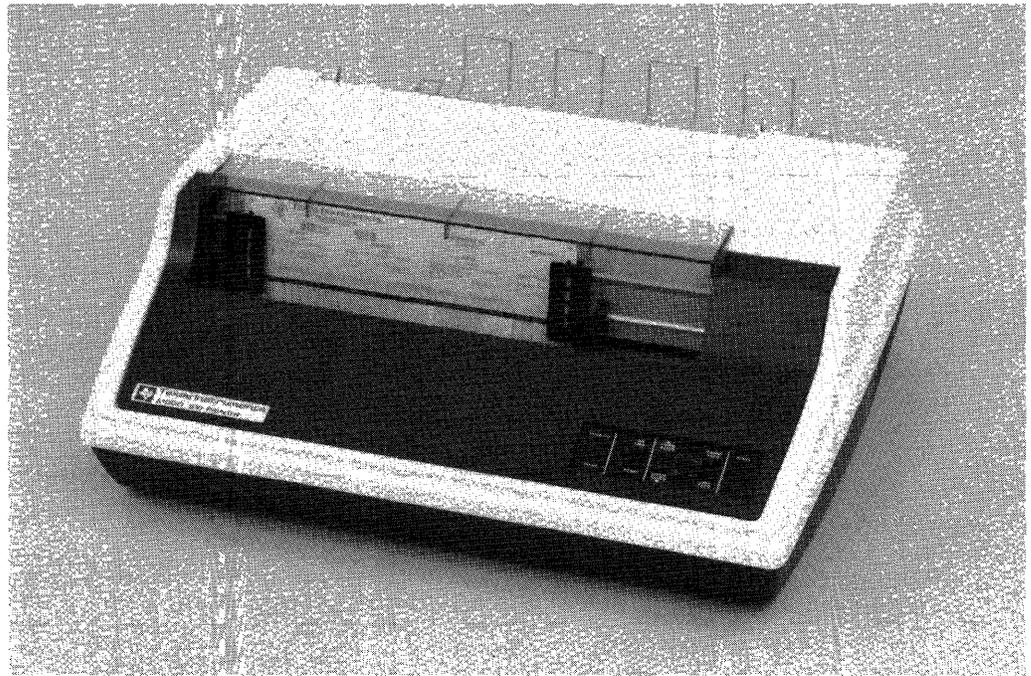**OMNi 800**
electronic data terminals

Characteristics Guide

Model 810
Receive-Only Printer

TEXAS INSTRUMENTS.

Model 810 Receive-Only Printer

The Model 810 Receive-Only Printer is a multi-copy, impact printer utilizing a unique look-ahead feature controlled by an on-board microprocessor to effect optimized bidirectional printing.

Speed of the Model 810 is 150 cps with an effective throughput from 60 full 132-character lines-per-minute, up to 440 lines-per-minute maximum with an average of 10 character lines.
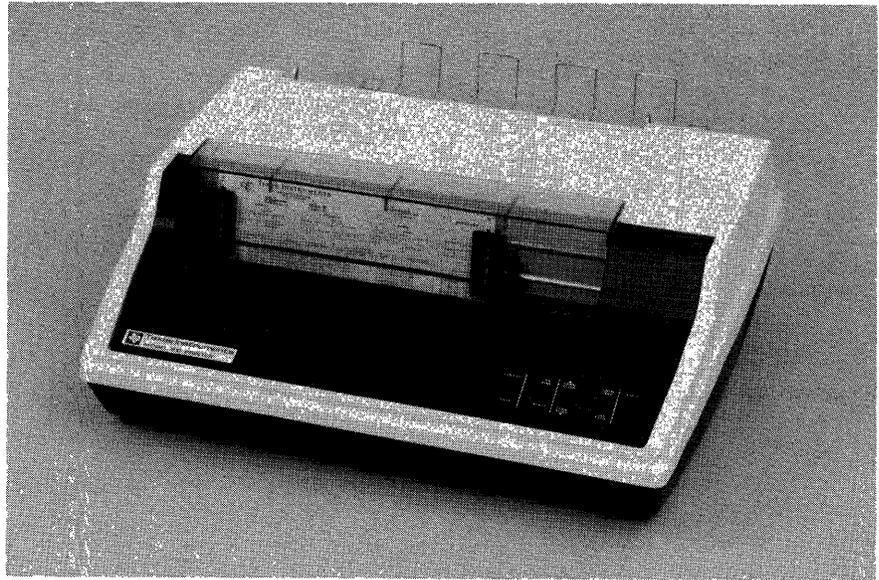
Features

High Speed Printing

Maximum throughput is achieved by using a look-ahead technique. Increased efficiency is attained because the printhead need not return to the left margin for each new line. Optimized bidirectional printing minimizes printhead travel time and correspondingly increases available print time.

