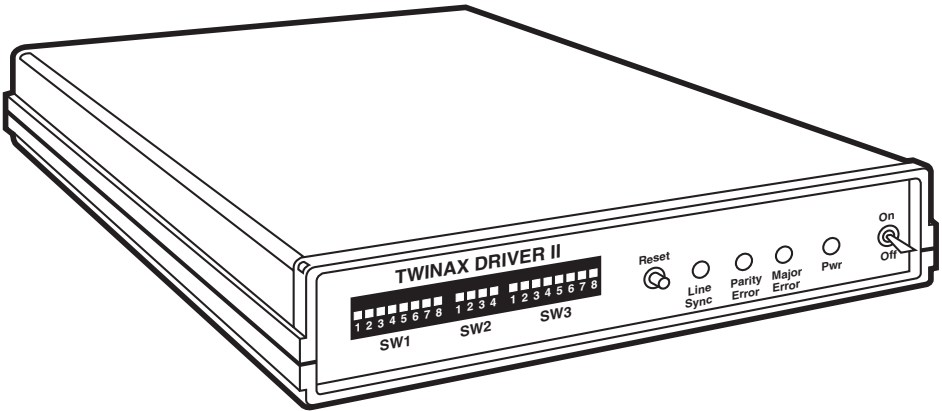




## Twinax Driver II



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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 J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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

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

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

**NORMAS OFICIALES MEXICANAS (NOM)  
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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**

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

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# 1. Specifications

**Printers**

**Supported—** IBM 5256 M1, M2, M3; IBM 5262 (emulating a 5256 M3);  
IBM 5224 M1, M2; IBM 5225 M1, M2, M3, M4;  
IBM 4214 M2; IBM 4210 (emulating a 4214 M2);  
IBM 5219 D01, D02; IBM 4234 M2;  
IBM 3812 (emulating a 5219)

**Indicators —** (4) Front-panel LEDs: (1) Power, (1) Major Error,  
(1) Parity Error, (1) Line Sync

**Connectors—** (1) 36-pin mini Centronics® parallel connector for parallel  
input; (1) DB9 for twinax output, (1) IBM PC standard  
DB25 female for diagnostics

**Power —** 115V AC, 60 Hz, 15 watts

**Size —** 1.5"H x 6.25"W x 9.75"H (3.8 x 15.9 x 24.8 cm)

**Weight —** 2.5 lb. (1.1 kg)

## 2. Introduction

The Twinax Driver II is a reverse protocol converter that lets an ASCII (PC, PC LAN, etc) or UNIX® (RS/6000, HP®, etc.) host send print jobs that are formatted for a Proprinter® or EPSON® FX Printer to an IBM twinax printer. The jobs are sent via a standard Centronics® compatible parallel port.

The Twinax Driver II automatically maintains all required twinax communication with the IBM 4234, 5219, 4214, 5225, 5224, 5256, or 3262 connected printer, and converts the ASCII EPSON FX or Proprinter formatting commands to the IBM printer commands (in accordance with the capabilities of the IBM printer). For example, the IBM 4234, 5219, and 4214 printers will print in 12 CPI if the EPSON or Proprinter commands for 12 CPI are sent to the Twinax Driver II. However, the 12 CPI command is ignored if the Twinax Driver II is attached to IBM 5225, 5224, 5256 or 3262 printers which do not have 12 CPI capability.

The Twinax Driver II will send paper bin commands to IBM 5219 and 4214 printers.

Because the Twinax Driver II accepts all EPSON FX and Proprinter commands (see Appendix A), you won't have to remove the complex EPSON or Proprinter commands before sending your print job. This enables the Twinax Driver II to accept input from the standard UNIX and PC software packages.

Some high-capability word- processing programs (such as WordPerfect®) and desktop publishing programs (such as VENTURA PUBLISHER®) issue extensive page positioning commands which exceed the capabilities of the attached twinax printer. When using these types of programs, the output printing device should be defined as a DOS printer. The program will reduce the complexity of the output and so the job can be printed on the twinax printer.

