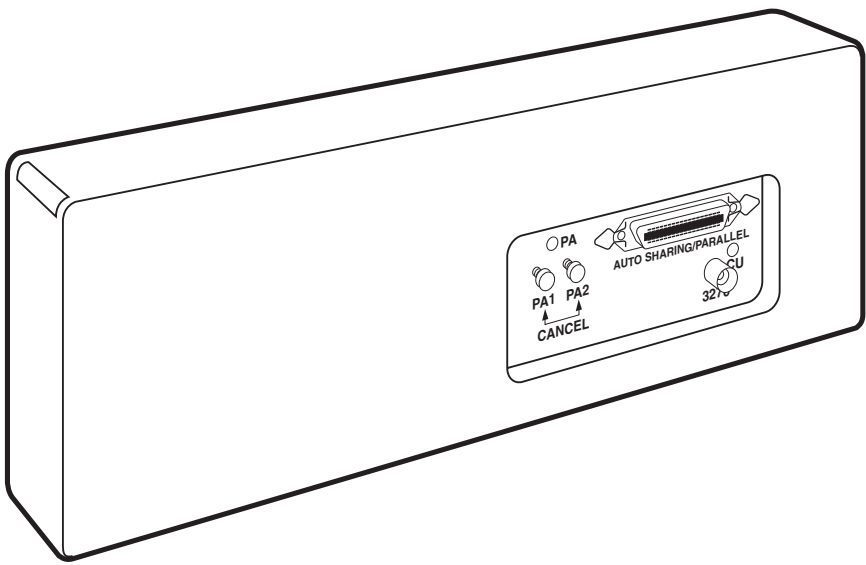




## 2380/2390 Coax Emulation



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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.

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**NORMAS OFICIALES MEXICANAS (NOM)  
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**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.

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# 1. Specifications

- Emulation** — IBM 3287, 3262, 3268, 4214, or 4224 (non-IPDS) printers
- Connectors** — IBM type A coax (BNC) female, Centronics female
- Indicators** — (2) LEDs: (1) red for self-test, cancel job, and Program Attention; (1) green for host communication
- Power** — +5V @ 240mA, supplied by printer
- Size** — 4.1"H x 11.5"W x 1.1"D (10.4 x 29.2 x 2.8 cm)
- Weight**— Less than 3 lb. (1.4 kg)

## 2. Introduction

The 2380/2390 Coax Emulation is a direct-attach coax interface that installs on an IBM® 2380/81 or 2390/91 printer. It emulates an IBM 3287, 3262, 3268, 4214 or 4224 (non-IPDS) printer when attached to an IBM 43XX, 30XX, or 937X host processor or an IBM 3174/3274/3276 Control Unit. The 2380/2390 Coax Emulation attaches to the host or control unit (known as the IBM 3270 system) through a Type A coax connector on the Interface.

An auto-sharing Centronics® parallel port on the 2380/2390 Coax Emulation allows a PC to be attached at the same time as the host. The 2380/2390 Coax Emulation automatically changes between host and PC printing without you having to change cables or switches.

The 2380/2390 Coax Emulation supports LU3 (DSC) and LU1 (SCS) mode printing, user-definable setup selections (including IBM RPQ options) that can be changed and stored in the interface's memory, and the Command Pass-Thru (hex transparency) feature for access to the special features of the printer directly from the host.

When you receive your 2380/2390 Coax Emulation, check the packaging for any damage and notify your supplier immediately if any damage is present. Open the box and remove the items. The package contains the following:

- The 2380/2390 Coax Emulation
- This manual



## 3. Installation

No special training or tools are needed to install the 2380/2390 Coax Emulation. Follow the steps below to install the 2380/2390 Coax Emulation. If you need assistance, contact your supplier.

### **WARNING**

**The 2380/2390 Coax Emulation is static sensitive. Make sure you discharge static by touching a grounded surface before handling the card.**

1. Power on the printer and perform a self-test as described in the printer's manual. Do not continue until the printer passes the self-test.
2. Set the printer to IBM PPDS mode, Code Page 850, character set 2, and parallel port active. Turn off the printer and remove the power cord and printer cable (if attached).
3. Lay the 2380/2390 Coax Emulation on the work surface near the printer's parallel port, with the its connectors facing down. Loosen the two thumbscrews on the 2380/2390 Coax Emulation, and remove the back by lifting the bottom out, then rotating to disengage the two pins at the top.
4. Align the catches on the 2380/2390 Coax Emulation back with the holes in the printer. Tilt the back up, insert the catches into the holes, then rotate the 2380/2390 Coax Emulation back onto the rear of the printer to engage the catches. See Figure 3-1.
5. Attach the 2380/2390 Coax Emulation's parallel connector to the printer's parallel port and secure it with the clip wires (bails). Plug the 2380/2390 Coax Emulation's power connector into the power outlet on the printer.
6. Engage the pins at the top of the 2380/2390 Coax Emulation and rotate the 2380/2390 Coax Emulation so that all cables are inside it. Secure the unit with the two thumbscrews. See Figure 3-1.