Easy Forms Programming

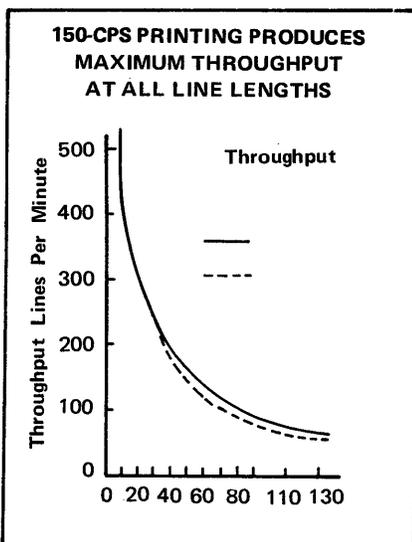Software or control panel programming allows for ease of defining forms

150-CPS PRINTING PRODUCES MAXIMUM THROUGHPUT AT ALL LINE LENGTHS

Throughput Lines Per Minute: 0, 100, 200, 300, 400, 500

0 20 40 60 80 110 130

FIGURE 1 — Printing Throughput

length or setting of vertical tabs, without the necessity of punching paper tape.

Reliability

TI microprocessor, MOS/LSI integrated circuits, and TI-built wire matrix printhead are the keys to performance and reliable, long-life operation. The 810's reliability is evident in our MTBF figures: printhead 150×10^6 characters, ribbon 5 to 7×10^6 characters, and the 810 MTBF is 2000 hrs. (excluding printhead, regardless of duty cycle).

Multi-Copy Capability

The 1×7 wire matrix printhead built by TI provides clear, legible printing of an original and up to 5 copies.

Off-Line Test

Allows operator to verify printer operation without expensive test equipment or training.

Standard Features

- Adjustable tractor feeds, 77 to 381 mm (3 to 15 inches)
- Switch-selectable automatic line feed with carriage return
- 150-cps maximum print speed for full 132 column lines
- Switch-selectable auto perforation skipover control
- 6 or 8 vertical lines per 2.5 cm (inch), software or hardware selectable
- EIA RS-232C serial interface
- Switch-selectable parity
- Forms feed from either the bottom or rear
- Slanted ribbon for extended ribbon life
- Switchable speeds: 110, 150, 300, 1200, 2400, 4800, and 9600 baud
- Capability for one vertical form program (software or hardware programmable)
- One software programmable forms length up to 112 lines. Default forms length is 66 lines, 280 mm (11 inch) form
- Acoustic baffle

Optional Features

- Full ASCII Character Set† — All upper and lower case letters are printable.
- International Character Sets: English (UK), Katakana, German, Danish/Norwegian, Swedish/Finnish.
- Expanded Character Option - Double width characters, 5 characters per 2.5 cm (inch)††

†,††, (overleaf)

- Interfaces —
  - Parallel TTL
  - 20 ma neutral current loop
  - Line Buffer Option
    - Line Buffer Parallel (LBP)
    - Line Buffer Teletype (LBT)
    - Line Buffer EIA (LBE)
- Tear Bar Option - Enables the tearing of paper as it emerges from the tractor feed
- 9-copy printhead, providing, clear, legible printing on airline stock, is available upon request.
- Vertical Forms Control (VFC)*†
  Up to eight software or hardware programmable vertical forms programs can be resident in non-volatile storage. Programs can be stored or recalled by commands from the data source or by operator manipulation of switches on the Model 810 auxiliary control panel. See Figure 4.
- Form Length Control (FLC)* —
  A hardware option providing a choice of 11 pre-set forms lengths: 76, 89, 102, 140, 152, 178, 203, 216, 280, 305, and 356 cm (3, 3.5, 4, 5.5, 6, 7, 8, 8.5, 11, 12, and 14 inches) plus one *programmable* FLC that allows any form length to a maximum of 112 lines. Hardware programming is performed locally by operator manipulation of applicable switches on the Model 810 auxiliary control panel. See Figure 4.
- Compressed Character Printing†
  A full 132-column width may be printed on a 204 mm (8 inches) line length. This option is available only with the VFC or FLC option. Print density is 16.5 characters per 2.5 cm (inch). See Figure 2.

Applications

- Peripheral printer for mini/micro computer systems.

- Hard copy output device for intelligent data terminals.
- Forms generation for accounting, scientific and data communications systems.
- Remote multicopy printing from host computer data base.
- Ticket Printer

Auxiliary Control Panel (See Figure 4)

Indicators
- 16.5 Characters per 2.5 cm (inch); 8 lines per 2.5 cm (inch)

Switches
- 7 Pencil Switches: Select baud rate, parallel interface operation, parity, automatic line feed, and automatic perforation skipover. All configurations.
- 16.5 CPI/8 LPI: Activation of 8 LPI with accompanying diode illumination causes printer to compress line feed from 6 Lines Per Vertical 2.5 cm (inch) to 8 Lines Per Vertical 2.5 cm (inch).

  Activating 16.5 CPI causes printer to compress print from normal 10 Characters Per (25.4 mm) Inch to 16.5 Characters Per (25.4 mm) Inch. 8 LPI configurations 1-5, 16.5 CPI configurations 2 & 5 only.

- Normal Test/VFC: Normal enables normal operation of printer; test/VFC causes the printing of a rotating test pattern with the printer on line, and enables the statement functions of main control panel switches when the printer is off line. All configurations.

