the printer manufacturer and/or various third party vendors. While the process of loading the cartridge or SIMM differs, the final result is the same. The stored image is assigned a macro ID number that must be called up by the application when the image is to be printed. Please refer to the documentation supplied with the cartridge or SIMM for instructions on how to store an image.

Generally, a macro stored in non-volatile memory is called up by sending the command `-E&f#y3X`, where # is the macro ID.

A PCL command used to reposition the stored image on a page is `!#u#Z`, where the first # (`!#u`) specifies the “Left Offset Registration” or horizontal movement in $n/720$ inch and the second # (`#Z`) specifies the “Top Offset Registration” or vertical movement of the image in $n/720$ inch.

The repositioning command must precede the macro call. To return to the original position, type `!0Z` immediately after the macro call.

7. Troubleshooting

This chapter provides instructions for performing diagnostic tests on the A/C-7 RO. It also contains a problem resolution guide that describes common problems with the A/C-7 RO or the printer and their solutions. If you are unable to solve a problem by following the procedures outlined in this chapter, contact technical support.

Before calling, verify that the A/C-7 RO is installed correctly, and that its configuration settings are correct, perform the appropriate diagnostic tests outlined in this chapter, and have the following information ready:

- Printer and A/C-7 RO self-test printouts
- Model number and serial number of the A/C-7 RO
- Description of the problem
- Results of diagnostic tests
- Type of host system or controller

You may also need to print a “hex

dump” or “buffer print” by enabling the Buffer Print option through the A/C-7 RO’s configuration switches, or Host/PC download command 42. This causes all printing to be in hexadecimal code, just as it’s received from the host, to help in tracing problems.

If you need to ship the A/C-7 RO, use the original carton and packaging to prevent damage.

7.1 A/C-7 RO Self-Test

Verify proper installation and configuration of the A/C-7 RO by performing an A/C-7 RO self-test. The self-test prints out the current software version, memory condition (RAM and ROM), and the current configuration selections.

NOTE

If you are operating a label printer, put the printer in ASCII hex dump mode, then follow the self-test instructions below. If the label printer starts printing the A/C-7 RO has passed the self-test. To obtain a printout of the current settings, connect the A/C-7 RO to a laser or dot-matrix printer.

Follow the steps below to start the self-test from your PC or terminal.

1. Verify that the printer is connected properly to the A/C-7 RO and in "READY" mode.
2. Type "&%Z98,1" on the screen.
3. Send that command to the printer (press the Print Screen Button or print the document/file that contains the Host/PC download command). The self-test will print out in a few seconds.

Follow the steps below to start the self-test by setting the configuration switches.

1. Verify that the printer is connected properly to the A/C-7 RO.
2. Power off the A/C-7 RO and the printer.
3. Set configuration switch SW1:8 (far right of first switch bank) to "1" and configuration switch SW1:1 to "o".
4. Power on the printer and the A/C-7 RO. A self-test will print within a few seconds after power up. After the self-test prints, the LED lights labeled "Host Ready" and "Printer Ready" begin blinking, indicating that the Print Box is not in operating mode.

5. Return configuration switch SW1:8 to the "o" position, then cycle the power one more time.

Two self-test pages will print if the A/C-7 RO is installed properly. Sample printouts of the first page are shown in **Figures 3-1** and **3-2**. The selections in the sample are factory defaults. The numbers at the left margin are command numbers used to change this setting using host download commands.

If the test does not print, the A/C-7 RO failed the self-test. Contact technical support for more information.

7.2 EBCDIC Hex Dump

The A/C-7 RO can be set up to print the buffer in hexadecimal EBCDIC code. This can be useful for a technician to diagnose problems with the A/C-7 RO or the printer.

The EBCDIC hex data is printed on a grid corresponding to the data's position in the buffer. If the hex data represents a printable character, that character is printed below the hex data.

To start the EBCDIC hex dump through Host/PC Download:

1. Verify that the printer is connected properly to the A/C-7 RO.
2. Type "&%Z42,1" on the screen.

3. Send that command to the printer (press the Print Screen Button or print the document/file that contains the Host/PC download command).
4. Send the host data in question to the printer.
5. To stop the EBCDIC hex dump, type "&%Z42,2" on the screen, then send it to the printer (press the Print Screen Button or print the document/file that contains the Host/PC download command).