The Twinax Driver II is very simple to use. All configuration on the twinax side is automatic, because the IBM printer identifies its address and printing capabilities via twinax protocol. On the ASCII side, the parallel port requires no setup. You use DIP switches to select either Proprinter or EPSON input protocol..

The Twinax Driver II supports the following IBM printers:

- 5256 M1, M2, M3
- 5262 (emulating a 5256 M3)
- 5224 M1, M2, M3
- 5225 M1, M2, M3, M4
- 4214 M2
- 4210 (emulating a 4214 M2)
- 5219 D01, D02
- 4234 M2
- 3812 M1 (emulating a 5219)

### **NOTE**

**Compatible third-party twinax printers should function with the Twinax Driver II, but their compliance with IBM twinax specifications cannot be assured.**

When you unpack the Twinax Driver II, check for any damages that may have occurred during shipping. Report any damage to the carrier and to your supplier.

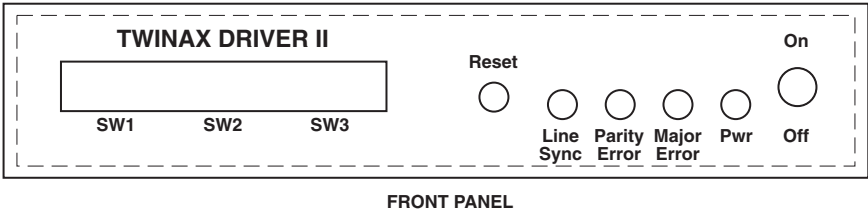
The Twinax Driver II package should contain the following items:

- The Twinax Driver II
- Wall-mount 12 VAC power supply
- Twinax output cable assembly with 9-pin connector
- Parallel input cable with mini 36-pin connector

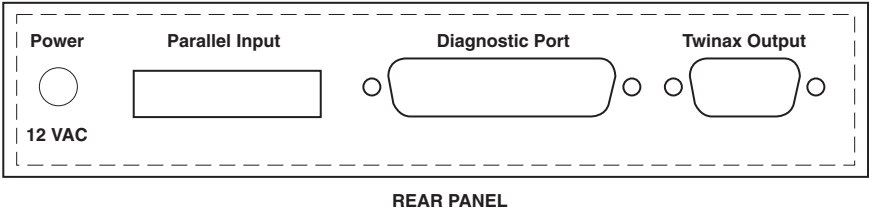


# 3. Installation

Figure 3-1 shows the front panel of the Twinax Driver I, and Figure 3-2 shows the rear panel.



**Figure 3-1. Front Panel of the Twinax Driver II.**



**Figure 3-2. Rear Panel of the Twinax Driver II.**

### 3.1 Front Panel

On the front panel of the Twinax Driver II you will see the following:

- **Power Switch** — Down is OFF, Up is ON.
- **DIP Switches** — Twenty DIP switches are available, but only the switches in the SW1 and SW2 banks are used.
- **Reset Button** — Press momentarily to reset error LED's. Press and hold to reset the unit completely.
- **Four LEDs :**

**Power** — ON indicates the Twinax Driver II has power.

**Major Error** — ON indicates that the Twinax Driver II in its function as a host for the twinax printer has identified a major error. If the problem re-occurs and the cause is unknown, put the Twinax Driver II into diagnostic mode (SW1:2 UP) and connect a parallel printer to the diagnostic port to print a record of the errors.

**Parity Error** — ON indicates that the Twinax Driver II identified a parity error in communicating with the twinax printer. A parity error is usually caused by a problem with the twinax cabling to the printer.

**Line Sync** — ON indicates that the Twinax Driver II and the twinax printer are properly communicating with each other.

### 3.2 Rear Panel

You will find the following connectors on the rear panel of the Twinax Driver II:

- **Power** — The wall-mounted transformer plugs into a standard 110-VAC power outlet. The center-post connector plugs into the 12-VAC jack on the back panel.
- **Parallel Input** — The 6-ft. (1.8 m) cable with the 36-pin mini-parallel connector (included) attaches to the back panel. The 25-pin male IBM standard PC parallel connector attaches the ASCII Host (PC, PC LAN, UNIX, AIX, etc.). The usual distance limit of about 15 feet (4.6 m) with parallel cabling is not a problem, since the twinax cabling to the printer can be up to 5,000 feet (1524 m) in length.
- **Twinax Output** — A 6-inch (15.2 cm) cable (included) attaches to the 9-pin connector on the back panel, and the twinax cable to the printer attaches to the twinax connector of the short cable.