Go to Section 3.1.

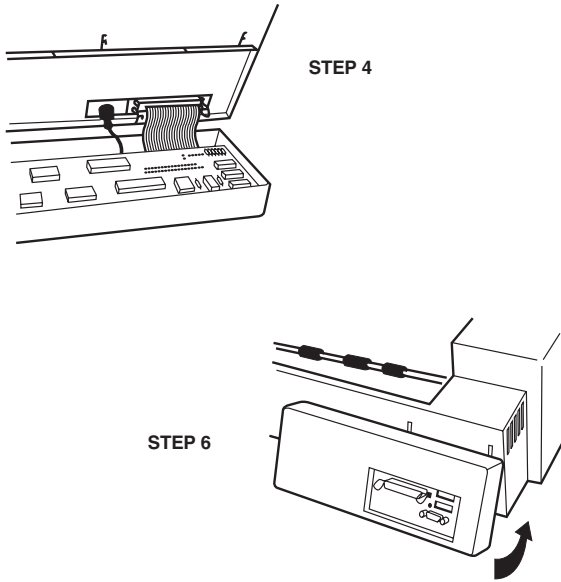


Figure 3-1. Installing the 2380/2390 Coax Emulation.

## Self-Test

Verify proper installation of the 2380/2390 Coax Emulation by performing the self-test. The self-test prints out the current software version, memory condition (RAM and ROM), and the current setup selections for reference. Follow these steps to print the self-test.

1. Disconnect the coax cable from the 2380/2390 Coax Emulation and power on the printer.
2. After the printer is READY, press the PA1 button and hold it for more than two seconds. Release the button and the interface performs a self-test.
3. If the 2380/2390 Coax Emulation is installed properly, a self-test page will print on the printer as shown on the next page.
4. If nothing prints, the 2380/2390 Coax Emulation is not installed properly. A separate test of the unit may be performed: Disconnect the coax cable and the parallel printer sharing cable. Turn on the 2380/2390 Coax Emulation and observe whether the LED displays red briefly (one-half second) to indicate successful completion of the self-tests. If the red LED remains on, the unit failed the self-test.

## 2380/2390 COAX EMULATION

When the self-test is completed successfully, attach the coax cable from the host or controller to the type A 3270 connector on the 2380/2390 Coax Emulation. Attach the parallel cable from the PC to the Auto Sharing/Parallel connector on the 2380/2390 Coax Emulation (if a PC is to be attached), then go to Chapter 4.

## 4. Configuration

After installation and self-test, the 2380/2390 Coax Emulation is ready to operate in most environments. The factory default settings will be satisfactory for many programs and applications. The interface also can be configured to meet the special needs of your application program.

There are two ways to select the configuration:

- Host Download Commands
- Push-Button Setup

Host download commands are commands placed in a print job to select the configuration. Push-button setup allows users who don't have access to the host select the basic configuration with the PA1 and PA2 push-buttons on the interface. A description of the host download commands is in Section 4.1. A description of push-button setup is in Section 4.2.

### 4.1 Host Download Commands

All configuration selections can be changed by placing commands into a host print job or print screen. The commands take effect when the job is sent to the printer. If the command is accepted by the 2380/2390 Coax Emulation, the command will not print, but only changes the line spacing, page length, etc. If the command is printed, then the interface did not recognize the command because of a problem in the command format.

If you want to confirm the active setup selections for the printer, you can print a listing page by either pressing and holding the PA1 button for 2 seconds, or sending the **Z98,1** command to the 2380/2390 Coax Emulation.

Host download commands sent to the 2380/2390 Coax Emulation take effect immediately, and stay in memory until the printer is powered off. If you want the command to be permanent, send the **Z99,0** command to the 2380/2390 Coax Emulation. This stores the selection into the printer's non-volatile memory, so the commands are active each time the printer is powered on.

#### 4.1.1 RESTORING THE FACTORY DEFAULTS

The factory-default configuration can be restored into the non-volatile memory of the 2380/2390 Coax Emulation by either a Host Download Command **Z98,0** or by the following steps:

1. Turn off the printer, disconnect the coax cable from the 2380/2390 Coax Emulation, and turn on the printer.

2. After the printer is READY, press and hold the PA2 button for over two seconds and then release. The red and green LEDs will begin to flash alternately.
3. Press the PA1 button and the green LED will flash.
4. Press the PA2 button and the red LED will flash two times.