Start the EBCDIC hex dump from the A/C-7 RO's front panel as follows:

1. With the A/C-7 RO powered on, set configuration switch SW1:1 (far left) to "o", and switch SW1:8 (far right of first switch bank) to "l". The A/C-7 RO is now in buffer print mode.
2. Return configuration switch SW1:8 to the "o" position after printing is completed.

7.3 ASCII Hex Dump

The A/C-7 RO can be set up to print the buffer in hexadecimal ASCII code. This differs from the EBCDIC hex dump in that the buffer is first translated into ASCII code before it is printed. This can be useful to diagnose problems with the interface or the printer. The ASCII Hex Dump can only be started through the A/C-7 RO's configuration switches. To start the ASCII Hex Dump:

1. Locate configuration switches SW1:4, SW1:5, SW1:6, and SW1:7 on the first switch bank.
2. Write down their current position ("o" or "l").
3. With the A/C-7 RO powered on, set the configuration switches SW1:4, SW1:5, SW1:6, and SW1:7 to "l". The A/C-7 RO is now in ASCII Hex Dump mode.
4. To end ASCII Hex Dump mode, return the switches to their original position (see Step 2).

7.4 Problem Resolution Guide

The following is a general guide to resolve common problems that may occur. Please refer to this guide before contacting technical support.

Table 7-1. Problem Resolution Guide.

Problem or Message	Probable Cause	Action
"Host Line Sync" LED is not on when connected to the host	Host is not operating	Check host system.
	Damaged or improper cabling	Check host cabling for damage or improper connection.
"Printer Online" LED is off when printer is connected	Printer not in a ready status	Make sure printer is on line, has paper, etc.
	Printer fault such as paper out, paper jam, etc.	Make sure the printer has paper, is clear of jams, etc.
	Damaged or loose printer cable	Check printer cable for damage or improper connection.
Printer loses host communication (drops off line)	Improper or damaged cabling	Check host cabling for improper connections or damage.

Table 7-1. Problem Resolution Guide.

Problem or Message	Probable Cause	Action
Right margin is cut off	Page width in word-processing program is not set wide enough	Change to a wider page.
	Page width is too wide	Select a narrower page.
Extra blank sheets are ejected between sheets of printout	Form length not correct in software (maximum length is 66 lines)	Make sure your document length doesn't exceed the maximum number of lines.
	Page orientation was changed	The printer may eject a blank page when the page orientation (portrait or landscape) is changed.
Form length is incorrect	Form length incorrect in software	Change form length

Table 7-1. Problem Resolution Guide.

Problem or Message	Probable Cause	Action
Printer won't change fonts	Incorrect typestyle number	Make sure the font ID used is valid. Invalid font IDs are ignored by the printer.
	Wrong font cartridge loaded	Load the cartridge with the font that corresponds to the font ID.
	Font cartridge damaged or not seated into the printer properly	If possible try a known good cartridge to determine if cartridge is faulty. Make sure the cartridge is loaded properly.
Printer does not print landscape in requested font	APO feature is ON <u>and</u> page size is 8-1/2" x 11" or less <u>and</u> width is less than height	Turn off APO <u>or</u> increase page size so it is larger than 8-1/2" x 11" <u>or</u> change width and height so width is greater than height.

Table 7-1. Problem Resolution Guide.

Problem or Message	Probable Cause	Action
	APO feature is OFF <u>and</u> orientation is set to COR, portrait, or user-defined (with font orientation portrait)	Set paper tray orientation to landscape <u>or</u> set font orientation to landscape <u>or</u> set font orientation to landscape.
Printer does not print portrait in requested font	APO feature is ON <u>and</u> page size is 8-1/2" x 11" or less; <u>and</u> width is greater than height	Turn off APO <u>or</u> increase page size so it is larger than 8-1/2" x 11" <u>or</u> change width and height so width is less than height. Refer to the COR and APO sections for additional solutions.
	APO feature is OFF <u>and</u> orientation is set to COR, landscape, or user defined (with font orientation landscape)	Set paper tray orientation to portrait <u>or</u> set font orientation to portrait.

Table 7-1. Problem Resolution Guide.

Problem or Message	Probable Cause	Action
Printer does not print COR	APO feature is ON <u>and</u> page size is 8-1/2" x 11" or less	Turn off APO <u>or</u> increase page size so it is larger than 8-1/2" x 11".
	APO feature is OFF <u>and</u> orientation is set to portrait, landscape, or user-defined	Set orientation to "COR."