- **Diagnostic Port** — A standard IBM PC parallel 25-pin to 36-pin cable attaches to a Centronics compatible parallel printer when additional information is desired for troubleshooting an operational problem. In diagnostic mode (SW1:2 UP), the Twinax Driver II prints messages via the diagnostic port printer, documenting its functional operations and any identified error conditions.

### 3.3 Twinax Driver II Setup

- **Twinax Output Port** — Automatically configures on power-up. The twinax printer identifies its model number to the Twinax Driver II, which then automatically adjusts the printing requirements to match the capabilities of the twinax printer.
- **Diagnostic Port** — Used in troubleshooting any problems that may occur or in test modes. See Chapter 5.
- **Parallel Input Port** — Centronics parallel compatible. Adapter cable connects to mini 36-pin connector. Input is received from the ASCII host (PC, PCLAN, UNIX, AIX, etc.). DIP Switch SW1:1 is used to identify the EPSON or Proprinter input protocol.

#### 3.3.1 SWITCH SETTINGS

Table 3-1 shows the proper switch settings for the SW1 (left) switch bank.

Table 3-2 shows the proper switch settings for the SW2 (center) switch bank.

**Table 3-1. Switch Settings for Switch Bank SW1.**

<b>SWITCH NO.</b>	<b>DOWN POSITION</b>	<b>UP POSITION</b>
SW1:1	Proprinter Input from ASCII host.	EPSON Input from ASCII host.
SW1:2	Normal operation.	Activates the diagnostic port.
SW1:3	Code page 437 (IBM PC Extended or EPSON Graphics) Character Set is determined by the ASCII host software. Use with Proprinter I and II and EPSON FX, LG, and older printer drivers.	Code Page 850 Character Set is determined by the ASCII host's software. Use with Proprinter III and newer EPSON Printer drivers.
SW1:4	Normal operation	Ignore Non-Busy condition after receipt of data.
SW1:5	Normal operation.	Ignore Non-Busy condition after a command.
SW1:6	The MPP is adjusted automatically to changes in CPI in the document. (Normal operation.)	The MPP is not adjusted in response to changes in CPI in the document.
SW1:7	Normal paper bin commands are not sent to the twinax printer.	Paper bin selection commands are sent to the twinax printer.
SW1:8	Normal operation.	Adjust horizontal position on CPI change.

**Table 3-2. Switch Settings for Switch Bank SW2.**

<b>SWITCH NO.</b>	<b>DOWN POSITION</b>	<b>UP POSITION</b>
SW2:1	Normal operation.	Twinax Driver II Self-Test prints on twinax printer.
SW2:2	Normal operation.	Twinax Driver II Self-Test prints on an ASCII printer connected to diagnostic port.
SW2:3	Normal operation.	Comprehensive twinax diagnostics testing results are printed on an ASCII printer attached to the diagnostic port.
SW2:4	Normal operation.	Diagnostic testing.

Table 3-3. Switch Settings for Switch Bank SW3.

SWITCH NO.	DOWN POSITION	UP POSITION
SW3:1	Normal operation.	Reserved for future features.
SW3:2	Normal operation.	Reserved for future features.
SW3:3	Normal operation.	Reserved for future features.
SW3:4	Normal operation.	Line feed is sent to printer when an ESC J, move paper n/216 or n/180 of an inch, command is received.
SW3:5	Normal operation.	Activates auto feed by sending a new line (NL) command to the printer when a carriage return (CR) is received.
SW3:6	Normal operation.	Sends LPI commands to a printer that responds as a 5256 (such as 5262 or other printer emulating a 5256) even though a true 5256 will report an error.
SW3:7	Normal operation.	Unix line feed. Sends a new line (NL) to the printer when a line feed (LF) is received.
SW3:8	Normal operation.	When SW3: 6 is also UP, five horizontal positions are added to the current print position to adjust for the positional error in PC support.
NOTE: SW3 switches are monitored continuously.		