When you complete these steps, the factory defaults have been restored to the non-volatile memory of the interface. Turn the printer off, then turn it on to implement the factory defaults. Press the PA1 button for 2 seconds to print out the setup listing to confirm that the factory defaults were restored.

### 4.1.2 COMMAND DESCRIPTIONS

Table 4-1 lists the Host Download Commands used to configure the interface to fit your application needs. A description of each command and how it is used follows the table.

Table 4-1. Host Download Commands.

COMMAND	DESCRIPTION
01	Buffer Size
02	Lines Per Inch
03	Characters Per Inch
04	Line Spacing
05	Form Length
06	Maximum Print Position
07	Print Case
08	LU1 Language
12	Form Feed Before Local Screen Copy
13	Form Feed After Local Screen Copy
14	LU3 Print Image (Non-SCS Mode)
15	CR at MPP+1
16	NL at MPP+1
17	Valid FF Followed by Data
18	Valid FF at End of Job
19	FF Valid Location
20	Automatic Function at End of Job
21	Print Quality (FastDraft)
25	Form Feed Usage
26	Suppress Empty Forms
27	Form Feed After Time Elapse
31	Truncate/Wrap Select
34	Intervention Required (IR) Timeout
35	Program Attention (PA) Response
36	Suppress Host Control Codes
37	Vertical Channel Select (VCS)
40	Alternate Delimiter Chars (hex)
41	Alternate Command ID Char (hex)
42	Start/Stop Buffer Hex Dump
45	SCS TRN Translate
50	Parallel Port Timeout
51	Coax Port Timeout
55	Custom User Strings
56	Shared Port Initialization String
57	Coax Port Initialization String
70	Overwrite EBCDIC Translate Table
71	Overwrite DSC Translate Table
98	Restore Configuration
99	Store Configuration in NV Memory

The host download commands take the format of:

**&%Z'Command Number','Value and/or data''space'**

The **&%** is the delimiter to signal the 2380/2390 Coax Emulation that the information is a command. The uppercase **Z** is the default command ID character. You can select alternate values for both the delimiter characters (see Command 40) and the command character (Command 41). The space signals the end of the command.

Multiple commands can be chained together by using a slash (/) or backslash (\) to separate the commands with no spaces allowed. Each chained command string must be preceded by an **&%** and 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.

For example, to set the characters per inch, line spacing, and form length (commands 3, 4, and 5) in one command string, place **&%Z3,15/Z4,2/Z5,70** followed by a space, into the document. This selects 15 CPI, double spacing, and 70 lines.

### NOTE

The asterisk (\*) identifies the factory-default selection. Commands have immediate effect unless noted otherwise. Any errors cause the 2380/2390 Coax Emulation to ignore the command and continue printing. For a command to be permanently stored in non-volatile memory, the Command Z99,0 must be used. RPQs are only active in LU3 (non-SCS) mode.

#### Command 1, Buffer Size

This command selects the logical default buffer size, and must be stored in the 2380/2390 Coax Emulation's non-volatile memory with the **Z99,0** command. The logical buffer size is only reported to the host after the printer is powered off, then on again. The physical buffer size is permanently set at 4K.

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

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

**Command 2, Lines per Inch**

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

<b>Value</b>	<b>Description</b>
3	3 LPI
4	4 LPI
6*	6 LPI
8	8 LPI

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

**Command 3, Characters per Inch** Selects the default CPI. The host can control CPI unless Command 36 is used to select override of host CPI commands.

<b>Value</b>	<b>Description</b>
0	No default sent to printer
10*	10 CPI
12	12 CPI
15	15 CPI
16	16.7 CPI

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

**Command 4, Line Spacing:**  
Selects the default line spacing.

<b>Value</b>	<b>Description</b>
1 *	Single Space
2	Double Space

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

**Command 5, Form Length:**

Selects the default form length (MPL, Maximum Print Lines). This default emulates the front-panel selection on an IBM printer.

<b>Value</b>	<b>Description</b>
000	Set form length in
to	number of lines.
255	
066*	Factory default

*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. Normal values are 80, 132, or 198 characters. This default emulates the front panel selection on an IBM printer, so MPP and the current position will not be affected by CPI changes. Infinite line length places no limits on the number of characters sent to the printer on a single line.

<b>Value</b>	<b>Description</b>
000	Infinite Line Length
001	Set MPP in number
to	of characters
255	
132*	Factory Default

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

**Command 7, Print Case**

Selects the default print case for LU3 (non-SCS) printing.