Appendix A: Font (FGID) Reference for HP LaserJet Printers

The following table lists the standard HP LaserJet resident fonts and the HP font cartridges that are available, along with the font ID number used to select the font.

Table A-1. Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
HP LaserJet Internal Resident Fonts					
Courier	R-8/CP850	P/L	10	12	11
Line Printer	R-8/CP850	P/L	15	8.5	223
Line Printer	R-8/CP850	P/L	17.1	8.5	254
Line Printer	R-8/CP850	P/L	19	8.5	281
Line Printer	R-8/CP850	P/L	13.33	8.5	204
LaserJet IID, III, IIID Printers have in addition:					
Courier italic	R-8/CP850	P/L	10	12	18
Courier bold	R-8/CP850	P/L	10	12	46
Courier	R-8/CP850	P/L	12	10	85

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Courier	R-8/CP850	P/L	12	10	85
Courier bold	R-8/CP850	P/L	12	10	88
Courier italic	R-8/CP850	P/L	12	10	89
Letter Gothic	R-8/CP850	P/L	12	12	87
LaserJet III and IIISi Resident Scalable Fonts					
CG Times	R-8/CP850	P/L	Prop.	6	4605
	R-8/CP850	P/L	Prop.	8	4606
	R-8/CP850	P/L	Prop.	10	4607
	R-8/CP850	P/L	Prop.	12	4608
	R-8/CP850	P/L	Prop.	14	4609
	R-8/CP850	P/L	Prop.	18	4611
	R-8/CP850	P/L	Prop.	24	4614
	R-8/CP850	P/L	Prop.	6	4617

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
CG Times bold	R-8/CP850	P/L	Prop.	6	4625
	R-8/CP850	P/L	Prop.	8	4626
	R-8/CP850	P/L	Prop.	10	4627
	R-8/CP850	P/L	Prop.	12	4628
	R-8/CP850	P/L	Prop.	14	4629
	R-8/CP850	P/L	Prop.	18	4631
	R-8/CP850	P/L	Prop.	24	4634
	R-8/CP850	P/L	Prop.	30	4637
CG Times italic	R-8/CP850	P/L	Prop.	6	4645
	R-8/CP850	P/L	Prop.	8	4646
	R-8/CP850	P/L	Prop.	10	4647
	R-8/CP850	P/L	Prop.	12	4648
	R-8/CP850	P/L	Prop.	14	4649
	R-8/CP850	P/L	Prop.	18	4651

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
	R-8/CP850	P/L	Prop.	24	4654
	R-8/CP850	P/L	Prop.	30	4657
CG Times bold italic	R-8/CP850	P/L	Prop.	6	4665
	R-8/CP850	P/L	Prop.	8	4666
	R-8/CP850	P/L	Prop.	10	4667
	R-8/CP850	P/L	Prop.	12	4668
	R-8/CP850	P/L	Prop.	14	4669
	R-8/CP850	P/L	Prop.	18	4671
	R-8/CP850	P/L	Prop.	24	4674
	R-8/CP850	P/L	Prop.	30	4677
Univers medium	R-8/CP850	P/L	Prop.	6	4805
	R-8/CP850	P/L	Prop.	8	4806
	R-8/CP850	P/L	Prop.	10	4807
	R-8/CP850	P/L	Prop.	12	4808

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
	R-8/CP850	P/L	Prop.	14	4809
	R-8/CP850	P/L	Prop.	18	4811
	R-8/CP850	P/L	Prop.	24	4814
	R-8/CP850	P/L	Prop.	30	4817
Univers med italic	R-8/CP850	P/L	Prop.	6	4825
	R-8/CP850	P/L	Prop.	8	4826
	R-8/CP850	P/L	Prop.	10	4827
	R-8/CP850	P/L	Prop.	12	4828
	R-8/CP850	P/L	Prop.	14	4829
	R-8/CP850	P/L	Prop.	18	4831
	R-8/CP850	P/L	Prop.	24	4834
	R-8/CP850	P/L	Prop.	30	4837