### 3.4 Connecting to the Host and Printer

Take the following steps to connect the Twinax Driver II to your ASCII Host and twinax printer.

#### CAUTION

**Make sure the power is OFF on the printer and the Twinax Driver II. Unplug all power cords before connecting any cables.**

1. Connect the full-size, DB25 end of the adapter cable to the parallel port on the ASCII host (PC, PC LAN, UNIX, AIX, etc.)
2. Connect the 36-pin mini-connector end of the adapter cable to the "Parallel Input" connector on the back panel of the Twinax Driver II.

#### NOTE

**It is not recommended that the supplied 6-foot parallel adapter cable be extended, but your printer can be located further from the host, since the twinax cable from the printer to the Twinax Driver II can be up to 5,000 feet (1524 m) long.**

3. Connect the twinax V-connector to the 9-pin "Twinax Output" connector on the back panel of the Twinax Driver II.
4. Connect the twinax cable from the printer to either one of the twinax connectors on the V-connector.

### 3.5 Connecting Power

Take the following steps to connect the Twinax Driver II to power.

1. Plug the wall-mounted transformer into a standard 110-VAC power outlet.
2. Plug the center-post connector into the 12-VAC receptacle on the back panel of the Twinax Driver II.

## 4. Operation

Switch bank SW3 (right) is not used. If you are familiar with the SCS EBCDIC twinax printer commands, the Twinax Driver II provides a Command Pass-Thru feature. This feature lets you insert EBCDIC SCS commands within the print files that are sent directly to the printer without being processed by the Twinax Driver II. Follow the steps below to send commands.

1. Identify the EBCDIC Twinax Printer commands you wish to send.
2. Insert the following characters in the document you are sending to the printer: **&%**.

When the Twinax Driver II receives these two characters, it knows that the characters following are commands in EBCDIC hexadecimal format.

3. Immediately following the **&%** characters, insert your EBCDIC SCS commands. The interface recognizes characters from 0-0 and A-F only (letters must be upper case).

You may insert one or several EBCDIC commands, as long as they are characters 0-9 and A-F. Do not exceed 250 characters within one set of **&%** groups. You may also insert spaces between hexadecimal pairs to increase visual clarity; however, do not put any spaces after the first **&%** characters or before the last **&%** characters.

4. After you have inserted all your commands, insert the **&%** characters again. This tells the interface that Command-Pass-Thru is finished and that the data following is normal print data.

*Example:* By sending **&%2BD20429000F&%** you will change the printer's pitch to 15 CPI.



### NOTE

Although these characters are displayed in your document on the display screen, the Twinax Driver II treats them as commands and does not print them. If part of the sequence is printed, you have made an error in entering the codes; check your document and make sure you are using the correct format and hexa-decimal characters.

Avoid sending codes that would move the print position during Command-Pass-Thru. Since the Twinax Driver II does not process these commands, it cannot keep track of the print position changes; this may affect the position of following characters and page layout.

You can also send the EBCDIC Command-Pass-Thru strings to the printer by typing them on the screen and pressing the Screen Print key.

## 5.0 Troubleshooting

The Twinax Driver II was designed to provide extensive problem resolution capabilities, since it is basically replacing an IBM S/3X or AS/400® host for the twinax printer.

### 5.1 Testing the Twinax Driver II

The Twinax Driver II has the following self-tests when the designated DIP switch is in the UP position:

- **SW2:1** — The results of the internal self-test, the software version and the setup DIP switch selections are printed out on the attached twinax printer. An example of the self-test printout is at the end of this chapter.
- **SW2:2** — Same self-test as SW2:1 except the results are sent to an ASCII parallel printer connected to the Diagnostic Port.
- **SW2:3** — Comprehensive diagnostic self-test is performed with “Test Complete” sent to the parallel printer attached to the diagnostic port or a description of errors identified. The twinax V-Cable, without any attached twinax cables connected, must be attached to the twinax output port of the Twinax Driver II or an “Input Data Available Bit Bad” error will be reported.
- **SW2:4** — For use by a repair technician with an oscilloscope. A twinax loopback signal is generated.

