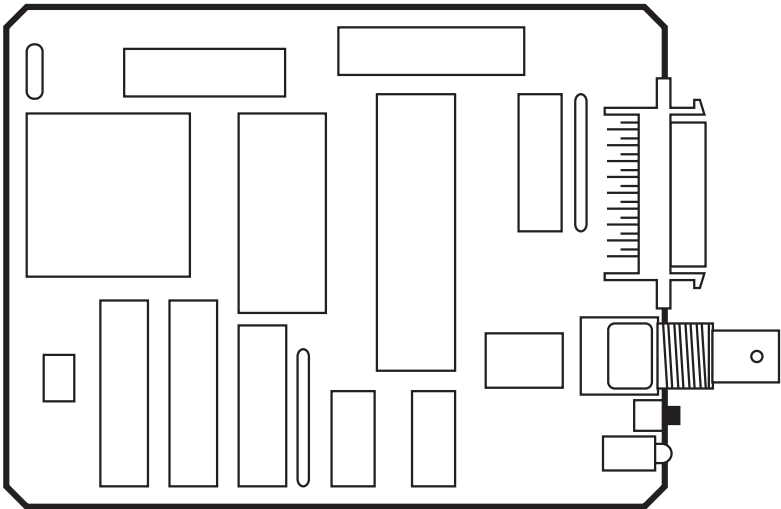




EP Coax Adapter Board II



**CUSTOMER
SUPPORT
INFORMATION**

Order toll-free in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mailing address: **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 B 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 la 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 USED IN THIS MANUAL

IPDS™ is a trademark, and IBM® is a registered trademark of International Business Machines Corporation.

Epson® is a registered trademark of Seiko Epson Corporation.

Centronics® is a registered trademark of Centronics Corporation.

Xerox® is a registered trademark of Xerox Corporation.

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

Any other trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

Contents

Chapter	Page
1. Specifications	6
2. Introduction.....	7
2.1 LEDs	8
2.2 Pushbuttons	8
3. Installation	9
3.1 Package Contents	9
3.2 Installing the Board.....	9
3.3 Executing a Self-Test.....	9
3.4 Configuration	10
3.5 Restoring Factory Defaults.....	10
4. Operation	12
4.1 Command Pass-Thru.....	12
4.2 Custom User Strings.....	13
4.3 SCS Mode Transparent Data	13
4.4 Alternate Host (PC) Auto Parallel Sharing	14
Appendix A: Host Download Configuration Commands	18
Appendix B: Pushbutton Setup.....	36
Appendix C: Sample Printouts.....	43

1. Specifications

Input Protocol —	IBM 3270 coax (LU1 or LU3) and Centronics parallel
Output Protocol —	Epson parallel, internal interface connection
Receive Data Rate —	Maximum burst: 2.3587 million bps
Data Buffering —	4K coax communication buffer
Language Support —	Standard IBM 3174 language sections
Connectors —	(1) Female BNC coax connector; (1) mini Centronics parallel connector
Indicators —	(2) LEDs: (1) green for communication; (1) red for program attention and manual operation
Switches —	(2) pushbuttons
Power —	+5V @ 240mA, supplied by the printer
Size —	1.3"H x 4"W x 5.8"D (3.3 x 10.2 x 14.7 cm)
Weight —	2 lb. (0.9 kg)

2. Introduction

The EP Coax Adapter Board II is an interface Card for DFX, FX, old LQ, and Epson® printers that accept the Epson Serial Card Model #8148. The Board allows the direct connection of supported Epson dot-matrix printers to a coax type-A adapter of an IBM® 3174/3274/ 3276 Control Unit or IBM 3270 mainframe system. In addition, a Centronics compatible mini-parallel port with automatic switching allows a PC or alternate host to share the printer with the 3270 host for optimum printer use.

NOTE

The parallel port of the printer must not be used while this Board is installed.

The EP Coax Adapter Board II lets your printer emulate IBM 3287, 3268, 4214-1, and 4224 (non IPDS™) dot-matrix printers.

The Board supports LU3 (DSC) and LU1 (SCS) mode printing. It has a large selection of user-definable setup selections (including IBM RPQ options) that can be changed and stored in non-volatile memory with commands embedded in documents sent to the printer (downloaded from the host). A Command Pass-Thru (hex transparency) feature lets you access the special features of the Epson printer directly from the coax host. The Board does not support coax-host-controlled color-printing options, AFP, IPDS, GDDM, APL, or programmed symbols.

These printers are supported:

- FX86e/286e, FX-800/100
- EX-800/1000
- LX-400/800
- LQ-2500
- LQ-2550
- SQ-2500
- LQ-850+, 1050+
- LQ-860/1060
- SQ-850/2550
- EPI-4000, EPJ-200
- FX-850/1050
- DFX-5000/8000
- LX-810/850/1050
- LQ-2500+
- TLQ-4800
- LQ-400/500/510/550/1010
- LQ-950
- LQ-860+/1060+
- TSQ-4800

2.1 LEDs

There are two LEDs on the EP Coax Adapter Board II. The green LED is for communications. When the green LED is **on**, the control unit is communicating with the Board. When the green LED is **off**, the control unit is not communicating with the Board.

The red LED's function depends on its status. If the red LED is **on**, the program attention manual operation is active, and the printer has received a request (from the host software) for a PA button to be pressed so printing can continue. When the red LED **blinks twice**, you pressed and released both pushbuttons at the same time—sending a cancel message to the host. When the red LED **stays on after power-up**, the Board encountered problems during the self-test.

2.2 Pushbuttons

There are two pushbuttons on the EP Coax Adapter Board II. The top button, **PA1**, prints out a page listing when pressed. If the coax cable is disconnected, then a RAM/ROM self-test is also performed and the results are printed. It also gives a YES response during pushbutton setup (see Appendix B).

The bottom button, **PA2**, begins restoration of factory-default setup. It generates a NO response during pushbutton setup (see Appendix B). After turning on, if both buttons are pressed and released (for less than one second), a cancel signal is sent to the host. The red LED blinks twice to confirm that the cancel signal was sent. (The printer will continue printing until its buffer is empty.)

After turning on, if both buttons are pressed and held for over two seconds, the Card enters the hexadecimal (buffer dump) diagnostic printing mode. The printer then prints "Buffer print is active" and the green LED blinks twice. Turn off the printer to exit this mode, or press and hold both buttons for more than two seconds, and the green LED blinks twice (see Command 42 in Appendix A).

3. Installation

3.1 Package Contents

Make sure your EP Coax Adapter Board II package contains the following items:

- EP Coax Adapter Board II
- Frame Ground strap and (4) screws
- Parallel Port Cover

An optional Mini Centronics® PC Sharing Cable (EHN050-0006) is available from your dealer if PC parallel printer sharing is desired.

3.2 Installing the Board

The installation of the EP Coax Adapter Board II is the same as the installation of any optional interface. This procedure is explained in the user's manual that comes with the printer, usually in either an appendix or the section on using printer options. Please follow the instructions carefully to install the coax interface card and then reassemble the printer. Next, follow the instructions below to execute a self-test and verify the installation.