- Store/Recall: Switch for optional VFC control to store or recall formats between working memory and optional VFC channel memory. Configurations 2 & 4.
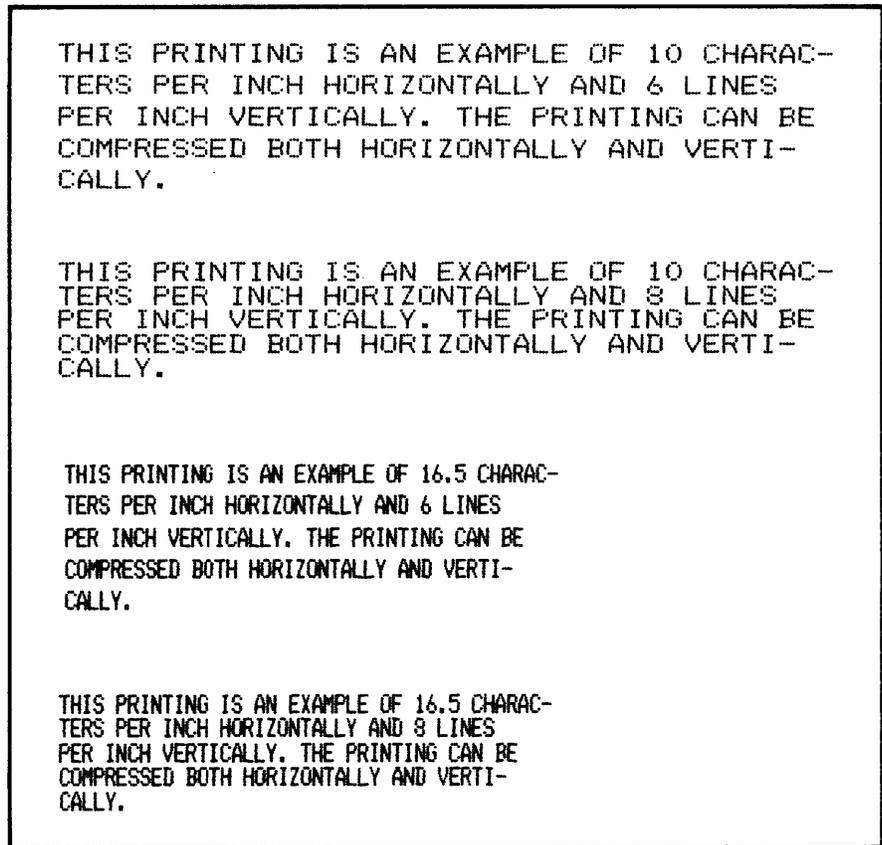
```
THIS PRINTING IS AN EXAMPLE OF 10 CHARAC-
TERS PER INCH HORIZONTALLY AND 6 LINES
PER INCH VERTICALLY. THE PRINTING CAN BE
COMPRESSED BOTH HORIZONTALLY AND VERTI-
CALLY.


THIS PRINTING IS AN EXAMPLE OF 10 CHARAC-
TERS PER INCH HORIZONTALLY AND 8 LINES
PER INCH VERTICALLY. THE PRINTING CAN BE
COMPRESSED BOTH HORIZONTALLY AND VERTI-
CALLY.


THIS PRINTING IS AN EXAMPLE OF 16.5 CHARAC-
TERS PER INCH HORIZONTALLY AND 6 LINES
PER INCH VERTICALLY. THE PRINTING CAN BE
COMPRESSED BOTH HORIZONTALLY AND VERTI-
CALLY.


THIS PRINTING IS AN EXAMPLE OF 16.5 CHARAC-
TERS PER INCH HORIZONTALLY AND 8 LINES
PER INCH VERTICALLY. THE PRINTING CAN BE
COMPRESSED BOTH HORIZONTALLY AND VERTI-
CALLY.
```

FIGURE 2 — Printing Examples

- VFC Switch: Rotary switch for optional vertical format control to select one of eight vertical format programs. Configurations 2 & 4.

- FLC Switch: Rotary switch for optional forms length control to select either one of eleven fixed forms lengths or a programmable forms length. Configurations 3 & 5.
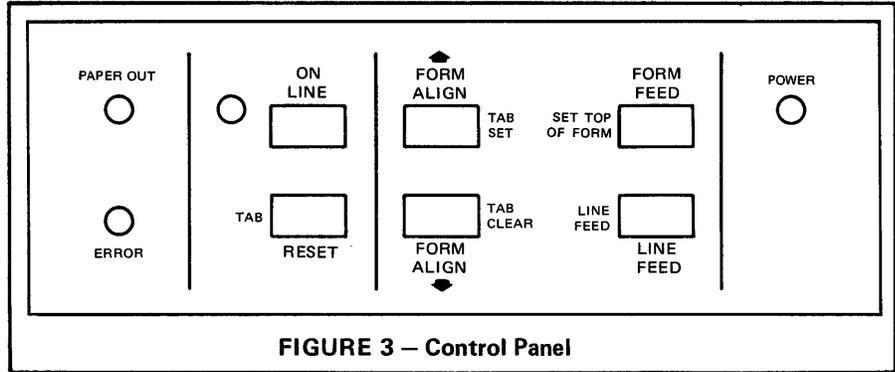
Operating Controls & Indicators (See Figure 3)

Indicators
- Paper Out; Error; On Line; Power.