### 5.2 LED Indicated Errors

The LEDs indicate that the twinax printer has identified an error during its printing and reported the error according to the twinax protocol to the Twinax Driver II.

- **Parity Error (Yellow)** — Parity error occurred. This is caused by defective twinax cabling attached to or connectors on the printer. If the error occurs frequently, check the twinax cables for problems. Press the Reset button to clear the error LED.
- **Major Error (Green)** — The twinax printer had a major error which may or may not affect the printed output. If the problem occurs consistently, activate the diagnostic port to print out more details regarding the operational error reported by the twinax printer. (See Section 5.4.) Press the Reset button to clear the error LED.

### 5.3 Diagnostic Port

The diagnostic port prints out a list documenting the sequence of the operations and conversions performed by the Twinax Driver II.

The output to an ASCII parallel printer attached to the diagnostic port is activated by placing the SW1:2 DIP switch in the UP position. This switch is constantly monitored and the function can be activated even while a document is printing to capture a repetitive problem. (Allow for a delay in printing caused by the size of the ASCII printer's buffer.) Activating the diagnostic port significantly slows down the printing speed.

### 5.4 Troubleshooting Procedures

- **Major Error LED comes ON**— Activate the diagnostic port (SW1:2 UP) and connect a parallel printer to the port and send the problem print job again. The error that caused the LED to come on will be documented on the diagnostic port printout.

Some non-IBM twinax, third- party printers do not go busy after receipt of a command or data as is normal. If this error prints out, then put SW1:4 and/or SW1:5 in the UP position to ignore this problem; it will not affect the printing.

- **Vertical Spacing of the printing is not consistent** — Print the job again using the diagnostic port to list the ASCII commands being sent from the PC, PC LAN, or UNIX host. Check these commands against the listing in Appendix A to determine if the vertical spacing commands are too complex for the limited capabilities of the IBM twinax printers. In the software program, redefine the output printer as a DOS printer which will simplify the complexity of the commands sent to the printer and resolve the problem.
- **ASCII commands are printed out on the twinax printer** — Print out a self-test and confirm that the EPSON FX or Proprinter emulation selected agrees with the emulation selected on the software sending the document to the printer. Compare the ASCII command against the command listing in Appendix A. Send the job again using the diagnostic port.

- **The printing of non-US standard characters is not correct** — Check the self-test printout to confirm whether Code Page 437 (IBM PC extended/EPSON Graphics) Character Set for EPSON FX or Proprinter I and II agrees with the print driver output of the software sending the document to the printer. If the software has the option for Code Page 850, select it and set DIP Switch SW1:3 to the UP position.

A sample of the self-test printout is shown on the next page.



# Appendix A: ASCII Command Translation

Table A-1 lists the ASCII Commands and explains how the Twinax Driver II interprets them in relation to the capabilities of the Twinax Printer used. All ASCII commands received on the parallel port are either used or purged from the data stream that is sent to the twinax printer. The table lists how each command is treated. An EPSON or Proprinter command without a conflicting command in the other type will be honored as possible (listed as IDENTICAL FUNCTION). Please note in the comments where there are conflicting commands, the treatment in EPSON or Proprinter mode is given.

**Table A-1. Twinax Driver II ASCII Command Translation.**

ASCII	DEC	HEX	Description	Comments
BEL	7	07	Beeper	Identical function in both Proprinter and EPSON modes. An EBCDIC BEL command is sent, which should sound the alarm and take the printer offline.
BS	8	08	Backspace	Identical function in both Proprinter and EPSON modes. For printers supporting EBCDIC backspace, it is sent, for other printers, the position is changed using the Absolute Horz. Position command.
HT	9	09	Tab horz.	Identical function in both Proprinter and EPSON modes. Not supported as tab; a blank space prints.
LF	10	0A	Line feed	Identical function in both Proprinter and EPSON modes. Supported as an EBCDIC line feed.
VT	11	0B	Tab vert.	Identical function in both Proprinter and EPSON modes. Not supported as a tab, but as a line feed.
FF	12	0C	Form feed	Identical function in both Proprinter and EPSON modes. Supported as a