The mini Centronics connector on the Board can be used for automatic alternate host (PC) sharing with the Mini Centronics PC Sharing Cable.

The Board is supplied with default setup selections stored in its non-volatile memory. These default selections are sufficient for most user requirements. Refer to Appendix A for a listing of the user-definable setup selections and custom features.

3.3 Executing a Self-Test

Follow these steps to perform a self-test. The self-test verifies proper installation and prints out the current setup selections.

1. Before testing the Board, perform a test of the printer to confirm that it is functional. Refer to instructions in the printer's user's manual. Do not proceed unless the printer is operational.
2. To test the Board, disconnect the coax and mini Centronics connectors from the Board and turn the printer on. After the printer is ready, press the top (PA1) button on the Board and hold it for more than two seconds. Release the button and the self-test results, as well as a listing of the setup selections, are printed. See Appendix C for example printouts.

3. The printer prints out the self-test page if the Board is installed properly. See Appendix C.
4. If nothing prints, the Board is not installed properly. A separate test of the Board may be performed by disconnecting the coax and mini Centronics connectors and turning on the printer. If the LED displays red and then goes out, it indicates successful completion of the self-tests. If the red LED remains on, the self-tests found a problem with the Board.

3.4 Configuration

After installing the Board and performing a self-test, the Board is ready to operate in most environments. The factory-default settings are satisfactory for most programs and applications. Be sure to check Command 60 on the self-test printout to confirm that the Board is configured correctly for either an FX and LQ type printer, or a DFX type printer.

All configuration selections can be changed by simply embedding commands (see **Appendix A**) in a 3270 print job or print screen that is sent to the printer. These are called “Host Download Commands.” If the embedded command is sent correctly, the characters that create the command are not printed. If the command is printed, the the Board did not recognize the command. Correct the problem in the format and send the command again. If you wish to confirm the active setup selections for the printer, you can print a listing page by either performing a self-test (pressing and holding the top button for 2 seconds) or sending the “Z98,1” command to the Board.

Unless the “Z99,0” command is sent to save the active setup in non-volatile (NV) memory, the configuration commands only change the active setup values and are lost when the printer is turned off. By sending a “Z98,1” command immediately after turning on the printer, you can identify the selections that are stored in the NV memory of the Board.

If a coax host is not available and basic setup selections need to be changed, the Board has the option of a pushbutton setup as defined in Appendix B. This option enables the basic Board features and RPQ options to be selected.

3.5 Restoring Factory Defaults

The factory-default configuration selections can be restored to the NV memory of the Board by either sending a host download command, “98,0,” or by turning on the printer when the coax cable is disconnected and performing the following steps (wait for the printer to signal READY):

1. Press and hold the bottom (PA2) button for more than two seconds and then release it; the red and green LEDs begin to blink alternately.
2. Press and release the top (PA1) button; only the green LED blinks.

3. Press and release the bottom (PA2) button; the red LED blinks twice.
4. The sequence is complete. Factory defaults are restored to the NV memory of the Board. Turn the printer off and then back on.

4. Operation

The EP Coax Adapter Board II features three methods for accessing the special features of Epson printers not normally available in the IBM printer being emulated:

- Command Pass-Thru
- Custom User Strings
- SCS Mode Transparent Data

Each of these methods is described in the following sections.

4.1 Command Pass-Thru

The Command Pass-Thru (hex transparency) feature allows you to access all of the built-in features of the Epson printer even if these features cannot be accessed by the IBM host software. Command Pass-Thru provides a method of placing printer-specific command sequences into the data sent to the printer from the host. The Board recognizes these special sequences and “passes the command through” to the printer. This feature lets the programmer access all of the Epson features, such as color printing, superscripts, and subscripts.

Command Pass-Thru is accomplished by converting the printer command sequence into a series of two-digit hexadecimal values. For example, an “escape” has a decimal value of 27 and a hexadecimal value of 1B. In Command Pass-Thru, an escape is the character “1” followed by the character “B”. To allow the Board to recognize the sequence, it is preceded by a “delimiter” sequence consisting of an ampersand (&), and a percent (%). Several commands may be contained within the enclosing &% pairs. Once the first &% is detected, the Board passes hexadecimal data to the printer until it receives the next &% or a character is received that is not in the hexadecimal range of 0 to 9 or A to F (uppercase letters only).

You have the option of selecting a different delimiter sequence using setup Command 40 (see **Appendix A**).

For example: In order to highlight a passage in a document, you may wish to use an Epson printer command such as the emphasized mode. The printer command sequence for emphasized printing listed in your Epson printer’s manual is “ESC E” or “1B 45” in hex, to begin emphasized print, and “ESC F” or “1B 46” in hex to end emphasized print.

At the point in the document where emphasized printing is desired, the sequence **&%1B45&%** should appear. When you want to cancel emphasized printing, insert the sequence **&%1B46&%**. If the document is viewed on a

CRT terminal, these characters are displayed. During printing these command sequences only start and stop emphasized mode; they do not appear on the paper and do not take up any space.

RULES FOR COMMAND PASS-THRU

- Command Pass-Thru must begin with an `&%` or the alternate delimiter characters specified in Command 40.
- Hexadecimal values must be used in the command. These values represent ASCII data, which is understood by the Epson printer.
- Valid character for hex codes are 0-9 and A-F (uppercase letters only).
- No spaces are allowed in the command between the delimiter sequence `&%` and the first hexadecimal value.
- A single space is permitted, but not required, to separate the pairs of hexadecimal characters (the space will help you interpret the hex codes).
- If an error in formatting the command sequence occurs, the Board resumes printing at the point in the sequence where the error occurs.
- The data included in a Command Pass-Thru string can span print buffers. This allows for transmission of long strings of hexadecimal data.
- During Command Pass-Thru, the Board ignores control codes (NL, LF, CR, and FF) but honors the EM code.

4.2 Custom User Strings

Host download Command 55 (Appendix A) lets you permanently define six custom user strings that are frequently used (for example, a special font selection). The custom user string is activated by putting the delimiter (`&%`), a capital letter U, and the number of the desired custom user string in the text of a page—for example, `&%U3`. The custom user strings can be any combination of text or special commands for the printer, especially those that are often used.

4.3 SCS Mode Transparent Data

SCS transparent mode (SCS TRN code 35) provides a method for transparent data transmission when operating in LU1 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 (such as control characters) are converted to hyphens. Data is translated to ASCII with undefined characters printed as hyphens. The EP Coax Adapter Board II offers a configurable option to emulate the IBM 3287 or to pass the data without translation. Refer to Appendix A, Command 35.

Another method of transparent data transmission is the Xerox® defined SCS TRN Code 36. Generally accepted for use in laser-printer applications, this method is the same as the coax interface non-translate method above. Rules for control-code sequences are the same for SCS Code 36 as for Code 35.