<b>Value</b>	<b>Description</b>
0	Mono case
1 *	Dual case

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

**Command 8, LU1 language**

Selects default LU1 language. This command along with command Z99,0 changes the default LU1 language selection in the non-volatile memory of the interface. The command value should match the language number used in the IBM CU configuration sequence number 121.

<b>Value</b>	<b>Description</b>
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)

<b>Value</b>	<b>Description</b>
17	(same as 16) French (alt.)
19	Spanish
20	Spanish (alt.)
21	Spanish Speaking
22	English (U.K.)
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

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

**Command 12, Form feed before local screen dump**

Sends a form feed before each local screen dump. This command only affects the local screen dumps, not the host-initiated local copy printing, and functions only in LU3 (non-SCS) operation.

<b>Value</b>	<b>Description</b>
0*	No Form Feed before local screen dump.
1	Form Feed before local screen dump.

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

**Command 13, Form feed after local screen dump**

Specifies whether a form feed is to be performed after a local screen dump. This command only affects the local screen dumps, not the host-initiated local copy printing, and functions only in LU3 (non-SCS) operation.

<b>Value</b>	<b>Description</b>
0*	No Form Feed after local screen dump.
1	Form Feed after local screen dump.

To use this function, the RPQ should be: IBM 3268 RPQ SC9508, IBM 3287 RPQ MC3750, IBM 4214 OPT 20=3

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

**Command 14, LU3 print image (Non-SCS Mode)**

Selects Null Line Suppression or True Screen Image in LU3 printing mode. Available only in LU3 (non-SCS) operation. Values 0 and 1 are only functional from CUT terminals.

### Value Description

- 0\* Null line suppression in local copy and LU3 (non-SCS) print.
- 1 Null line suppression in LU3 (non-SCS) print and true screen image in local copy.
- 2 True screen image in LU3 (non-SCS) print and null line suppression in local copy.
- 3 True screen image in LU3 (non-SCS) print and true screen image in Local Copy.

To use this function, the RPO should be: IBM 3268 RPQ SC9505, IBM 3287 RPO SC3741, IBM 4214 OPT 18=2

*Example: &%Z14,3* prints true screen image in LU3 (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. Available only in LU3 (non-SCS) operation.

### Value Description

- 0\* 1st PP of next line
- 1 1st PP of current line

To use this function, the RPQ should be: IBM 3268 RPQ SC9501, IBM 3287 RPO S30219, IBM 4214 OPT 15 = 1

*Example: &%Z15,1* prints 1st 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. Available only in LU3 (non-SCS) operation.

### Value Description

- 0\* 1st PP of current line + 2 lines
- 1 1st PP of next line

To use this function, the RPQ should be: IBM 3268 RPQ SC9502, IBM 3287 RPQ S30219, IBM 4214 OPT 15=1

*Example: &%Z16,1* performs 1st 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. Available only in LU3 (non-SCS) operation.

<b>Value</b>	<b>Description</b>
0*	2nd print position of 1st line on next form
1	1st print position of 1st line on next form

For the Value 1 selection, the RPQ would be: IBM 3268 RPQ SC9503, IBM 3287 RPQ N/A, IBM 4214 OPT 16=2

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

**Command 18, Valid FF at end of print buffer:**

Sets the printer in accordance with the RPQ installed in the control unit. Available only in LU3 (non-SCS) operation.

<b>Value</b>	<b>Description</b>
0	1st PP of 2nd line on next form
1*	1st PP of 1st line on next form

To use this function, the RPQ should be: IBM 3268 RPQ SC9504, IBM 3287 RPQ SC3749, IBM 4214 OPT 17=2

*Example: &%Z18,1* performs 1st PP of 1st 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. Available only In LU3 (non-SCS) operation.

<b>Value</b>	<b>Description</b>
0*	FF is valid only at 1st print position or at position MPP + 1.
1	FF is 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

*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. Available only in LU3 (non-SCS) operation.

<b>Value</b>	<b>Description</b>
0*	NL will automatically be executed after the buffer is completed (unless a FF, NL or CR was last in the buffer).
1	FF will automatically be executed after the print buffer is competed (unless a FF was last in the buffer).

To use this function, the RPQ should be: IBM 3268 RPQ SC9507, IBM 3287 RPQ SC3740, IBM 4214 OPT 20 = 2

### NOTE

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

*Example: &96Z20,1* sets the printer to issue an FF automatically at the end of the print buffer.

#### **Command 21, Print Quality (FastDraft):**

Selects the printer's print quality for host data processing output in PPDS Fast Draft or normal draft quality. This command is only available in 10 CPI and 12 CPI, and does not affect NLQ unless value 4 is selected.