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Univers med condensed	R-8/CP850	P/L	Prop.	6	4845
	R-8/CP850	P/L	Prop.	8	4846
	R-8/CP850	P/L	Prop.	10	4847
	R-8/CP850	P/L	Prop.	12	4848
	R-8/CP850	P/L	Prop.	14	4849
	R-8/CP850	P/L	Prop.	18	4851
	R-8/CP850	P/L	Prop.	24	4854
	R-8/CP850	P/L	Prop.	30	4857
Univers med cond italic	R-8/CP850	P/L	Prop.	6	4865
	R-8/CP850	P/L	Prop.	8	4866
	R-8/CP850	P/L	Prop.	10	4867
	R-8/CP850	P/L	Prop.	12	4868
	R-8/CP850	P/L	Prop.	14	4869
	R-8/CP850	P/L	Prop.	18	4871

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
	R-8/CP850	P/L	Prop.	24	4874
	R-8/CP850	P/L	Prop.	30	4877
ITC Zapf Dingbat	R-8/CP850	P/L	Prop.	6	4985
	R-8/CP850	P/L	Prop.	8	4986
	R-8/CP850	P/L	Prop.	10	4987
	R-8/CP850	P/L	Prop.	12	4988
	R-8/CP850	P/L	Prop.	14	4989
	R-8/CP850	P/L	Prop.	18	4991
	R-8/CP850	P/L	Prop.	24	4994
	R-8/CP850	P/L	Prop.	30	4997
General Font Assignments					
Time	R-8/CP850	P	Prop.	8	157
Time	R-8/CP850	P	Prop.	10	158
Time Bold	R-8/CP850	P	Prop.	10	159

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Time Italic	R-8/CP850	P	Prop.	10	155
Helvetica Bold	R-8/CP850	P	Prop.	14.4	34126
Courier Bold	R-8/CP850	P/L	10	12	46
Courier Italic	R-8/CP850	P/L	10	12	18
Prestige	R-8/CP850	P/L	12	10	86
Prestige Bold	R-8/CP850	P/L	12	10	111
Prestige Italic	R-8/CP850	P/L	12	10	112
Letter Gothic	R-8/CP850	P/L	12	12	87
Letter Gothic Bold	R-8/CP850	P/L	12	12	110
Letter Gothic Italic	R-8/CP850	P/L	12	10	112
Helvetica	ASCII	P	Prop.	6	181
Helvetica	ASCII	P	Prop.	8	183
Helvetica Bold	ASCII	P	Prop.	8	182

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Helvetica Bold	ASCII	P	Prop.	10	185
Helvetica Bold	ASCII	P	Prop.	12	188
Helvetica Bold	ASCII	P	Prop.	14	190
Tax Line Draw	LinDrw-7	P	10	12	34
Letter Gothic	R-8/CP850	P	10	14.4	40
Letter Gothic	R-8/CP850	P	17.1	9.4	255
OCR-A 10N	OCR-A	P	10	12	19
OCR-B 10N	OCR-B	P	10	12	3
Code 3-9 4.6N	3 of 9	P	4.6	12	240
Code 3-9 9.3N	3 of 9	P	9.3	12	61
EAN/UPC Bold Bar Code	UPC	P	Prop.	12	171

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
EAN/UPC Bar Code	UPC	P	PROP.	12	170
HP Cartridge Font Assignments					
Procollection Cartridge					
Line Printer	ASCII	P/L	17.1	8.5	253
Courier Bold	ASCII	P/L	10	12	45
Courier Italic	ASCII	P/L	10	12	17
Courier	ASCII	P/L	12	10	85
Courier Bold	ASCII	P/L	12	10	108
Courier Italic	ASCII	P/L	12	10	92
Courier	Legal	P	10	12	51
Courier Bold	Legal	P	10	12	52
Courier Italic	Legal	P	10	12	53
Courier	Legal	P	12	10	93
Courier Bold	Legal	P	12	10	94

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Courier Italic	Legal	P	12	10	95
Prestige Elite	ASCII	P/L	15	7	220
Prestige Elite	ASCII	P/L	12	10	83
Prestige Elite Bold	ASCII	P/L	12	10	113
Prestige Elite Italic	ASCII	P/L	12	10	114
Prestige Elite	Legal	P	15	7	219
Prestige Elite	Legal	P	12	10	97
Prestige Elite Bold	Legal	P	12	10	98
Prestige Elite Italic	Legal	P	12	10	99
Letter Gothic	ASCII	P/L	27	3.6	291
Letter Gothic	ASCII	P/L	19	6	281
Letter Gothic	ASCII	P/L	17.1	9.5	257