**Table A-1 (continued). Twinax Driver II ASCII Command Translation.**

ASCII	DEC	HEX	Description	Comments
CR	13	0D	Carriage Return	Identical function in both Proprinter and EPSON modes. Supported as an EBCDIC carriage return.
S0	14	0E	Select double width (1 line)	Identical function in both Proprinter and EPSON modes. Supported by 4214 as 5 CPI, ignored otherwise.
SI	15	0F	Select condensed mode	Identical function in both Proprinter and EPSON modes. Selects 15 CPI on all printers except 5256, where command is ignored.
DC1	17	11	Select printer	Identical function in both Proprinter and EPSON modes. Not supported—ignored.
DC2	18	12	Cancel condensed mode	Identical function in both Proprinter and EPSON modes. Selects 10 CPI on all printers except 5256 where command is ignored.
DC3	19	13	Deselect	Identical function in both Proprinter and EPSON modes. Not supported—command is ignored.
DC4	20	14	Cancel double width (1 line)	Identical function in both Proprinter and EPSON modes. Returns a 4214 set to 5 CPI for single line only to 10 CPI, otherwise ignored.
CAN	24	18	Cancel line	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
DEL	127	7F	Delete character	Identical function in both Proprinter and EPSON modes. Not supported—ignored.
ESC S0	14	0E	Select double width (1 line)	Identical function in both Proprinter and EPSON modes. Supported by 4214 as 5 CPI, ignored otherwise.
ESC SI	15	0F	Select condensed mode	Identical function in both Proprinter and EPSON modes. Selects 15 CPI on all printers except 5256.

**Table A-1 (continued). Twinax Driver II ASCII Command Translation.**

<b>ASCII</b>	<b>DEC</b>	<b>HEX</b>	<b>Description</b>	<b>Comments</b>
ESC EM	25	19	Automatic sheet feeder on/off	Identical function in both Proprinter and EPSON modes. Supported only by 4214 and 5219 with #2 or "B" selecting the "Back" bin (EPSON command), any other selection will select front bin.
ESC SP	32	20	Set inter-character space	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC !	33	21	Master select	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC #	35	23	Cancel MSB control	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC \$	36	24	Set absolute print position	Identical function in both Proprinter and EPSON modes. Is supported using EBCDIC set Absolute Horizontal Position command.
ESC %	37	25	Select user-defined set	Identical function in both Proprinter and EPSON modes. Not supported command ignored.
ESC &	38	26	Define user-defined characters	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC *	42	2A	Select graphics mode	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC -	45	2D	Turn underlining on/off	Identical function in both Proprinter and EPSON modes. Underlining supported on 5219 using EBCDIC start and end underlining. All others supported by Absolute Horz. Pos. and restriking with underline.



**Table A-1 (continued). Twinax Driver II ASCII Command Translation.**

ASCII	DEC	HEX	Description	Comments
ESC/	47	2F	Select vertical tab channel	Identical function in both Proprinter and EPSON modes. Not supported — command ignored.
ESC 0	48	30	Select 1/8-inch line spacing	Identical function in both Proprinter and EPSON modes. Supported as 1/8" on all printers except 5256.
ESC 1	49	31	Select 1/4-inch line spacing	Identical function in both Proprinter and EPSON modes. Supported as 1/4" on all printers except 5256.
ESC 2	50	32	Select 1/2-inch line spacing	EPSON Mode. Selects 1/2" (6 LPI) on all printers except 5256.
ESC 2	50	32	Select programmable line spacing	Proprinter Mode. Activates the 1/2" line spacing previously set by the ESC A command.
ESC 3	51	33	Select 1/16 line spacing	Identical function in both Proprinter and EPSON modes. Selects line spacing as (n/3)/72" on all printers except 5256.
ESC 4	52	34	Select italic mode	EPSON Mode. No support for italic printing—command ignored.
ESC 4	52	34	Set top of form	Proprinter Mode. The current vertical is sent to the EBCDIC printer to establish new top of form.
ESC 5	53	35	Cancel italic mode	EPSON mode. No support for italic printing—command mode.
ESC 5	53	35	Turn automatic line feed on/off	Proprinter mode. When following parameter is one either 01h or 31h, an LF is added to each CR. The function is cancelled when the following parameter is zero either 00h or 30 h.
ESC 6	54	36	Printable code area expansion	EPSON mode. Not supported; interface uses only code pages 437 or 850 and does not support duplicate control codes.