Value	Description
0*	The Page Presentation Media (PPM) commands control the quality: DP Quality (01) = Fast-Draft and DP Text Quality (02) = normal draft
1	All DP draft output is printed FastDraft
2	All DP draft output is printed normal draft
3	Value 0 reversed, 01 = normal and 02 = Fast-Draft
4	NLQ

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

#### **Command 25, Form Feed usage:**

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

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:**

Suppress blank pages caused by form feeds at the top of a form. If this command is selected, the interface ignores form feed commands at the top of form. This command effects printing in both LU3 (DSC) and LU1 (SCS) modes. This differs from the IBM 3287, which suppresses form feeds only in LU3 (DSC) mode.

<b>Value</b>	<b>Description</b>
0*	No, do not suppress empty forms
1	Yes, suppress empty forms

*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 time-out selected in Command 51. In most cases, the host application generates a termination FF, and there is no need to change this command.

<b>Value</b>	<b>Description</b>
0*	No extra FF is sent
1	Send FF after time out value

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

**Command 31, Truncate/wrap select:**

The user can select whether the interface truncates or wraps the text if the maximum print position is exceeded.

<b>Value</b>	<b>Description</b>
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 which exceeds the maximum print position to be lost.

**Command 34, Intervention required (IR) timeout:**

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

<b>Value</b>	<b>Description</b>
000	Never send an IR
001	Send IR after value x 5
to	seconds in case of printer
255	error
012*	Default, send IR after one minute

*Example: &%Z34,036* sets IR time interval to 3 minutes.

**Command 35, Program attention (PA) response:**

The host software can send a program attention (PA) request to the printer which causes the printer to stop printing until a PA1 or PA2 response from the printer is sent back to the host. You can either automatically return a PA1 response or stop and wait (with the red LED on) until the operator presses one of the two push-buttons on the interface card. This lets an operator to install special forms, colored paper, etc. into the printer before the PA push-button is pressed.

**Value Description**

- 0\* Printer stops and waits for operator to press a PA1 or PA2 push-button before sending the PA response to the host.

**Value Description**

- 1 Interface automatically responds with a PA1 if a PA request is received from the host.

*Example: &%Z35,1:* Printer will automatically respond with a PA1 response.

**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. If 1 is selected, format documents by sending transparent control codes to the printer using Command Pass-Thru or SCS mode transparent data. The user-specified font ID codes have priority if the CPI of the SCS command matches the CPI of the font ID. If value 2 is selected, the SCS pitch (CPI) and line density (LPI) commands will be suppressed (not sent to the printer). Value 3 causes the printer to print with the user-specified font ID.

**Value Description**

- 0\* Obey all IBM control codes
- 1 Suppress all IBM control codes
- 2 Suppress only LPI and CPI control codes
- 3 Suppress only CPI control codes
- 4 Suppress only LPI control codes
- 5 Suppress print quality specified in the PPM command.

*Example: &%Z36,2:* no LPI or CPI commands will be sent to the printer. The printer will print using its front-panel selections.

**Command 37, Vertical channel select (VCS):**

Specifies vertical channel select (VCS) emulation.

**Value Description**

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

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

**Command 40, Alternate delimiter characters:**

Specifies two characters in addition to &% which can be used for the delimiter characters for Command Pass-Thru and host download commands.

**Value Description**

0000	Deletes previously selected alternate characters.
XXYY	XX is the ASCII Hexadecimal value of the first character and YY is the ASCII Hex 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, Alternate command ID characters:**

Specifies a character (in addition to Z) which can be used for the command identifier following the delimiter characters. The character selected must not be a hex value (0 through 9 or A through F).

**Value Description**

00	Deletes the previously selected alternate characters.
Z	Is the ASCII HEX value of the command ID character.

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

**Command 42, Start and stop buffer hex dump:**

At the start command, the interface sends the next buffer full of host data to the printer as hexadecimal printing. A stop command powering off the printer returns to normal printing. This is an alter-native to pressing and holding both push-buttons on the interface for more than 2 seconds to activate buffer hex dump. This command enables the user to print only the section of the document in question in buffer hex dump format. Hex printing starts with the first buffer full after the start command, and stops with the next buffer full after the stop command.

**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.

**Command 45, SCS TRN translate:**

Specifies how transparent data sent using SCS code 35 is handled. Value 1 causes valid graphic characters to be printed normally (that is, converted from EBCDIC to ASCII) while control codes and invalid graphics are printed as hyphens, and normal page for-matting 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.