Switches
- On Line: Pressing once causes printer to go on line; pressing a second time takes printer off line.

- Reset/Tab*: Reset function clears paper out or error conditions, TAB

FIGURE 3 — Control Panel

causes paper to advance to next vertical tab in VFC mode.

- Form Align/TAB Set*

- Form Align/TAB Clear*: Form Align moves paper from .35 mm (1/72 inches) through full line feeds; TAB Set/Clear used in VFC mode to set or clear vertical tabs at the present line.

- Form Feed/Set Top of Form*: Form feed moves the paper to the next top of form. Set top of form is active in VFC mode to set top of form position.

- Line Feed/Line Feed*: Any data in line buffer is printed, then paper is advanced one line. Active only off line.

_____

*Active only when Normal/VFC switch in TEST/ VFC position.
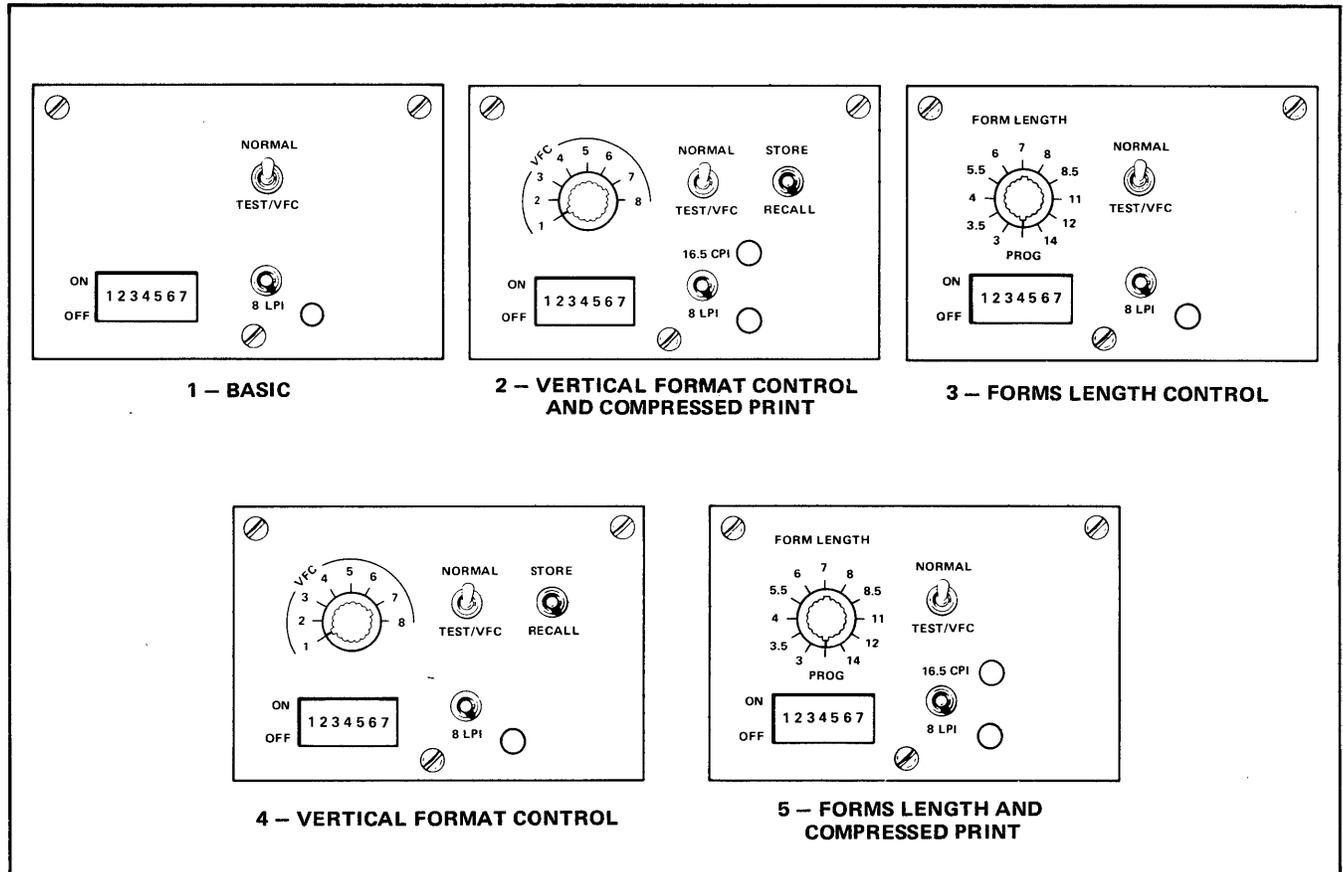
FIGURE 4 — Auxiliary Control Panel Configurations

Interfacing the 810

The Model 810 is available with an EIA RS/232-C Serial Data Interface as standard, with TTY Current Loop and Parallel Interfaces offered as options. Each of the interfaces also has the option of Line Buffering.