4.4 Alternate Host (PC) Auto Parallel Sharing

WARNING

The printer's full-size 36-pin parallel connector must not be used. The supplied port cover must be kept on this port.

The Board has a mini Centronics parallel connector that enables it to automatically share the printer between the 3270 host and an alternate host (usually a personal computer). The Board periodically checks the 3270 host and the PC until it finds input data to be printed. The Board continues to print using data from the current source until the input data stops and no additional data is received for the period of time specified in Comannnds 50 and 51. (Factory defaults are 5 seconds for the parallel port and 10 seconds for the 3270 port.) The other source is then checked for the presence of data to be printed. Each host is constantly checked for data when both hosts are idle. The host with the first data will have printing priority until it has printed all of its data and remained idle for the time interval specified in Command 50 or 51.

The Epson printer may have large print buffers, so you might not actually see the printer stop between print jobs, but the Board still pauses for the specified time period without passing data to the printer before changing to the other port. While the 3270 host is active, the parallel port accepts the first parallel byte and then goes busy. This allows the interface to know that parallel data is waiting. Conversely, while the parallel port is printing, the 3270 coax port will receive data and then send a busy signal to the host until the printer is available (the time-out period on the parallel port has expired and no additional data has been received). PC printing longer than 10-20 minutes (depends on host configuration) may cause the 3270 host to drop communication with the printer.

Prior to printing a coax host document, if the previous document comes from the PC-sharing port, the Board sends the coax port initialization string to the printer and restores the printer's format that was last specified by the coax host when switching to coax printing (see **Appendix A**, Command 57). Also, before printing an initial document from the PC-sharing port, the Board sends the user-defined shared port initialization string (**Appendix A**, Command 56). The alternate (PC) host must send the printer all of the necessary formatting instructions and commands for correct printing.

The Board provides a miniature Centronics parallel data input port to allow automatic sharing of the Epson printer between the 3270 host and an alternate (PC) host. The parallel interface was designed to be compatible with popular printer interfaces found on PCs. Table 4-1 gives a description of the parallel interface signals.

Table 4-1. Parallel Interface Specifications.

Signal Pin	Return Pin	Signal	Parallel Cable Pin	Direction	Description
1	19	STROBE	1	IN	Strobe pulse to read data in. Pulse width must be more than 0.5 μ sec at the Board.
2	20	DATA1	2	IN	These signals represent information in bits 1-8 of parallel data, respectively. Each signal is HIGH when data is logical 1 and LOW when it is logical 0.
3	21	DATA2	3	IN	
4	22	DATA3	4	IN	
5	23	DATA4	5	IN	
6	24	DATA5	6	IN	
7	25	DATA6	7	IN	
8	26	DATA7	8	IN	
9	27	DATA8	9	IN	
10	28	ACKNLG	10	OUT	A LOW pulse with a minimum width of 2.7 μ sec. A low indicates that data has been received and that the printer is ready to accept more data.
11	29	BUSY	11	OUT	A HIGH signal indicates that the printer cannot receive data. The signal goes HIGH for each character received.
12	30	PE	12	OUT	HIGH when the printer is out of paper.
13	—	SLCT	13	OUT	This signal goes LOW when the printer is in an error state such as “out of paper” or “off line.”

Table 4-1 (continued). Parallel Interface Specifications.

Signal Pin	Return Pin	Signal	Parallel Cable Pin	Direction	Description
14	—	AUTO FEED	14	IN	THIS SIGNAL IS NOT SUPPORTED BY THE BOARD. (Defined by many printers to add an LF to each CR.) The IBM 3270 protocol does not allow support of this signal.
15	—	NC	—	—	Not used.
16	—	GND	19	—	Logic ground.
17	—	CGND	—	—	Chassis ground.
18	—	NC	—	—	Not used.
19-30	—	GND	21-24	—	Twisted-pair ground returns listed above.
31	—	INIT	16	IN	Defined to reset and clear the printer when LOW; THE RESET AND CLEAR ARE NOT SUPPORTED BY THE BOARD.
32	—	ERROR	15	OUT	This signal goes LOW when the printer is in an error state such as “out of paper” or “off line.”
33	—	GND	25	—	Logic ground.
34	—	NC	—	—	Not used.
35	—	HIGH	—	—	Pulled up to +5V through a 3.3-Kohm resistance.
36	—	SLCTIN	17	—	NOT SUPPORTED.

The mini-parallel connector is a DDK type DAH-36 or equivalent.

The column heading “Direction” refers to the direction of the signal-flow as viewed from the interface.

“Return” denotes the twisted-pair return, to be connected at signal ground level. For the interface wiring, be sure to use twisted-pair cable for each signal and to complete the connection on the return side. The cable should be shielded and connected to the chassis of the host computer and printer.

All interface conditions are based on TTL levels. Both the rise and the fall times of each signal must be less than 0.2 microseconds. Data transfer is carried out by observing the ACKNLG or BUSY signals. Data transfer to the printer occurs only after receipt of the ACKNLG signal or when the BUSY signal is LOW.

Data must be present a minimum of 0.5 microseconds before and after a minimum 0.5-microsecond STROBE pulse. BUSY goes HIGH before the end of the STROBE signal and remains HIGH until the end of the ACKNG pulse of minimum 4 microseconds.

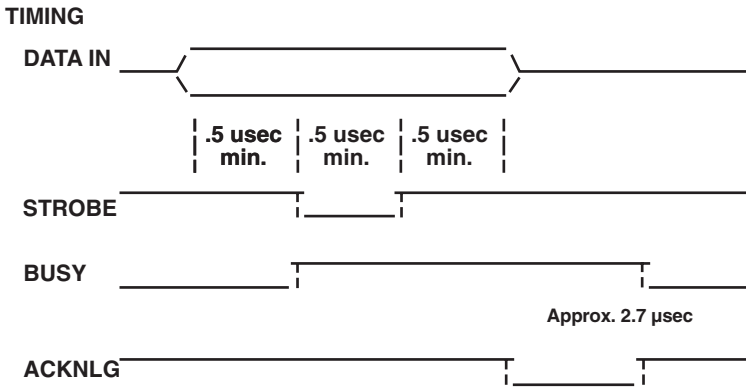


Figure 4-1. Paths of the Timing Signals.

Appendix A: Host Download Configuration Commands

This appendix defines the configuration commands that may be used to select setup values for the printer interface. These commands may be sent to the printer as part of a normal 3270 coax print job or hardcopy print screen, or they can also be sent to the Board via the parallel PC-sharing port. The Board identifies the commands and obeys their instructions without printing the text of the command. If the text of a command prints, check that the format of the command is correct.

The format for all configuration commands is:

&%Z[Command Number],[Value and/or data]

The &% characters are defined as the default delimiter characters, and the upper case Z is the default command ID character. It is possible to specify user-selectable alternate values for the delimiter characters (see Command 40). The capital letter Z or other command character (see Command 41) precedes all command numbers.