Value	Description
0	Binary Transparent
1*	Emulate IBM 3287 Printer

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

### **Command 50, Parallel port time-out:**

Selects the interval that the 2380/2390 Coax Emulation will wait for additional PC data before automatically switching to check for host data. The 2380/2390 Coax Emulation resets the printer and restores the host formatting (for example, LPI, CPI, MPL, MPP) before each host print job. Because the printer is being shared, some PC jobs terminate because the printer appears busy during the timeout. Set the parallel port on the PC to infinite retry using the DOS Mode command. Using a spooling program or the DOS Print command is recommended.

Special modes, CPI, LPI, etc. used for PC printing must be sent to the printer through download command or Command Pass-Thru prior to the PC print job, since the 2380/2390 Coax Emulation restores host formatting commands during each host print job.

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

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

### **Command 51, Coax port timeout:**

Selects the interval that the interface waits for additional host data before automatically switching to check for PC data. PC formatting commands such as CPI, LPI, etc. are cleared from memory and the host formatting commands are restored before each host print job.

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

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

**Command 55, Custom user strings:** Allows a user to define up to six custom user strings, up to 25 bytes each, which are stored in the interface's memory 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
1	number, the user puts a
2	parenthesis followed by the
3	hex bytes included in the
4	user string and a
5	parenthesis to end.

To aid in readability, a single space is allowed between hex bytes but this space will not be 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, input the new values and the old string is automatically erased. To delete a custom user string from the non-volatile memory, simply put nothing between the parentheses.

*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, Shared port initialization string:**

Allows the user to define an initialization string of up to 25 bytes which are stored in the interface’s memory and sent to the printer at the beginning of PC printing. To aid in readability, a single space is allowed between hex bytes but will not be included in the string. The string could specify a special font or other custom command. To change the initialization string from the non-volatile memory, input the new values and the old string is automatically erased. To delete the initialization string from the non-volatile memory, simply put nothing between the parentheses.

Value	Description
1	(Following the value number, the user puts a parenthesis followed by the hex bytes included in the command string and a parenthesis to end.)

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

#### **Command 57, Coax port initialization string:**

Allows the user to define an initialization string of up to 25 bytes which are stored in the memory of the interface and sent to the printer after PC printing. The interface also restores the host page formatting prior to host printing.

Value	Description
1	(Following the value number, the user puts a parenthesis followed by the hex bytes included in the command string and a parenthesis to end.)

To aid in readability, a single space is allowed between hex bytes but will not be included in the string. The coax port initialization string is only sent to the printer on power-up and after PC printing. Host SCS commands and download commands have priority over the initialization string instructions. To change the initialization string, input the new command values and the old string is automatically erased. To delete the initialization string from the non-volatile memory, simply put nothing between the parentheses.

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

### **Command 70, Overwrite EBCDIC (SCS/LU1) translate table:**

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

#### **Value Description**

- XX The EBCDIC character to be changed (in hex).
- YY The substitute ASCII character for the EBCDIC character above.

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. The command **Z99,0** must be used to store the substitutions in non-volatile memory for them to be effective the next time the printer is turned on. The active EBCDIC (SCS/LU1) translate table prints out at the end of the self-test summary.

*Example: &%Z70,7B,40/99,0* prints a 40 ASCII hex (an @ symbol) when the 2380/2390 Coax Emulation receives an EBCDIC 7B (a # symbol). The command is followed by a command **Z99,0** which stores the change in non-volatile memory.

### **Command 71, Overwrite DSC (W3) translate table:**

Custom substitutions defined by this command, and stored in the non-volatile memory, are overwritten into the DSC (W3) to ASCII translate table. This command functions similar to Command 70, except the substitutions are applicable to the DSC (W3) translate table. Refer to the Command 70 instructions. The active DSC (LU3) translate table prints out at the end of the self-test summary.

### **Command 98, Restore defaults or print configuration:**

Restores the factory's default configuration selections, prints a copy of the active configuration selections, or restores the non-volatile memory selections to the active configuration status.

Value	Description
0	Restores the factory defaults.
1	Prints out the active setup selections for review.
2	Restores the setup selections stored in the non-volatile memory to active status.

The active setup selections are the same as the non-volatile memory selections if no host download commands have been sent to the printer. If you have printed a document using temporary host download commands (commands not stored into the non-volatile memory using the **Z99,0** command) value 2 will restore the non-volatile memory selections. Put a **&%Z98,2** at the end of the special document to restore the standard setup for the next user of the printer. The active setup and non-volatile memory setup selections are the same after a command **Z99,0** or a command **Z98,2** has been sent to the printer.

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

#### **Command 99, Store configuration in non-volatile memory:**

This command must be sent after the host download commands to store the commands in the interface's non-volatile memory. Otherwise, configuration commands will be lost whenever the printer is powered off.