LBE — Line buffering with EIA interface;
LBP — Line buffering with parallel interface; and
LBT — Line buffering with TTY interface.

(See Table 4 for interface specifications for all interfaces.)

The standard interfaces, without line buffering, go busy when the rate of the incoming data exceeds the print speed and causes the buffer to be filled. This may happen at any place along the data stream, thereby requiring busy status to be monitored after each character. (See timing diagrams, Figures 5 and 7.)

With Line Buffering, receipt of the 132nd printable character causes the printer to go busy until either the buffer is cleared or printing begins. In addition, CR, LF, FF, VT, Delete, and DC3 characters will also cause busy conditions. This enables the transmitting device to only look at busy status following the transmission of a block of 132 printable characters or less, instead of after each character. (See timing diagrams, Figures 6 and 7.)

NOTE: Transmitter stops sending data when the 810 is busy

Line Buffering modifies the following machine performances:

1. Throughput may be effectively decreased due to always going busy after each 132 characters, or at the end of each line.

2. The software programmable option of variable line widths is not functional with Line Buffering. The line width is fixed at 132 characters.

3. The parallel interface (LBP) includes a 125 KHz clock signal on line 15 and a line count signal on line 34.

4. See appropriate timing diagram for LBE, LBP, and LBT, Figures 6 and 7.

Interfaces available with the Model 810 are described in Table 2. Select an interface and review its corresponding configurations.

Each configuration is available in one of two descriptions, as described in Table 3. For each configuration that corresponds to the selected interface, select the desired description and specify when ordering. Only one description can be chosen for each configuration.

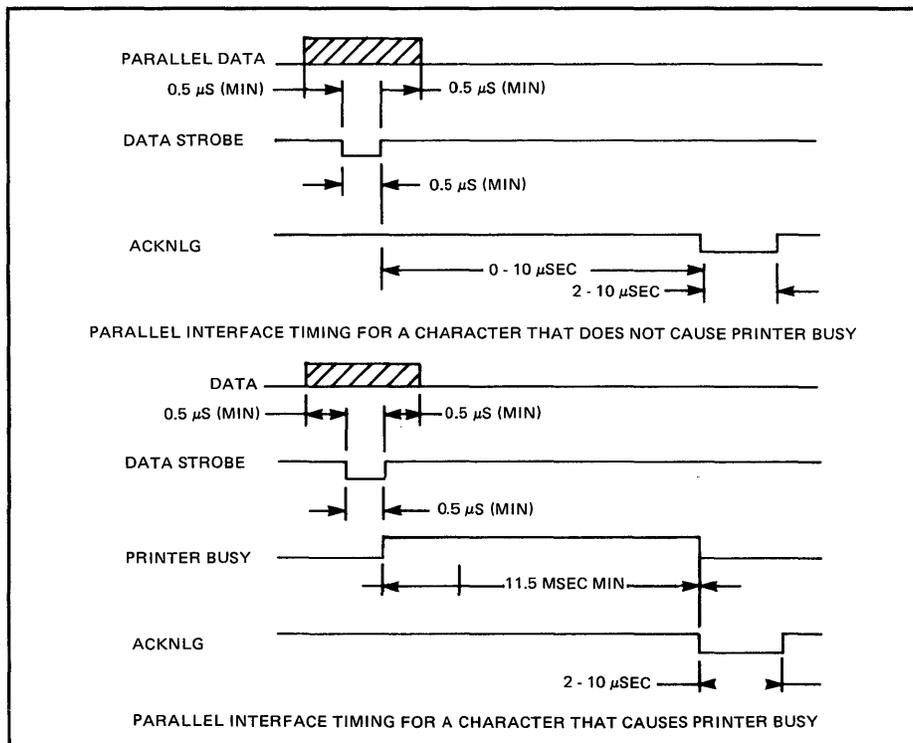Cables to connect the Model 810 to various other devices may be selected from Figure 8 and Table 1.