**Table A-1 (continued). Twinax Driver II ASCII Command Translation.**

ASCII	DEC	HEX	Description	Comments
ESC 6	54	36	Select international character set	Proprinter mode. Not supported; interface uses only code page 437 or 850.
ESC 7	55	37	Cancel ESC 6	EPSON mode. Not supported as described for ESC 6.
ESC 7	55	37	Select standard character set	Proprinter mode. Not supported as described for ESC 6.
ESC 8	56	38	Disable paper-out sensor	Identical function in both Proprinter and EPSON modes. Not supported; function not available on EBCDIC printers.
ESC 9	57	39	Enable paper-out sensor	Identical function in both Proprinter and EPSON modes. Not supported; paper-out always enabled on EBCDIC printers.
ESC :	58	3A	Copy ROM into RAM	EPSON mode. Not supported; this is a function of graphics or user-created characters which are not supported.
ESC:	58	3A	Select elite pitch	Proprinter mode. Supported as 12 CPI on 4214 or 5219. Not supported on 5256. Supported as 10 CPI on all others.
ESC <	60	3C	Select uni-directional mode (1 line)	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC =	61	3D	Set MSB to 0	EPSON mode. Not supported, only code pages 437 or 850 supported.
ESC =	61	3D	Define user-defined characters	Proprinter mode. Not supported—no user defined characters.
ESC >	62	3E	Set MSB to 1	Identical function in both Proprinter and EPSON modes. Not supported; only code page 437 or 850 supported.

**Table A-1 (continued). Twinax Driver II ASCII Command Translation.**

ASCII	DEC	HEX	Description	Comments
ESC ?	63	3F	Reassign graphics mode	Identical function in both Proprinter and EPSON modes. Not supported—graphics modes are not supported.
ESC @	64	40	Initialize printer	Identical function in both Proprinter and EPSON modes. Commands to reset printer functions to default conditions are sent to the printer.
ESC A	65	41	Select 1/2-inch line spacing	EPSON Mode. Select 1/2 inch line spacing on all printers except 5256.
ESC A	65	41	Set 1/2 inch	Proprinter mode. Defines line spacing as n/72 to be selected by a following ESC (32h) command. Supported on all printers except 5625 where command is ignored.
ESC B	66	42	Set vertical tab	Identical function in both Proprinter and EPSON modes. Not supported—a vertical tab is treated as a LF.
ESC C	67	43	Set page length in lines	Identical function in both Proprinter and EPSON modes. Page length set to number of lines as defined by the following parameter.
ESC C 0	67 00	43 00	Set page length in inches	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC D	68	44	Set horiz. tabs	Identical function in both Proprinter and EPSON modes. Not supported—commands ignored. Tabs are treated as spaces.
ESC E	69	45	Select emphasized mode	Identical function in both Proprinter and EPSON modes. This will activate the bold function. In this mode each character is sent to the printer, an Absolute Horizontal Position is sent to place the print head over the character, and it is sent again.

**Table A-1 (continued). Twinax Driver II ASCII Command Translation.**

ASCII	DEC	HEX	Description	Comments
ESC F	70	46	Cancel emphasized mode	Identical function in both Proprinter and EPSON modes. This cancels the bold mode.
ESC G	71	47	Select double-strike mode	Identical function in both Proprinter and EPSON modes This will activate the bold function. In this mode, each character is sent to the printer, an Absolute Horizontal Position is sent to place the print head over the character, and it is sent again.
ESC H	72	48	Cancel double-strike mode	Identical function in both Proprinter and EPSON modes. This cancels the bold mode.
ESC I	73	49	Printable code expansion	EPSON mode. Not supported, only code pages 437 or 850 are supported.
ESC I	73	49	Select font	Proprinter mode. Support on 4214 only for NLQ and DRAFT selections. 0, 1, 4, 5 select Draft. 2, 3, 6, 7 select NLQ.
ESC J	74	4A	Perform $\frac{1}{16}$ -inch line feed	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC K	75	4B	Select single-density graphics	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC L	76	4C	Select double-density graphics	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC M	77	4D	Select elite pitch	Identical function in both Proprinter and EPSON modes. Supported as 12 CPI on 4214 and 5219. Not supported on 5256. All other printers supported as 10 CPI.
ESC N	78	4E	Set skip over perforation	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.