Value	Description
0	To complete the command, the value 0 must be used.

Host download selections followed by a Command **Z99,0** are stored in non-volatile memory and are active when the printer is powered 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 non-volatile memory of the interface.

## **4.2 Push-Button Setup**

The push-button setup is another method for selecting the basic configuration. The push-button setup options are similar to the host download commands, except the selections are made by pushing the PA1 or PA2 push-button. During the setup, press the **PA1** button to answer **Yes** to a option choice, and press the **PA2** button to answer **No**.

### **4.2.1 ENTERING PUSH-BUTTON SETUP**

Perform a self-test of the interface as described in Section 3.1. At the end of the self-test, the last line of printing asks, "**Do you want to do push-button setup?**" To continue, complete these steps:

1. Press the **PA1** push button to answer **Yes** and enter the push-button setup. The Yes answer prints, followed by the current choice for the first option.
2. If you don't want the push-button setup, press the **PA2** push-button to answer **No**. The printer will go on-line for normal operation. Powering the printer off and on again instead of pressing the PA2 push-button is the same as answering No.

### 4.2.2 MAKING PUSH-BUTTON SETUP SELECTIONS

The push-button setup options are limited to the basic emulation configuration. Each option has choices that are selected by answering Yes or No to each choice.

After entering the setup, the current choice for an option is printed, followed by the question "**Do you want this changed?**" If you answer No, that choice is selected and the setup continues to the next option; if you answer Yes, the next choice for this option prints. The choices for each option cycle through until you select one by answering No.

As an example, if you want to change the buffer size of the 2380/2390 Coax Emulation, you must do the following:

1. Enter the push-button setup as described above. After you enter the setup, the current choice for the first option, buffer size, prints.

```
1920 = Logical buffer size  
Do you want this changed? (Y/N)
```

2. If you want to select the current choice for the buffer size, answer **No** by pressing the **PA2** button. The setup will save that choice and continue to the next option. If you don't want the current choice for the buffer size, answer **Yes** by pressing the **PA1** button, and the next choice for buffer size prints.

```
2560 = Logical Buffer Size  
Do you want this changed? (Y/N)
```

3. Continue to answer **Yes** with the **PA1** button to each choice for buffer size until the choice you want is printed. Answer **No** with the **PA2** button to the choice you want for buffer size. The setup cycles through the choices for an option as long as the answer is **Yes**, and doesn't continue to the next option until a **No** answer selects a choice.

You can scroll through the options by answering No until the current choice of the option you want to change is printed. This allows you to skip through the options and only change the one that needs to be changed. The setup also asks, "**Do you want to end?**" several times during the setup to allow you to make the selections needed and exit the setup without having to go through all the options. Answer **Yes** to exit and save the setup, or **No** to continue the setup.

At the end of the setup, the question “**Save Current Settings?**” prints. Answer **Yes** to exit the setup and save the settings. A message “**Selections stored, power off unit**” prints. Turn the printer off and then on to return to normal operation with the new selections active. If you answer **No** to this question, the setup begins again at the first option.

Table 4-2 lists each push-button option and the choices for the option. An \* indicates the factory default. Refer to the command number listed for a description of the option and choices in the Section 4.1.2.

**Table 4-2. Push-Button Options.**

<b>OPTION</b>	<b>REFER TO</b>	<b>CHOICES</b>
Buffer Size	Command 1	1920*, 2560, 3440, 3564, 960
Default LPI	Command 2	6*, 8, 4, 3
CPI	Command 3	10*, 12, 15, 16.7
Line Spacing	Command 4	Single*, Double
Form Length—MPL	Command 5	66*, 72, 84
Max. Print Position	Command 6	132*, 198, 255, infinite, 80
Print Case	Command 7	Dual*, Single
Language	Command 8	US English*, Austrian/German, Belgian, Brazillian, Canadian/French, Danish/Norwegian, Finnish/Swedish, French, International, Italian, Japanese (English), Spanish, Spanish Speaking, English (UK), Portuguese
Form feed (FF) before local screen copy	Command 12	No FF*, FF
Form Feed (FF) after local screen copy	Command 13	No FF*, FF
Null line suppression	Command 14	LU3 and local copy*, LU3, Local copy, or No
CR at MPP +1	Command 15	Next line*, Current line
NL at MPP +1	Command 16	Current line + 2*, Next line
Print position after valid FF	Command 17	2nd pp*, 1st pp