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Letter Gothic	ASCII	P/L	12	12	66
Letter Gothic Bold	ASCII	P/L	12	12	69
Letter Gothic Italic	ASCII	P/L	12	12	68
Times Roman	ASCII	P	Prop.	8	163
Times Roman	ASCII	P	Prop.	10	164
Times Roman Bold	ASCII	P	Prop.	10	165
Times Roman Italic	ASCII	P	Prop.	10	166
Times Roman	ASCII	P	Prop.	12	167
Times Roman Bold	ASCII	P	Prop.	12	168
Times Roman Italic	ASCII	P	Prop.	12	169
Times Roman	Legal	P	Prop.	8	173
Times Roman	Legal	P	Prop.	10	174

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Times Roman Bold	Legal	P	Prop.	10	175
Times Roman Italic	Legal	P	Prop.	10	176
Times Roman	Legal	P	Prop.	12	177
Times Roman Bold	Legal	P	Prop.	12	178
Times Roman Italic	Legal	P	Prop.	12	179
Helvetica	ASCII	P	Prop.	8	183
Helvetica	ASCII	P	Prop.	10	184
Helvetica Bold	ASCII	P	Prop.	10	185
Helvetica Italic	ASCII	P	Prop.	10	186
Helvetica	ASCII	P	Prop.	12	187
Helvetica Bold	ASCII	P	Prop.	12	188

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Helvetica Italic	ASCII	P	Prop.	12	189
Helvetica Bold	ASCII	P	Prop.	14	190
Helvetica Bold	Legal	P	Prop.	14	191
WordPerfect Cartridge					
CG Times	DskTop	P	Prop.	6	4685
CG Times	DskTop	P	Prop.	8	4686
CG Times Bold	DskTop	P	Prop.	8	4706
CG Times Italic	DskTop	P	Prop.	8	4814
CG Times	DskTop	P	Prop.	10	4687
CG Times Bold	DskTop	P	Prop.	10	4707
CG Times Italic	DskTop	P	Prop.	10	4815

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
CG Times	DskTop	P	Prop.	12	4688
CG Times Bold	DskTop	P	Prop.	12	4708
CG Times Italic	DskTop	P	Prop.	12	4816
CG Times	DskTop	P	Prop.	14	4689
CG Times Bold	DskTop	P	Prop.	14	4709
CG Times Italic	DskTop	P	Prop.	14	4817
CG Times Bold	DskTop	P	Prop.	18	4711
CG Times Bold	DskTop	P	Prop.	24	4714
Univers	DskTop	P	Prop.	14	4789
Univers	DskTop	P	Prop.	18	4791
Univers	DskTop	P	Prop.	24	4794

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Microsoft Cartridge					
Helv	R-8	P	Prop.	8	34102
Helv	R-8	P	Prop.	10	34103
Helv Bold	R-8	P	Prop.	10	34123
Helv Italic	R-8	P	Prop.	10	34231
Helv	R-8	P	Prop.	12	34104
Helv Bold	R-8	P	Prop.	12	34124
Helv Italic	R-8	P	Prop.	12	34232
Helv Bold	R-8	P	Prop.	14	34125
TmsRmn	R-8	P	Prop.	8	5686
TmsRmn	R-8	P	Prop.	10	5687
TmsRmn Bold	R-8	P	Prop.	10	5707
TmsRmn Italic	R-8	P	Prop.	10	5815

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
TmsRmn	R-8	P	Prop.	12	5688
TmsRmn Bold	R-8	P	Prop.	12	5708
TmsRmn Italic	R-8	P	Prop.	12	5816
TmsRmn Bold	R-8	P	Prop.	14	5709
Line Printer	R-8	P/L	15	8.5	223
Polished Worksheets Cartridge					
Prestige Elite	R-8	P/L	15	7	221
Prestige Elite	R-8	P/L	12	10	86
Prestige Elite Bold	R-8	P/L	12	10	111
Prestige Elite Italic	R-8	P/L	12	10	112
Prestige Elite	Legal	P/L	15	7	219
Prestige Elite	Legal	P/L	12	10	97

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Prestige Elite Bold	Legal	P/L	12	10	98
Prestige Elite Italic	Legal	P/L	12	10	99
Letter Gothic	R-8	P/L	27	3.6	290
Letter Gothic	R-8	P/L	12	12	87
Letter Gothic Bold	R-8	P/L	12	12	110
Letter Gothic Italic	R-8	P/L	12	12	109
Letter Gothic	Legal	P/L	27	3.6	292
Letter Gothic	Legal	P/L	12	12	90
Letter Gothic Bold	Legal	P/L	12	12	107
Letter Gothic Italic	Legal	P/L	12	12	106
Presentation Bold	ASCII	P/L	8.1	16	434