SENDING MULTIPLE COMMANDS

Multiple commands can be chained together by using a forward slash (\) or a back slash (/) to separate the commands (no spaces are allowed). The command string must start with "&%" and be terminated by one space or a control character (such as LF, NL, CR, or FF). The terminating space or control character is not sent to the printer, but the host download commands are sent to the printer and take effect immediately on the page where they are located. The following string is an example of chaining multiple commands together:

&%Zx,y/Zxx,y/Zx,yy, (followed by a space or control character), where x= the command number and y= the option setting of that command.

Commands are used by the Board and sent to the printer immediately upon receipt from the host. Commands chained together with slashes and located on the first line and first position take effect immediately on the page where they are located. Otherwise, they take effect on the next page.

The asterisk (*) character identifies factory-default selections.

All commands have immediate effect unless noted otherwise.

For a command to be permanently stored in non-volatile memory, the command **"/Z99,0"** must be used.

An error causes the Board to exit download mode and print from the point of error.

The RPQs are active only in LU3, non-SCS mode.

Command 1: Buffer Size

This command selects the logical default buffer size.

Value	Description
1	960 characters
2*	1920 characters
3	2560 characters
4	3440 characters
5	3564 characters

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

This command, along with the “Z99,0” command, changes the selection for logical buffer size in the non-volatile memory of the Board. The logical buffer size is not reported to the host until the next time the unit is powered up. The physical buffer size is permanently set at 4K.

Command 2: Lines Per Inch

This command selects the default lines per inch (LPI).

Value	Description
3	3 LPI
4	4 LPI
6*	6 LPI
8	8 LPI

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

This default emulates the front-panel selection on an IBM printer. The IBM host can control the LPI unless Command 36 is used to select override of host LPI commands.

Command 3: Characters Per Inch

This command selects the default characters per inch (CPI).

Value	Description
10*	10 CPI
12	12 CPI
15	15 CPI
16	16.7 CPI

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

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

Command 4: Line Spacing

This command selects the default line spacing.

Value	Description
1*	Single Space
2	Double Space

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

Command 5: Form Length

This command selects the default form length (MPL, Maximum Print Lines).

Value	Description
000	No Form Length Control
001	Set Form Length in to number of lines
254	
066*	(Factory Default)

Example: **&%Z5,72** sets form length to 72 lines for A4 paper.

This default emulates the front-panel selection on an IBM printer. The 000 value enables the front-panel selection on the printer to control the forms length when Command 25 is set to value 0.

Command 6: Maximum Print Position

This command selects the current and default maximum print position—the maximum number of characters that can be printed on each line.

Value	Description
000	Infinite Line Length
001	Set MPP in number of to characters
254	
132*	(Factory Default)

Example: **&%Z6,80** sets MPP to 80 characters.

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

Command 7: Print Case

This command selects the default print case.

Value	Description
0	Mono case
1*	Dual case

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

- **Mono case** — upper case characters only
- **Dual case** — upper and lower case characters

This default affects only LU3 printing.

Command 8: LU1 Language

This command selects the default LU1 language.

Value	Description
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	French (alt.)
13	Austrian/German (alt.)
14	International Set 5
15	Italian
16	Japanese (English)
17	French (alt.)
19	Spanish
20	Spanish (alt.)
21	Spanish Speaking
22	English (U.K.)
23	Norwegian
24	Swedish
25	EBCDIC (alt.)
26	Norwegian (alt.)
27	Swedish (alt.)
28	Portuguese
29	Canadian (Bilingual)
30	French AZERTY (105 char.)
31	Swiss German
32	Swiss French

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

This command, along with command “Z99,0” changes the default LU1 language selection in the non-volatile memory of the Board.

The number of the command value should agree with the language number used in IBM CU con-figuration sequence number 121.

Command 9: Font Select

This command selects the Epson default font.

Value	Description
1*	Draft Print Quality
2	Roman, NLQ
3	Sans Serif, NLQ
4	Courier, NLQ (font cartridge required)
5	Prestige, NLQ (font cartridge required)
6	Script, NLQ (font cartridge required)
7	OCR-B, NLQ (font cartridge required)
8	OCR-A, NLQ (font cartridge required)
9	Orator, NLQ (font cartridge required)
10	Orator-S, NLQ (font cartridge required)
11	Script C, NLQ (font cartridge required)

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

Command 12: Form Feed Before Local Screen Copy

This command specifies whether a form feed is performed before doing local screen hard copy.

Value	Description
0*	No form feed before local screen hard copy
1	Form feed performed before local screen hard copy

Example: `&%Z12,1` performs a form feed before local screen copy.

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

Command 13: Form Feed After Local Screen Copy

This command specifies whether a form feed is performed after a local screen hard copy.

Value	Description
0*	No form feed after local screen hard copy
1	Form feed performed after local screen hard copy

Example: `&%Z13,1` performs a form feed after local screen copy.

To use this function, the RPQ should be:

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

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

Command 14: LU3 Print Image (Non-SCS Mode)

This command selects null line suppression or true screen image in LU3 printing mode.

Value	Description
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

Example: &%Z14,3 prints true screen image in non-SCS print and local copy. To use this function, the RPQ should be:

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

This command is available in non-SCS operation only. Values 0 and 1 are functional only from CUT terminals.

Command 15: CR at MPP + 1

This command sets the printer in accordance with the RPQ installed in the control unit.

Value	Description
0*	First print position (PP) of next line
1	First PP of current line

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

To use this function, the RPQ should be:

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

This command is available only in non-SCS operation.

Command 16: NL at MPP + 1

This command sets the printer in accordance with the RPQ installed in the control unit.

Value	Description
0*	First PP of current line + 2 lines
1	First PP of next line

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

To use this function, the RPQ should be:

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

This command is available only in non-SCS operation.

Command 17: Valid FF Followed By Data

This command sets the printer in accordance with the RPQ installed in the control unit.

Value	Description
0*	Second PP of first line on next form
1	First PP of first line on next form

Example: &%Z17,1 performs first PP of first line on next form as the next PP when a valid FF (positioned anywhere but the end of an IBM print buffer) is received.

For the value 1 selection, the RPQ should be:

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

This command is available only in non-SCS operation.

Command 18: Valid FF At End Of Print Buffer

This command sets the printer in accordance with the RPQ installed in the control unit.

Value	Description
0	First PP of second line on next form
1*	First PP of first line on next form

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.

To use this function, the RPQ should be:

```
IBM 3268 RPQ SC9504
IBM 3287 RPQ SC3749
IBM 4214 OPT 17=S
```

This command is available only in non-SCS operation.

Command 19: FF Valid Location

This command sets the printer in accordance with the RPQ installed in the control unit.

Value	Description
--------------	--------------------

- | | |
|----|--|
| 0* | FF is valid only at the first print position or at position MPP+1. |
| 1 | FF is valid anywhere it occurs. |

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

To use this function, the RPQ should be:

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

This command is available only in non-SCS operation.

Command 20: Automatic Function At End Of Job

This command sets the printer in accordance with the RPQ installed in the control unit.