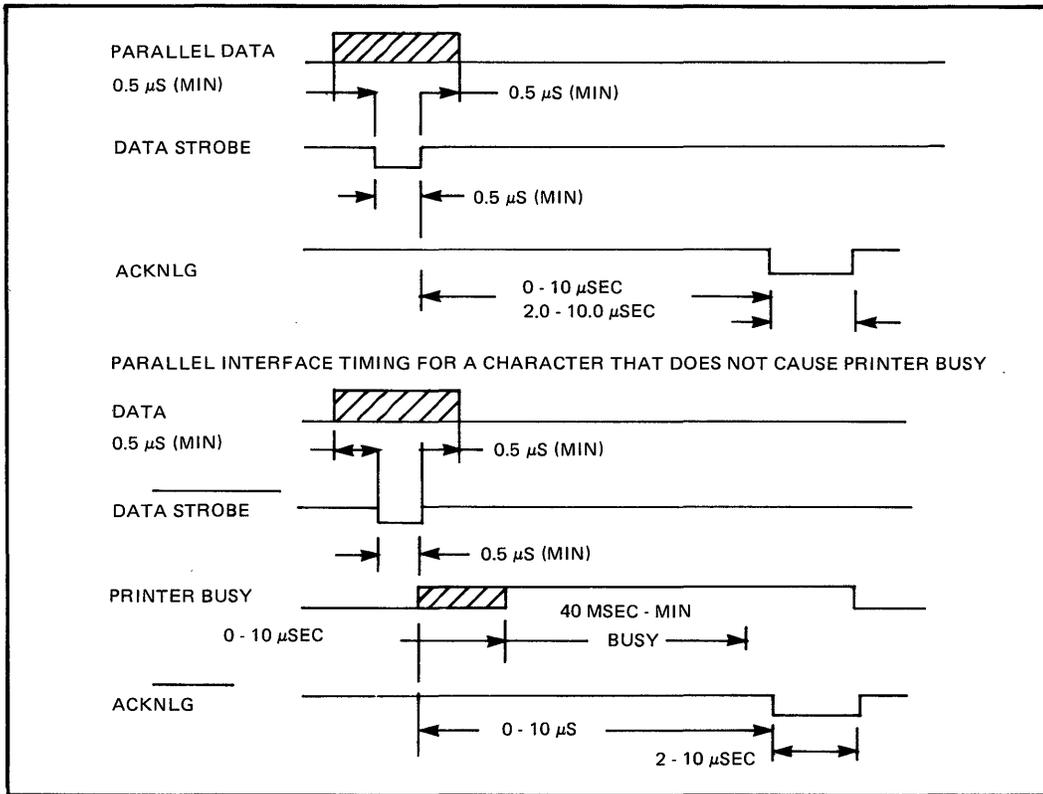FIGURE 5 — Basic Parallel Interface Timing
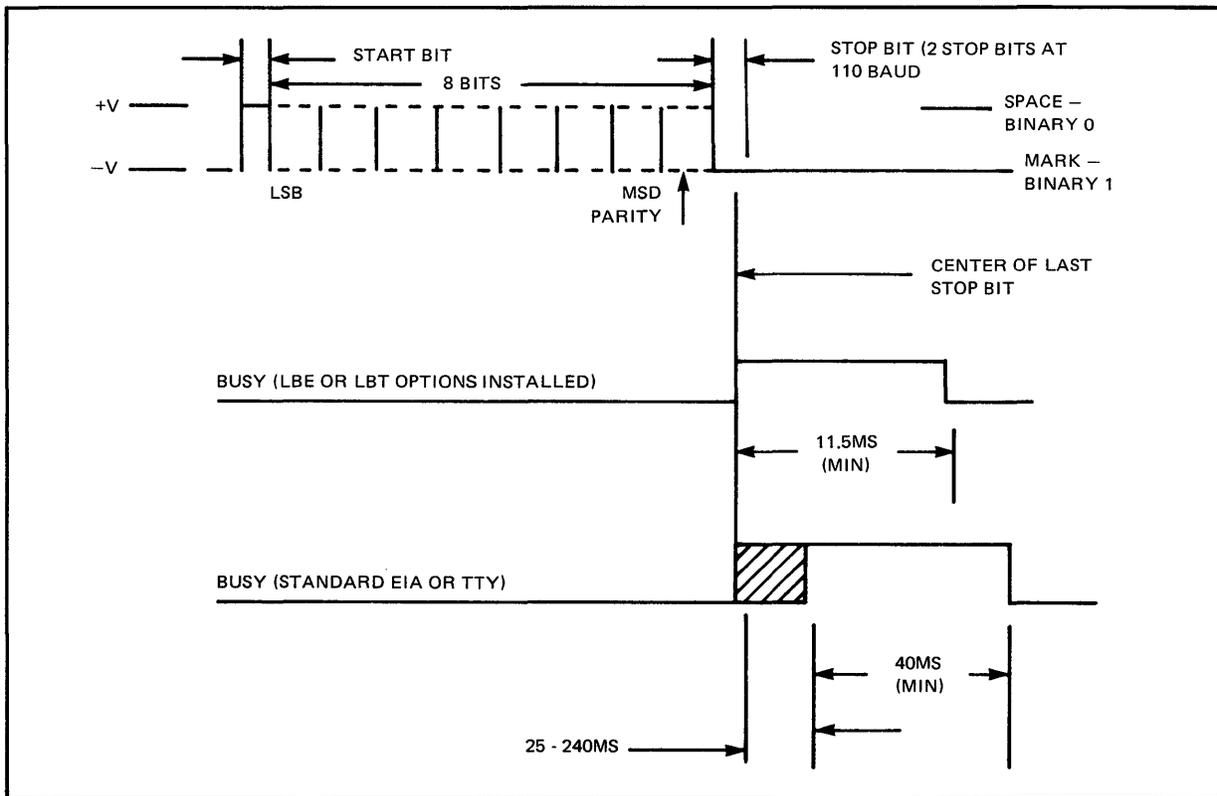
FIGURE 6 — LBP Parallel Interface Timing