**Table 4-2 (continued). Push-Button Options.**

<b>OPTION</b>	<b>REFER TO</b>	<b>CHOICES</b>
Print position after valid FF at end-of-buffer	Command 18	Line 1*, Line 2
FF valid location	Command 19	FF valid at 1st PP or MPP +1, FF valid anywhere
Automatic function at end-of-buffer	Command 20	NL*, FF
Print quality	Command 21	DP=FastDraft, Text = Draft; Fast Draft; Draft; DP = Draft, Text = Fast Draft; NLQ
Form feed usage	Command 25	Multi LF*, FF
Suppress empty forms	Command 26	Suppress empty forms*, Do not suppress empty forms
FF after time-out	Command 27	Do not FF*, Do FF
Truncate/wrap	Command 31	Wrap*, Truncate
Intervention Required (IR) time-out	Command 34	10 min.*, 20 min., 5 sec., 30 sec., 60 sec., 3 min.,
PA1 response	Command 35	Manual PA1/2*, Auto PA1
Suppress IBM control codes	Command 36	No*, CPI, LPI, CPI/LPI, Print Quality All
Vertical Channel Select (VCS)	Command 37	3268/4224*, 3287
SCS Command 35 translation	Command 45	3287*, Binary transparent data
Parallel port timeout	Command 50	5*, 10, 20, 30, 60 (seconds)
Coax port timeout	Command 51	10*, 20, 30, 60 (seconds)

## 5. Operation

### 5.1 Automatic Parallel Sharing

Make certain the PC printer cable is attached as described in Chapter 3. Send a print job to the printer. The printer may continue to print after the PC shows the print job is finished, because of the printer's data buffer. After the buffer is empty, the 2380/2390 Coax Emulation continues to wait for the PC to send data until the time-out has elapsed.

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 once the host job is complete, or if the PC's printer port is set for infinite retry through the DOS Mode (Configure printer) command (described in the DOS manual), the print job continues to wait until the printer receives the data.

### 5.2 Advanced Features

There are three advanced features for accessing special functions of the printers, which are not normally available on the IBM 3287 or 4224 printers. These features are listed below:

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

Each of these features is described in the following sections.

#### 5.2.1 COMMAND PASS-THRU

The Command Pass-Thru (hex transparency) feature allows the user to access all of the built-in features of the printer, even if these features aren't normally available through the host software. Command Pass-Thru provides a method of placing printer specific command sequences into the data sent to the printer. The 2380/2390 Coax Emulation recognizes these special sequences and passes the command through to the printer. The steps on the next page describe how to use Command Pass-Thru.

1. Find the command for the print feature in the printer's manual. For example, ESC E begins bold printing and ESC F ends bold printing.
2. Convert the printer command to hexadecimal. ESC E would be 1B45 (ESC = 1B and E=45) and ESC F would be 1B46.



3. Place the delimiter **&%** (or the custom delimiter as described below) in the document at the place where you want the command to take effect. This signals the start of the printer command. Enter the printer command, then the delimiter again. Spaces are allowed only between the hexadecimal code pairs.
4. Move the cursor to the place in the text where you want the printer command to end. Place the delimiter, followed by the printer command, and then the delimiter again, into the document. For example, enter:

This is a **&%1B45&%bold&%1B 46&%** word.

to print on the printer as:

This is a **bold** word.

### NOTE

**Spaces are not allowed between the delimiter and the hex code. Only numbers or letters A–F are allowed. Errors in the Command Pass-Thru sequence will cause the 2380/2390 Coax Emulation to ignore the command and resume printing at the point the error occurred. Command Pass-Thru may make the horizontal spacing uneven in some documents.**

#### 5.2.2 CUSTOM USER STRINGS

Host download command 55 lets you to define up to six (0-5) custom user strings. A user string can be a font ID, a form feed, or other printer command which is frequently used. Chapter 4 describes how to define the custom user strings.

After the custom user string is defined, the string is activated by placing the delimiter (**&%**), a capital letter **U**, and the number of the desired custom user string into the text of a document. For example, to send a form feed at the end of a print job, enter the hex value for the form feed function (**FF = 0C** in hex) next to the user string number, using command 55.

For this example, use command number 3. When you want to send the form feed at the end of your print, place **&%U3** at the end of the document. Send the document to print. The 2380/2390 Coax Emulation will send the **0C** command to the printer when it encounters the **&%U3** code in the document.

#### 5.2.3 SCS MODE TRANSPARENT DATA

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

A 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. To emulate the characteristics of the IBM 3287, non-print-able characters (i.e., control characters) are converted to hyphens. Data is translated to ASCII, with undefined characters printed as hyphens. This interface offers a configurable option to emulate the IBM 3287 or to pass the data without translation. Refer to command 45, SCS TRN translate.



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