Value	Description
--------------	--------------------

- | | |
|----|--|
| 0* | NL is automatically executed after the buffer is completed (unless an FF, NL, or CR was last in the buffer). |
| 1 | FF is automatically executed after the print buffer is completed (unless an FF was last in the buffer). |

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

To use this function, the RPQ should be:

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

This command is available only in non-SCS operation.

Do not press the Form Feed or Line Feed buttons on the front of the printer. This causes the host and printer to lose synchronization of the paper position. This command reduces the need to advance the paper.

Command 25: Form Feed Usage

This command enables a form feed from the host system to be converted to the required number of line feeds (beneficial when form length is controlled by the Board).

Value	Description
-------	-------------

- | | |
|----|--|
| 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 |

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

Command 26: Suppress Empty Forms

This command can be used to suppress blank printout pages caused by form feed commands that occur at the top of a form.

Value	Description
-------	-------------

- | | |
|----|---------------------------------|
| 0* | No, do not suppress empty forms |
| 1 | Yes, suppress empty forms |

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

If selected, the Board 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.

Command 27: FF After Time Elapse

This command sends a form-feed if unprinted data remains in the print buffer for the specified coax-port timeout interval in Command 51.

Value	Description
-------	-------------

- | | |
|----|-----------------------------|
| 0* | No extra FF is sent |
| 1 | Send FF after timeout value |

Example: `&%Z27,1` sends FF after time delay selected by Command 51 (default = 10 sec.) when unprinted data remains in the print buffer.

The timeout value is the same as the timeout used to switch between host and alternate host printer sharing (see Command 51).

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

In duplex printing, the last page is ejected.

Command 30: Override of Formatting Commands

This command enables the printer's front panel selections to control how a job is printed.

Value Description

- 0* Normal operation
- 1 Formatting commands to the printer are not sent

Example: ℓ30,1 prevents the sending of formatting commands from the Board to the printer.

This command overrides the Board's default selections for CPI, LPI and font. It also has no effect on the special features: Command Pass-Thru, User Strings, Initialization Strings, and coax host RPQ's.

Command 31: Truncate/Wrap Select

This command selects if the Board truncates or wraps the text if the maximum print position is exceeded.

Value Description

- 0* Allow text to print on next line when the maximum print position is exceeded
- 1 Truncate text beyond the maximum print position

Example: ℓ31,1 causes text that exceeds the maximum print position to be lost.

Command 34: Intervention Required (IR) Timeout

This command 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 Send IR after the value
- to times 5 seconds after the
- 255 printer error occurs
- 120* Default, send IR after ten
- minutes

Example: ℓ34, 036 sets IR time interval to 3 minutes.

Command 35: Program Attention (PA) Response

The IBM host software can send a program attention (PA) request to the printer, causing the printer to stop printing until a PA1 or PA2 response from the printer is sent to the host software. The Board can be set to either automatically return a PA1 response upon receiving a PA request, or stop and

wait (with the red LED on) until the operator presses one of the two pushbuttons on the Board.

Value	Description
-------	-------------

- | | |
|----|---|
| 0* | Printer stops and waits for operator to press a PA1 or PA2 pushbutton before sending the PA response to the host. |
| 1 | Board automatically responds with a PA1 if a PA request is received from the host. |

Example: &%Z35,1 printer automatically responds with a PA1 response.

This can be used to enable an operator to install special forms, colored paper, legal paper, etc. in the printer before the PA pushbutton is pressed.

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 in LU1 printing.

Value	Description
-------	-------------

- | | |
|----|--|
| 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. |

Example: &%Z36,2 stops LPI or CPI commands from being sent to the printer. The printer prints using the user-specified selections.

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

If this command is set to 2, the SCS pitch (CPI), line density (LPI), SHF (MPP), and SVF (MPL) commands are suppressed (not sent to the printer).

Command 37: Vertical Channel Select (VCS)

This command specifies vertical channel select (VCS) emulation.

Value	Description
-------	-------------

- | | |
|----|------------------------------|
| 0 | 3287 VCS emulation |
| 1* | 3268/4214/4224 VCS emulation |

Example: &%Z37,0 selects 3287 emulation.

This command functions similarly to a vertical tab, except the 3287 does line feed only.

Command 40: Alternate Delimiter Characters

This command specifies two characters in addition to `&%` that can be used for the delimiter character for Command Pass-Thru and Host Download Commands.

Value	Description
-------	-------------

0000	Deletes previously selected alternate characters
XXYY	XX is the ASCII hexa-decimal value of the first character and YY is the ASCII hexadecimal value of the second character.

Example: `&%Z40,253F` specifies the `%?` characters as the alternate delimiter characters. The ASCII hex value of “%” is 25, and the ASCII hex value of “?” is 3F.

Command 41: Command ID Character

This command specifies the character that can be used for the command identifier (in place of Z) which follows the lead-in characters.

Value	Description
-------	-------------

5A*	Makes Z the command character
ZZ	ZZ is the ASCII hex value of the command ID character

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

The character selected must not be 0 through 9 or A through F (valid hex values), or L, P, or U.

Command 42: Start and Stop Buffer Hex Dump

Upon receipt of a start command, the Board, 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 buffer hex dump
2	Stop buffer hex dump

Example: `&%Z42,1` starts buffer hex dump printing. `&%Z42,2` stops buffer hex dump printing.

This command enables you to print only the section of the document that is in question in buffer hex dump format. Hex printing starts with the buffer following the start command and stops with the buffer following the stop command.

This is an alternative to pressing both pushbuttons on the Board and holding them for more than 2 seconds to activate a buffer hex dump.

Command 45: SCS TRN Translate

This command specifies how transparent data sent using SCS Code 35 is handled.

Value	Description
0	Binary transparent
1*	Emulate IBM 3287 printer

Example: &%Z45,0 causes all SCS Code 35 data to be sent to the printer as binary codes without translation.

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

Command 50: Parallel Port Timeout

This command selects the time interval that the Board waits for receipt of additional data from the alternate (PC) host before automatically switching to check for data from the coax host.

Value	Description
01	Time interval in number of seconds
60	
5*	Factory default is 5 seconds

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

The Board sends a reset command to the printer and restores the coax host-defined format commands (LPI, CPI, MPP, and MPL) 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 lpt1:,,p” (in the case of an LPT1 printer) in DOS.

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 your printer’s IES timeout period is less than the Command 50 timeout setting.

Command 51: Coax Port Timeout

This command selects the time interval that the Board waits for receipts of additional data from the coax host before automatically switching to check for data from the alternate (PC) host.

Value	Description
-------	-------------

- | | |
|-----|--|
| 00 | The Board never checks for parallel-port data (parallel shared port is disabled) |
| 01 | Time interval in number |
| to | of seconds |
| 60 | |
| 10* | Factory default is 10 seconds |

Example: `&%Z51,05` sets the time interval to 5 seconds.

The alternate (PC) 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 your printer's IES timeout period is less than the Command 51 timeout setting.