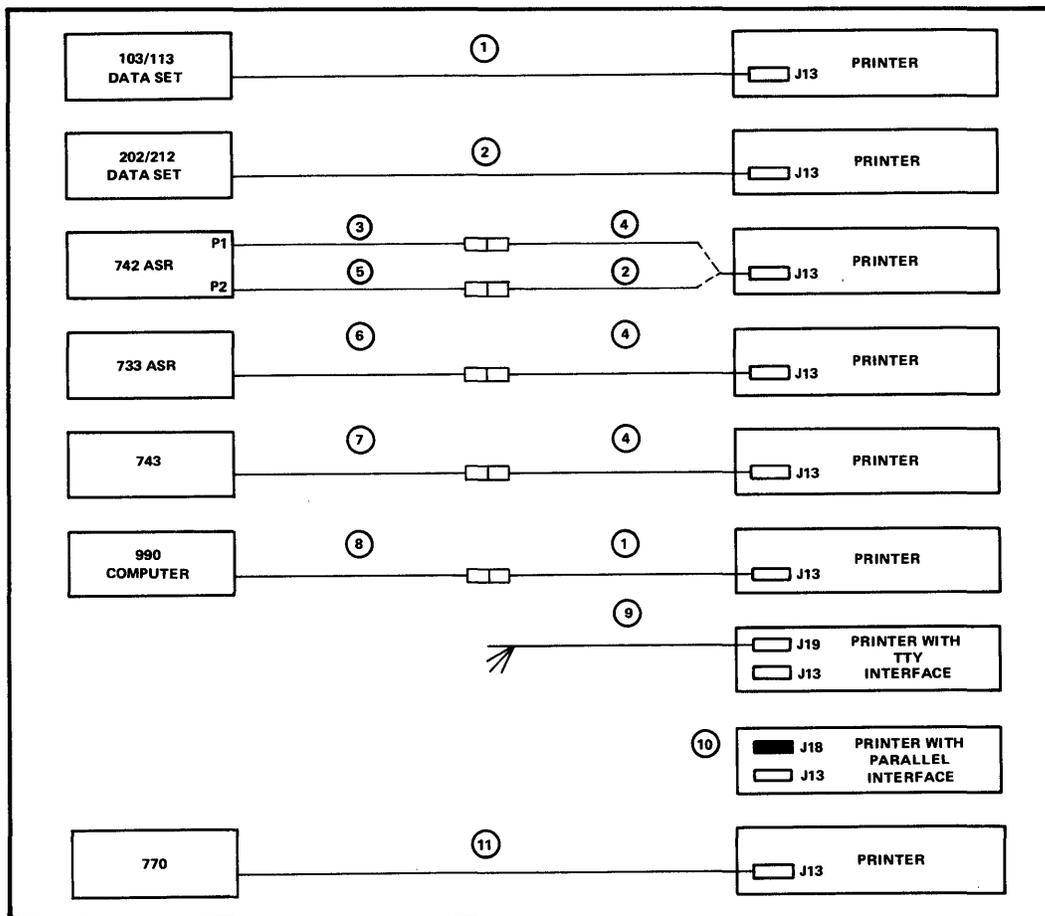**FIGURE 7 — Serial Interface Timing**

FIGURE 8 — Cable Section Diagram*
*Circled numbers refer to the item numbers in Table 3 Below.

ITEM NUMBER	PART NUMBER	DESCRIPTION	METERS	(FEET)
1	993204-0001	103 DATA SET CABLE	1.8	(6)
2	993205-0001	202/212 DATA SET	1.8	(6)
3	969626-0001	742 TERMINAL CABLE	1.8	(6)
4	993210-0001	DATA TERMINAL CABLE	1.8	(6)
5	973265-0001	742 AUXILLIARY EIA INTERFACE CABLE	3.6	(12)
6	959372-0002	ASR TERMINAL CABLE (1200 BAUD)	1.8	(6)
7	983848-0001	743 TERMINAL CABLE	1.8	(6)
8	975056-0010	990 COMPUTER CABLE	3	(10)
8	975056-0020	990 COMPUTER CABLE	6	(20)
9	994403-0001	CURRENT LOOP INPUT CABLE (INCLUDED IN TTY OPTION)	1.8	(6)
10	414127-0001	CONNECTOR ONLY (INCLUDED IN PARALLEL OPTION)	–	–
11	993231-0001	CA ASSY MC810 PRINTER	3.6	(12)
ALSO AVAILABLE	993211-0001	EIA EXTENSION CABLE (25 WIRES)	1.8	(6)

TABLE 1 — Cable Options

TABLE 2 — Interfaces and Corresponding Configurations

ITEM NO.	MODEL 810 INTERFACE	CONFIGURATIONS
301	EIA (EIA RS-232 with Character Buffering) Included with Basic Model 810	BRO, DNB, IRC, NDE
302	TTY (Current Loop with Character Buffering)	BRO, NDE
303	PLT (Parallel with Character Buffering)	NDE
304	LBE (EIA with Line Buffering)	BRO, DNB, DSC, GDS, IRC
305	LBT (Current Loop with Line Buffering)	BRO, DSC, HDP
306	LBP (Parallel with Line Buffering)	DSC, GDS

TABLE 3 — Configuration Descriptions

IMPORTANT: One description must be specified for each configuration included with the interface described in Table 2.