**Table A-1 (continued). Twinax Driver II ASCII Command Translation.**

ASCII	DEC	HEX	Description	Comments
ESC O	79	4F	Cancel skip over perforation	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC P	80	50	Select pica pitch	EPSON mode. Supported as 10 CPI on all printers except 5256 where command is ignored. 01, 31 = begin proportional spacing 00, 30 = end proportional spacing.
ESC P	80	50	Begin or End Proportional spacing	Proprinter Mode. Proportional spacing selection only supported on the 5219 printer.
ESC Q	81	51	Set right margin	EPSON mode. Supported by setting line length.
ESC Q3	81	51	Deselect printer	Proprinter mode. Not supported — command ignored.
ESC R	82	52	International character set	EPSON mode. Not supported — command ignored. Only code pages 437 and 850 are supported.
ESC R	82	52	Restore default tab settings	Proprinter mode. Not supported — command ignored. Tabs are treated as spaces.
ESC S 0	83 00	53 00	Select super-script mode	Identical function in both Proprinter and EPSON modes. Supported only on 5219 printer. All others ignore this command.
ESC S 1	83 01	53 01	Select sub-script mode	Identical function in both Proprinter and EPSON modes. Supported only on 5219 printer. All others ignore this command.
ESC T	84	54	Cancel superscript/	Identical function in both Proprinter and EPSON modes. Supported only subscript on 5219 printer. All others ignore this command.
ESC U	85	55	Turn uni-directional mode on/off	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.

**Table A-1 (continued). Twinax Driver II ASCII Command Translation.**

ASCII	DEC	HEX	Description	Comments
ESC W	87	57	Turn double-width on/off	Identical function in both Proprinter and EPSON modes. Double wide is supported by the 4214 only. A parameter of 01 or 31 selects 5 CPI. A parameter of 00 or 30 returns to 10 CPI. All other printers ignore this command.
ESC X	88	58	Set left and right margins	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC Y	89	59	High-speed double-density	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC Z	90	5A	Quadruple density graphics	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC \	92	5C	Set relative position	EPSON Mode. Not supported—this will print as a space.
ESC \	92	5C	Print characters from symbol set	Proprinter Mode. Not supported—command ignored.
ESC ^	94	5E	Select nine-pin graphics	EPSON mode. Not supported—command ignored.
ESC ^	94	5E	Print 1 character from symbol set	Proprinter mode. Not supported—command ignored.
ESC _	95	5F	Turn over-score on/off	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC a	97	61	NLG justification	Identical function in both Proprinter and EPSON modes. Not supported—command ignored
ESC b	98	62	Set vertical tabs in channels	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.

**Table A-1 (continued). Twinax Driver II ASCII Command Translation.**

<b>ASCII</b>	<b>DEC</b>	<b>HEX</b>	<b>Description</b>	<b>Comments</b>
ESC i	105	69	Turn immediate mode on/off	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC j	106	6A	Perform $\frac{1}{16}$ inch reverse LF	Identical function in both Proprinter and EPSON modes. Not supported—command ignored
ESC k	107	6B	Select NLQ font	Identical function in both Proprinter and EPSON modes. Not supported—command ignored
ESC l	108	6C	Set left margin	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC p	112	70	Turn proportional mode on/off	Identical function in both Proprinter and EPSON modes. Supported on 5219 only, all others ignored.
ESC r	114	72	Select printing color	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC s	115	73	Turn half-speed mode on/off	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC t	116	74	Select character table	Identical function in both Proprinter and EPSON modes. Not supported—command ignored.
ESC x	120	78	Select NLQ or draft	Identical function in both Proprinter and EPSON modes. Supported by NLQ and DRAFT selections on the 4214 printers, all others ignored. 00 or 30 = Draft 01 or 31 = NLQ



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