Command 55: Custom User Strings

This command lets you define up to six custom user strings, of up to 25 bytes each, which are stored in the memory of the Board and sent to the printer whenever the two-letter delimiter, letter U, and number of the string appears in the text of the document—for example, `&%U3`.

Value	Description
-------	-------------

- | | |
|----|---|
| 0 | Following the value |
| to | number, insert a |
| 5 | parenthesis followed by the ASCII hex bytes included in the user string, and then a parenthesis to end. |

Examples: `&%Z55,3(1B01)` defines the `&%U3` custom user string to send an “ESC and SOH” (1B and 01 hex) to the printer. This is the Epson double-width, one line, ON command.

`&%Z55,4(0F)` defines the `&%U4` custom command to send “SI” (shift in, 0F hex) to the printer wherever the `&%U4` command appears in the text. This turns ON the Epson condensed printing.

`&%Z55,5(12)` defines the `&%U5` custom command to send “DC2” (Device Control 2, 12 hex) to the printer. This is the Epson condensed printing OFF command.

`&%Z55,1()` deletes from NV memory any hex string that had been previously defined for the `&%U1` custom command.

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 before the data.

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

To delete a custom user string from the NV memory, simply put nothing between the parentheses.

Command 56: Shared Port Initialization String

This command lets you define an initialization string of up to 25 bytes, which is stored in the memory of the Board and sent to the printer at the beginning of any printing received from the alternate shared port.

Value Description

- | | |
|---|---|
| 1 | Following the value number, insert a parenthesis followed by the hex bytes included in the command string, an a parenthesis to end. |
|---|---|

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

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 before the data 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.

Command 57: Coax Port Initialization String

This command lets you define an initialization string of up to 25 bytes. This string is stored in the memory of the Board and is sent to initialize the printer for coax-port printing after printing from the shared parallel port has occurred. The Board also, after the initialization string, sends scommands to restore the default or host-defined page format parameters before to coax port printing.

Value Description

- 1 Following the value number, insert a parenthesis, followed by the hex bytes included in the command string, and then a parenthesis to end.

Example: &%Z57,1() deletes from NV memory any hex string that had previously been defined for the coax port initialization string.

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

The coax-port initialization string is sent to the printer only 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 entire old string is automatically erased.

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

Command 60: ASCII Printer Protocol

This command specifies the type of ASCII printer protocol instructions that the Board will use when converting from the 3270 coax cable commands.

Value Description

- 6 Epson ESC/P (24-pin)
- 7 Epson true 15 CPI (9-pin)
- 8* Epson DFX 5000/8000 (9-pin)

Example: &%Z60,6 selects use of the Epson LQ (24-pin) type printers.

A change in this command is not active until it is saved to NV memory with the command &%Z99,0, and the unit is turned off and back on.

The DFX 5000/8000 (9-pin) printers are able to print 10 and 16.7 CPI in draft mode and only 10 CPI in NLQ mode. If a true 15-CPI pitch is required for forms, then select value 7, but the 15-CPI printing speed will be slow.

Command 65: Character Set Selection

This command lets you make a special selection of the ASCII character set that is used in the conversion from EBCDIC (SCS/LU1) or DSC (LU3) to ASCII. This is the character set that the printer uses in printing. It must be selected at the printer by using the front panel or DOP switches of the printer. For Epson FX, old LQ, and DFX type printers, there is only one selection.

Value	Description
-------	-------------

3*	Epson graphics (PC Set 2) character set
----	---

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.

Command 70: Overwrite EBCDIC (SCS/LU1) Translation Table

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

Value	Description
-------	-------------

XX	The hex location in the EBCDIC table that sends the following ASCII hex sequence
YY	The ASCII hex sequence that is overwritten in the EBCDIC translation table

Example: **&%Z70,7B,40/Z99,0** overwrites the ASCII hex output for the EBCDIC 7B (a # symbol) to send a 40 ASCII hex, which will print a @ symbol instead. The command is followed by a command **Z99,0** which stores the active setup selections in non-volatile memory.

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 canceled if an ASCII hex sequence of 00 is specified.

Command **Z99,0** must be used to store the substitutions in NV 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 Board's self-test summary.

Command 71: Overwrite DSC (LU3) Translation Table

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

This command works the same way as Command 70, except that 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 Board self-test summary.

Command 98: Restore Defaults or Print Configuration

This command restores the factory- default configuration selections, prints out a copy of the active configuration, or restores the NV memory selections to the active configuration status.

Value	Description
--------------	--------------------

- | | |
|---|--|
| 0 | Restores the factory defaults to the NV memory of the Board |
| 1 | Prints out the active setup selections for review |
| 2 | Restores the setup selections stored in the NV memory to active status |

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

The active setup selections are the same as the NV memory selections if no host download commands have been sent to the printer since it was turned on.

Value 2 is a quick way, after having printed a document using special setup selections, to return the Board to the normal selections. Put a **&%Z98,2** at the end of the special document to restore the standard setup parameters for the next coax user of the printer.

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

Command 99: Store Configuration in NV Memory

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

Value	Description
--------------	--------------------

- | | |
|---|---|
| 0 | To complete the command format, the value 0 must be used. |
|---|---|

Example: **&%Z99,0** stores the currently active setup selections in the NV memory of the Board.

Only host download selections that have been followed by a command Z99,0 will be stored in NV memory and restored to the active setup when the printer is turned on.

Use command Z99,0 only when the host download selection needs to be permanently stored in the memory of the Board.

Appendix B: Pushbutton Setup

Pushbutton (Yes/No) setup is another way to select the basic configuration selections for the printer emulation. Selections can also be changed by the Host Download Configuration Commands as specified in Appendix A.

To start pushbutton setup, perform a self-test (see **Section 3.3**). At the end of the self-test printout, the last line of printing will have the question: "Do you want to do pushbutton set up?" Press the PA1 pushbutton to answer the question "Yes." Press the PA2 pushbutton to answer the question "No," or simply turn off the printer to discontinue pushbutton setup.

NOTE

For reference, your Yes or No response is printed before the next option statement is printed. Some printers may require you to line-feed the paper to a position where the printed text can be read. On a laser printer, it is necessary to form-feed a page to read the printed output.

Here is a detailed example of the Pushbutton Setup printout:

```

1920 =   Logical Buffer Size
         Do you want this changed?   (Yes/No)   Yes

2560 =   Logical Buffer Size
         Do you want this changed?   (Yes/No)   Yes

3564 =   Logical Buffer Size
         Do you want this changed?   (Yes/No)   Yes

3440 =   Logical Buffer Size
         Do you want this changed?   (Yes/No)   Yes

960 =    Logical Buffer Size
         Do you want this changed?   (Yes/No)   Yes

```

1920 = Logical Buffer ... (Sequence repeats until a **No** response is given)

A **Yes** response causes the next selection in the option group to be substituted into the printed statement with a similar **Yes/No** response requested. When the **No** button is pushed, the current configuration selection remains and the selection jumps to the next group of configuration-setup options. The selections are grouped together with periodic opportunities to end pushbutton setup provided at the end of each group.