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Presentation Bold	Legal	P/L	8.1	16	431
Persuasive Presentations Cartridge					
Letter Gothic	ASCII	P/L	10	14	39
Letter Gothic	Legal	P/L	10	14	38
Presentation Bold	ASCII	P/L	10	14	6
Presentation Bold	Legal	P/L	10	14	7
Presentation Bold	ASCII	P/L	8.1	16	434
Presentation Bold	Legal	P/L	8.1	16	431
Presentation Bold	ASCII	P/L	6.5	18	435
Presentation Bold	Legal	P/L	6.5	18	432
Presentation Bold	ASCII	P/L	5.7	24	436

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Presentation Bold	Legal	P/L	5.7	24	433
Helv Outline	ASCII	P/L	Prop.	24	34115
Helv Outline	Legal	P/L	Prop.	24	34116
Serifa	ASCII	P/L	Prop.	24	34215
Serifa	Legal	P/L	Prop.	24	34216
Line Draw	LinDrw	P/L	10	14	31
PC Line Bold	PCLin	P/L	10	14	32
Forms, Etc. Cartridge					
Univers	R-8	P/L	Prop.	6	33101
Univers	R-8	P/L	Prop.	8	33102
Univers Bold	R-8	P/L	Prop.	8	33122
Univers Bold	R-8	P/L	Prop.	10	33123
Univers Bold	R-8	P/L	Prop.	12	33124
Univers Bold	R-8	P/L	Prop.	14	33125

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Helv Cond. Black Bold	TaxNum	P/L	Prop.	24	34128
OCR-A	OCR-A	P	10	12	19
Tax Line Draw	TaxLin Drw	P/L	10	12	30
Bar Codes & More Cartridge					
Letter Gothic	R-8	P/L	15	9.5	230
Letter Gothic	R-8	P/L	12	12	87
Letter Gothic	R-8	P/L	10	14	40
OCR-A	OCR-A	P	10	12	19
OCR-B	OCR-B	P	10	12	3
Code 3 of 9	3 of 9	P	8.1	12	60
Code 3 of 9	3 of 9	P	4.6	12	240
EAN/UPC 10 Mil	UPC	P	Prop.	12	170
EAN/UPC 13 Mil Bold	UPC	P	Prop.	12	171

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
USPS Zip	ZIP	P/L	Prop.	12	172
Line Draw	LinDrw	P/L	10	12	33
Text Equations					
Prestige Elite	R-8	P	15	7	221
Prestige Elite	R-8	P	17.1	7	256
Prestige Elite	R-8	P	12	10	86
Prestige Elite Bold	R-8	P	12	10	111
Prestige Elite Italic	R-8	P	12	10	112
CG Times	R-8	P	Prop.	8	157
CG Times	R-8	P	Prop.	10	158
CG Times Bold	R-8	P	Prop.	10	159
CG Times Italic	R-8	P	Prop.	10	155

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Global Text Cartridge					
CG Century Schoolbook	R-9	P/L	Prop.	8	16950
CG Century Schoolbook	R-8	P/L	Prop.	10	16951
CG Century Schlbk Bold	R-8	P/L	Prop.	10	16971
CG Century Schlbk Italic	R-8	P/L	Prop.	10	17079
CG Triumvirate	R-8	P/L	Prop.	10	33335
CG Triumvirate Bold	R-8	P/L	Prop.	14	33357
Pretty Faces Cartridge					
Microstyle	ASCII	P	Prop.	18	5910
Microstyle Bold	ASCII	P	Prop.	36	5920
Hobo Medium	ASCII	P	Prop.	30	5930

Table A-1 (continued). Selecting Standard Fonts.

Typeface	Symbol Set	Orient.	Pitch	Point Size	Typestyle No.
Hobo Medium	ASCII	P	Prop.	14	5940
Thunderbird	ASCII	P	Prop.	54	5950
Signet Roundhand	ASCII	P	Prop.	18	5960
Signet Roundhand	ASCII	P	Prop.	14	5970
ITC Dingbats	ITC	P	Prop.	36	5980
ITC Dingbats	ITC	P	Prop.	18	5990

Appendix B: Character Sets

The IBM 3812-1 printer emulation supports both the Roman 8 character set and Code Page 850. The IBM 4214, 5224, 5225, and 5256 printer emulations support both the Code Page 850 and Code Page 437 character sets. The selection between the two available character sets decides which is used when a font supports both. Refer to the printer's user's guide for illustrations and information on character sets.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	DLE	SP	0	@	P	`	p				—	â	Ă	Á	þ
1	SOH	DC1	!	1	A	Q	a	q			À		ê	î	Ä	þ
2	STX	DC2	"	2	B	R	b	r			Â		ô	Ø	ã	
3	ETX	DC3	#	3	C	S	c	s			È	°	û	Æ	Ð	
4	EOT	DC4	\$	4	D	T	d	t			Ê	Ç	á	â	đ	
5	ENQ	NAK	%	5	E	U	e	u			Ë	ç	é	í	í	
6	ACK	SYN	&	6	F	V	f	v			Î	Ñ	ó	ø	ì	—
7	BEL	ETB	'	7	G	W	g	w			Ï	ñ	ú	æ	Ó	1/4
8	BS	CAN	(	8	H	X	h	x			´	ı	à	Ä	Ò	1/2
9	HT	EM	)	9	I	Y	i	y			`	ı	è	ì	Õ	^a
A	LF	SUB	*	:	J	Z	j	z			^		ò	Ö	õ	^o
B	VT	ESC	+	;	K	[	k	{			¨	£	ù	Ü	Š	«
C	FF	FS	,	<	L	\	l	|			~	¥	ä	É	š	■
D	CR	GS	-	=	M	]	m	}			Ù	§	ë	ï	Ú	»
E	SO	RS	.	>	N	^	n	~			Û	f	ö	ß	ÿ	±
F	SI	US	/	?	O	_	o	DEL			£	¢	ü	Ô	ÿ	

Figure B-1. Roman 8.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		▶		0	@	P	`	p	Ç	É	á	⋮	ℓ	õ	Ó	–
1	☺	◀	!	1	A	Q	a	q	ü	æ	í	⋈	⊥	Ɔ	β	±
2	☺	↕	"	2	B	R	b	r	é	Æ	ó	⋈	⊥	Ê	Ô	=
3	♥	!!	#	3	C	S	c	s	â	ô	ú	|	†	Ë	Ò	¾
4	♦	¶	\$	4	D	T	d	t	ä	ö	ñ	‡	–	È	õ	¶
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	Á	†	ì	Õ	§
6	♠	–	&	6	F	V	f	v	â	û	ª	Â	ã	í	μ	÷
7	•	↕	'	7	G	W	g	w	ç	ù	º	À	Ã	î	þ	,
8	◻	↑	(	8	H	X	h	x	ê	ÿ	¿	©	ℙ	ï	þ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö	®	℥	℞	⌋	Ú	¨
A	◼	→	*	:	J	Z	j	z	è	Ü	¬	||	≠	Γ	Û	•
B	♂	←	+	;	K	[	k	{	ï	ø	½	¶	≠	■	Ù	1
C	♀	⌊	,	<	L	\	l	l	î	£	¼	¶	ℙ	■	y	3
D	♪	↔	-	=	M	]	m	}	ì	Ø	ì	¢	=	ì	Y	2
E	♪	▲	.	>	N	^	n	~	Ä	×	«	¥	≠	ì	-	■
F	⚙	▼	/	?	O	_	o	◊	Å	f	»	Γ		■	'	

Figure B-2. Code Page 850.

Appendix C: Serial-Port Specifications

The A/C-7S RO uses a standard, RS-232-C, 25-pin serial printer cable for connection to a serial printer and for connection to a serial PC/LAN print server port.

The A/C-7S RO's input and output connectors use the same pin assignments. They are:

Shell:	Chassis Ground
1:	Chassis Ground
2:	Transmit (TXD) .....output
3:	Receive (RXD) .....input
4:	Request To Send (RTS) .....output
5:	Clear To Send (CTS) .....input
6:	Data Set Ready (DSR) .....input
7:	Signal Ground
8-19:	No connection
20:	Data Terminal Ready (DTR) .....output

Figure C-1. Input and Output Connector Pinout.