Following is the summary list of the pushbutton setup option groups that are used to select the basic configuration. The underlined segment of each statement is the portion that changes.

*Epson ESC/P dot matrix protocol active (See Command 60)

Do you want this changed? (Yes/No)

Alternate Selections:

- * HP® LaserJet® PCL®
- * Epson ESC/P dot-matrix

*1920 = Logical Buffer Size (See Command 1)

Do you want this changed? (Yes/No)

Alternate Selections:

- * 2560
- * 3564
- * 3440
- * 960
- * 1920

* 6 = Default LPI (See Command 2)

Do you want this changed? (Yes/No)

Alternate Selections:

- * 8
- * 3
- * 4
- * 6

* 10 = Default CPI (See Command 3)

Do you want this changed? (Yes/No)

Alternate Selections:

- * 12
- * 15
- * 16.7
- * 10

* Single (6 or 8 LPI) = Default Spacing (See Command 4)

Do you want this changed? (Yes/No)

Alternate Selections:

- * Double (3 or 4 LPI)
- * Single (6 or 8 LPI)

* 66 = MPL (See Command 5)

Do you want this changed? (Yes/No)

Alternate Selections:

- * 72
- * 84
- * 66

EP COAX ADAPTER BOARD II

*132 = Default MPP

(See Command 6)

Do you want this changed? (Yes/No)

Alternate Selections:

- * 198
- * 255
- * Infinite
- * 80
- * 132

*Dual Case = Default Print Case

(See Command 7)

Do you want this changed? (Yes/No)

Alternate Selections:

- * Mono
- * Dual

*English (U.S.) = Default Language

(See Command 8)

Do you want this changed? (Yes/No)

Alternate Selections:

- * Austrian/German
- * Belgian
- * Brazilian
- * Canadian/French
- * Danish/Norwegian
- * Danish/Norwegian (alt.)
- * Finnish/Swedish
- * Finnish/Swedish (alt.)
- * French
- * Austrian/German (alt.)
- * International
- * Italian
- * Japanese (English)
- * Spanish
- * Spanish (alt.)
- * Spanish Speaking
- * English (U.K.)
- * Portuguese
- * English (U.S.)

Do you want to END? (Yes/No)

NO response continues with following setup selections.

YES response prints: Save current settings? (Yes/No)

YES response prints: Selections stored, turn off unit.

*No FF before local screen hard copy

(See Command 12)

Do you want this changed? (Yes/No)

Alternate Selections:

- * FF
- * No FF

*No FF after local screen hard copy (See Command 13)

Do you want this changed? (Yes/No)

Alternate Selections:

- * FF
- * No FF

*LU3 and Local Copy Null line suppression (See Command 14)

Do you want this changed? (Yes/No)

Alternate Selections:

- * LU3
- * Local Copy
- * NO
- * LU3 and Local Copy

*Next Line first PP, for CR at MPP + 1 (See Command 15)

Do you want this changed? (Yes/No)

Alternate Selections:

- * Current Line
- * Next Line

*Current Line + 2 is next PP for NL at MPP + 1 (See Command 16)

Do you want this changed? (Yes/No)

Alternate Selections:

- * Next Line
- * Current Line + 2

*2nd PP of line 1 on next form, for FF (See Command 17)

Do you want this changed? (Yes/No)

Alternate Selections:

- * 1st PP
- * 2nd PP

*Line 1 first PP of next form, for valid FF at EOB (See Command 18)

Do you want this changed? (Yes/No)

Alternate Selections:

- * Line 2
- * Line 1

*FF valid at 1st PP or MPP + 1 (See Command 19)

Do you want this changed? (Yes/No)

Alternate Selections:

- * FF valid anywhere
- * FF valid at 1st PP or MPP + 1

*NL will be added at EOB if not present (See Command 20)

Do you want this changed? (Yes/No)

Alternate Selections:

- * FF
- * NL

EP COAX ADAPTER BOARD II

Do you wish to end? (Yes/No)

NO response continues with following setup selections.

YES response prints: Save current settings? (Yes/No)

YES response prints: Selection stored, turn off unit.

*Multi LF's used to eject forms

(See Command 25)

Do you want this changed? (Yes/No)

Alternate Selections:

- * FF
- * Multi LF

*Suppress empty forms

(See Command 26)

Do you want this changed? (Yes/No)

Alternate Selections:

- * Do not suppress empty forms
- * Suppress empty forms

*Do Not FF if data in the printer after timeout

(See Command 27)

Do you want this changed? (Yes/No)

Alternate Selections:

- * Do
- * Do not send

*Disable override of formatting commands

(See Command 30)

Do you want this changed? (Yes/No)

Alternate Selections:

- * Enable
- * Disable

*Wrap text beyond MPP

(See Command 31)

Do you want this changed? (Yes/No)

Alternate Selections:

- * Truncate
- * Wrap

*10 min. = IR timeout

(See Command 34)

Do you want this changed? (Yes/No)

Alternate Selections:

- * 20 min.
- * Disabled
- * 5 sec.
- * 30 sec.
- * 60 sec.
- * 3 min.
- * 10 min.

*Manual PA1/2 response *(See Command 35)*

Do you want this changed? (Yes/No)

Alternate Selections:

- * Auto PA1
- * Manual PA1/2

*No IBM control codes suppressed *(See Command 36)*

Do you want this changed? (Yes/No)

Alternate Selections:

- * CPI
- * LPI
- * CPI/LPI
- * Print quality
- * All
- * No

*3268/4224 VCS emulation *(See Command 37)*

Do you want this changed? (Yes/No)

Alternate Selections:

- * 3287
- * 3268/4224

*3287 emulation of SCS Command 35 *(See Command 45)*

Do you want this changed? (Yes/No)

Alternate Selections:

- * Binary transparent data
- * 3287

*5 Seconds for Parallel Port time out *(See Command 50)*

Do you want this changed? (Yes/No)

Alternate Selections:

- * 10
- * 20
- * 30
- * 60
- * 5

*10 Seconds for Coax Port timeout *(See Command 51)*

Do you want this changed? (Yes/No)

Alternate Selections:

- * 20
- * 30
- * 60
- * 5
- * 10

EP COAX ADAPTER BOARD II

Do you want to END? (Yes/No)

NO response returns to first set up selections.

YES response prints: Save current settings? (Yes/No)

YES response prints: Selections stored, turn off unit.