The serial printer cable shipped with the A/C-7S RO has the following pin assignments:

DB25F	DB25M
Shell	Shell
2	3
3	2
5, 6, 8	20
7	7
20	5,6,8

Figure C-2. Serial Printer Cable Pinout.

This pin out will work with most PCs and printers (i.e. the supplied cable can be used as either sharing cable or printer cable). When used to connect the printer to the print box, the cable's female side (DB25F) is connected to the A/C-7S RO. When used as a sharing cable, the male end (DB25M) is connected to the A/C-7S RO.

Appendix D: Parallel-Port Specifications

The A/C-7P RO uses standard 36-pin/25-pin Centronics printer cables for connection to a parallel printer and to connect a parallel PC/LAN printer server port.

The 25-pin connector on the A/C-7P RO label “Parallel Out To Printer” has the following pin assignments:

Table D-1. 25-Pin Connector Pinout.

Pin Number	Direction	Name
1	Output	nStrobe
2-9	Output	Data 1 - Data 8
10	Input	nAck
11	Input	Busy
12	Input	PError
13	Input	Select
14	Output	nAutoFd (always high)
15	Input	nFault
16	Output	nInit (always high)
17	Output	nSelectIn (always high)
18-25		Signal Ground
Shell		Chassis Ground

The 36-pin connector on the A/C-7P RO labeled “Parallel In From PC/LAN” (TxP plus) and “Parallel Setup Port From PC/LAN” uses the following pin assignment:

Table D-2. 36-Pin Connector Pinout.

Pin Number	Direction	Name
1	Input	nStrobe
2-9	Input	Data 1 - Data 8
10	Output	nAck
11	Output	Busy
12	Output	PError
13	Output	Select
14, 15		No connection
16		Signal Ground
17		Chassis Ground
18	Output	Optional +5V (350 mA max)
19-30		Signal Ground
31	Input	nSelectIn (an Acknowledge will be generated in response to this input going active, but the A/C-7P RO will not be reset)
32	Input	nFault
34-36		No connection
Shell		Chassis Ground

Appendix E: Transferring Power to Pin 18

To transfer power to pin 18 of the parallel input connector of the A/C-7P RO, you must move a jumper on the A/C-7P RO board. To move this jumper do the following:

1. Power off the printer, the A/C-7P RO, and the attached PC or LAN print server.
2. Disconnect all cables from the A/C-7P RO.
3. Remove the two black screws from the outside of the back panel.
4. Pull out the A/C-7P RO's back panel, together with the attached board.
5. Locate the jumper in the lower left corner, right above the parallel connector labeled "Parallel In From PC/LAN" (see **Figure E-1**).
6. Remove the black jumper from the pin, then reinsert it covering both pins (see **Figures E-1a** and **E-1b**).

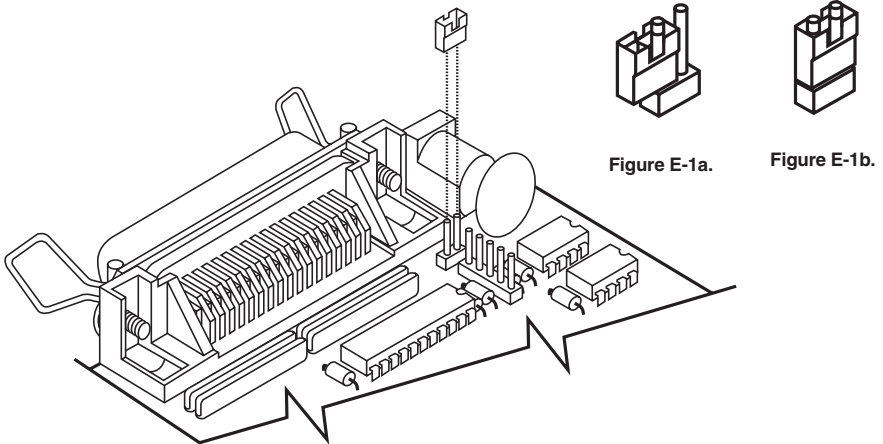


Figure E-1. Jumpers.

7. Slide the A/C-7 RO board back into the bottom groove of the chassis.
8. Tighten the black screws on the back panel.
9. Connect the printer and the PC/LAN to the A/C-7 RO, then connect the power cord.
10. Power on the printer, then the A/C-7 RO.



© Copyright 2000. Black Box Corporation. All rights reserved.

1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax 724-746-0746

Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>