Appendix C: Sample Printouts

EP COAX ADAPTER BOARD II
 Ram OK
 Rom Ok
 Microcode Load - OK

Software Version 1.02

Active Configuration Selections

```

01 Buffer Size (Characters) -----: 2 1920
02 Lines Per Inch (LPI) -----: 6
03 Characters Per Inch (CPI) -----: 10
04 Line Spacing -----: 1 (Single (6 or 8 LPI)
05 Form Length (MPL) -----: 066
06 Maximum Print Position (MPP) -----: 132
07 Print Case -----: 1 Dual
08 LU1 language -----: 01 English (US)
09 Font Select (Matrix) -----: 01 Draft
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 suppression
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
25 Form Feed Usage -----: 0 FF
26 Suppress Empty Forms -----: 0 No
27 Form Feed After Time Elapse -----: 0 No
30 Override of formatting cmds -----: 0 Disable
31 Truncate/Wrap Select -----: 0 Wrap text beyond MPP
34 Interv Required (IR) Time out ---: 120 times 5 seconds
35 Program Attn (PA) Response -----: 0 Manual PA1/2
36 Suppress Host Control Codes -----: 0 No
37 Vertical Channel Select (VCS) ----: 1 3268/4224
40 Alt Delimiter Chars (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 of SCS command 35
50 Parallel Port Time out -----: 05 seconds
51 Coax Port time out -----: 10 seconds
55 Custom User Strings:
   U0:
   U1:
   U2:
   U3:
56 Shared Port Init. String:
   SP:
57 Coax Port Init String:
   CP:
60 ASCII Printer Protocol -----: 2 HP LaserJet PCL-4

```

EP COAX ADAPTER BOARD II

SCS (LU1) EBCDIC to ASCII Translate Table

EBCDIC	40	50	60	70	80	80	A0	B0	C0	D0	E0	F0	456789ABCDEF
0:	20	26	2D	D6	D2	B3	F3	BF	7B	7D	5C	30	&-øø°µ^{ }0
1:	20	C5	2F	DC	61	6A	7E	BB	41	4A	19	31	é/Éaj~-fAJ1
2:	C0	C1	A2	A4	62	6B	73	BC	42	4B	53	32	âêĀĒbksYBKS2
3:	CC	CD	D8	A5	63	6C	74	F2	43	4C	54	33	âêĀĒcly•CLT3
4:	C8	C9	A1	A3	64	6D	75	BE	44	4D	55	34	àèĀĒdmufDMU4
5:	C4	D5	E0	E5	65	6E	76	BD	45	4E	56	35	áíĀĒienv§ENV5
6:	E2	D1	E1	A6	66	6F	77	F4	46	4F	57	36	âîĀĒifow¶FOW6
7:	D4	DD	D0	A7	67	70	78	F7	47	50	58	37	âîĀĒigpx'¼GPX7
8:	B5	D9	B4	E6	68	71	79	F8	48	51	59	38	çìÇĪhqv'¼HQY8
9:	B7	DE	B6	A9	69	72	7A	F5	49	52	5A	39	ñŖÑ`irz'¼IRZ9
A:	5B	5D	7C	3A	FB	F9	B8	5E	2D	31	32	33	ç! :«* [-123
B:	2E	24	2C	23	FD	FA	B9	7C	C2	C3	DF	AE	.\$,#>¿]δúŮŮ
C:	3C	2A	25	40	E4	D7	E3	B0	CE	CF	DA	DB	<*&@øœD öüŮŮ
D:	28	29	5F	27	B2	20	B1	AB	CA	CB	E8	AD	()_`y`Y•öüŮŮ
E:	2B	3B	3E	3D	F0	D3	F1	27	C6	C7	E7	ED	+;>=DÇp'óúŮŮ
F:	21	5E	3F	22	FE	BA	20	5F	EA	EF	E9	FF	^?"± _öÿŮ

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&ãĀĀAaqAQ
1:	00	3D	31	2D	C9	CD	A3	A5	62	72	42	52	=1-èèĒĒbrBR
2:	00	27	32	C2	D9	DD	E6	A7	63	73	43	53	˘2.iiĪicsCS
3:	00	22	33	2C	CA	CE	E8	DA	64	74	44	54	"3,òçŮŮdtDT
4:	00	2F	34	3A	CB	CF	AD	DB	65	75	45	55	/4:ùùŮŮeuEU
5:	00	5C	35	2B	E2	C0	E1	A2	66	76	46	56	\5+ããĀĀfvFV
6:	00	7C	36	5E	EA	C1	E9	A4	67	77	47	57	6^øeŮEgwGW
7:	00	7C	37	B0	EF	D1	59	A6	68	78	48	58	7-ÿiYIhxHX
8:	3E	3F	38	B3	C8	C2	41	DF	69	79	49	59	>?8•ãçŮŮiYIY
9:	3C	21	39	00	C9	C3	45	AE	6A	7A	4A	5A	<!9 èuEUjzJZ
A:	5B	24	DE	5E	C5	C4	45	E0	6B	D7	4B	D3	[§Ŗ^áéĀĒkæKæ
B:	5D	BF	BD	7E	D9	C5	49	DC	6C	D6	4C	D2]ç§-iéĪĪlŮLŮ
C:	29	BB	23	AB	CA	D5	4F	E5	6D	D4	4D	D0)f#"óioĪmĀMĀ
D:	28	BC	40	60	CB	C6	55	E7	6E	B5	4E	B4	(¥@`ùòŮŮncŃç
E:	7D	F2	25	A9	CF	C7	59	ED	6F	3B	4F	3B	}•%~úúYŮo;O;
F:	7B	BA	5F	00	B5	B7	43	B6	70	2A	50	2A	{°_çñCŃp*P*

Hex Print LU1 (SCS Mode)

```

Printer Registers
Addr  0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
0000-00 04 00 00 00 00 00 00 00 00 01 40 15 10 10 00 .....
.....
0010-04 06 00 50 00 39 03 40 00 00 00 00 00 00 00 00 ...&...
.....
0020-00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
.....
*DUP*
0040-00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
.....

```

```

Print Buffer
Addr  0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
0050-2B C1 01 E3 88 89 A2 40 89 A2 40 81 40 A3 85 A2 .A.This is a tes
0060-A3 15 C1 C2 C3 C4 C5 C6 C7 C8 C9 D1 D2 D3 D4 D5 t.ABCDEFGHIJKLMN
0070-D6 D7 D8 D9 E2 E3 E4 E5 E6 E7 E8 E9 40 F1 F2 F3 OPQRSTUVWXYZ 123
0080-F4 F5 F6 F7 F8 F9 F0 15 0C

```

Hex Print LU3 (DSC Mode)

```

Printer Registers
Addr  0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
0000-00 04 00 00 00 00 00 00 00 00 01 40 15 10 10 00 .....ä\
.
0010-00 01 00 50 00 36 03 00 00 00 00 00 00 00 00 00 ...ä.^
.....
0020-00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
.....
*DUP*
0040-00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
.....

```

```

Print Buffer
Addr  0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
0050-B3 87 88 92 10 88 92 10 80 10 93 84 92 93 03 A0 This is a test.
A
0060-A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF B0
ABCDEFGHIJKLMNO P
0070-B1 B2 B3 B4 B5 B6 B7 B8 B9 10 21 22 23 24 25 26 RSTUVWXYZ
123456
0080-27 28 29 20 03 02 7890...

```



© Copyright 1996. Black Box Corporation. All rights reserved.

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