CONFIGURATIONS	DESCRIPTION
BRO	1. Baud rates — 110, 150, 300, 1200, 2400, 4800, and 9600 2. Baud rates — 110, 200, 300, 600, 1200, 2400 and 9600
DNB	3. Data Terminal Ready (DTR) brought high to indicate Printer On Line only. 4. DTR brought high indicates Printer On Line and Not Busy.
DSC	5. Prints buffer contents on receipt of LF, FF, or VT. 6. Printing of buffer contents on receipt of LF, FF, or VT inhibited.
GDS	7. After going busy, printer will accept at least 5 characters. 8. After going busy, printer will ignore all characters except "DEL".
HDP	9. Line Buffered TTY printer uses full-duplex only. 10. Line Buffered TTY printer allows half-duplex operation only.
IRC	11. Reverse Channel held high to indicate "not busy". 12. Reverse Channel held low to indicate "not busy".
NDE	13. Receipt of DEL character clears the buffer. 14. No action taken by printer on receipt of DEL character.

TABLE 4 – Data Interface Specifications

	PIN	SIGNAL NAME	SOURCE	FUNCTION
EIA RS-232-C SERIAL DATA INTERFACE Standard EIA RS-232-C Interface with a 25-pin female connector, AMP 206584-2 mounted on printer. See Model 810 Price List for available cables. Note: Printer busy status on pin 11 should be monitored at baud rates of 1200 and above.	1	Protective Ground	None	Chassis ground
	2	Transmitted Data	Printer	This signal is at the negative EIA level in the normal mode, and at the positive EIA level in the test mode.
	3	Received Data	Input Device	Received serial data
	4	Request to Send	Printer	This signal is held at the negative EIA level. (Not used)
	5	Clear to Send	Input Device	
	6	Data Set Ready	Input Device	This signal must be at the positive EIA level for the printer to receive data.
	7	Signal Ground	None	Return path for data and control signals.
	8	Carrier Detect	Input Device	This signal must be at the positive EIA level for the printer to receive data.
	9	+12 volts	Printer	May be used as bias voltage for inputs to printer.
	10	−12 volts	Printer	May be used as bias voltage for inputs to printer.
	11	Secondary Request to Send	Printer	
	20	Data Terminal Ready	Printer	This signal is at the positive EIA level when the printer is on line and negative EIA level when off line.

	PIN	SIGNAL NAME		FUNCTION
DC-CURRENT LOOP SERIAL INTERFACE Nominal operating current is 20 ma A Nine-Pin female connector Cannon type DEC-9S mounted on printer. Includes cable assembly 0994403-0001.	1	TTY Transmitted Data		Low impedance (marking) between pins 1 and 2 when the TTY printer is ready to accept data; high impedance (spacing) when the TTY printer is busy.
	2	TTY Transmitted Data Return		
	3	Ground		Provides chassis ground.
	4	TTY Received Data Return		Note: Less than 1.5V (transmit) and 3V (receive) drop across contacts while marking.
	5	TTY Received Data		

	SIGNAL PIN	RETURN PIN	SIGNAL NAME	SOURCE	DESCRIPTION
PARALLEL INTERFACE Those signals listing a return pin require twisted pair lines with the return to logic ground. A 36-pin female mating connector Amphenol type 57-30360 is included. This interface includes clock signal and line count signal †Included with line buffer option parallel (LBP) only.	1	19	Data Strobe	Input Device	A 0.5 microsecond pulse (minimum) used to clock data from the input device to the printer logic.
	2	20	Data 1	Input Device	Input data levels. A high represents a binary one, a low represents a binary zero. All printable characters (i.e., codes having a one in Data 6 or Data 7) are stored in the print buffer. Control characters (i.e., codes having a zero in both Data 6 and Data 7) are used to define control functions.
	3	21	Data 2	Input Device	
	4	22	Data 3	Input Device	
	5	23	Data 4	Input Device	
	6	24	Data 5	Input Device	
	7	25	Data 6	Input Device	
	8	26	Data 7	Input Device	
	9	27	Data 8	Input Device	
	10	28	Acknowledge	Printer	A pulse low indicates that a character has been received and that the printer is ready to accept another character.
	11	29	Busy	Printer	A signal high indicates that the printer cannot receive data.
	12	–	PE (Paper Out)	Printer	A signal high indicates that the printer is out of paper.
	13	–	SLCT (On Line)	Printer	A signal high indicates that the printer is selected.
	15	33	OSCXT (External Clock)	Printer	125 kHz signal for external use.
	16	–	Logic Ground	Printer	Logic ground.
	17	–	Chassis Ground	Printer	Chassis ground (protective).
	18	–	+5 VDC	Printer	For test purposes.
	31	30	REMRST	Input Device	A signal low terminates a form feed or vertical tab motion.
	32	14	Fault	Printer	A signal high indicates a fault condition.
	34	35	Line Count	Printer	Isolated reed relay contacts close on each line feed.

TABLE 5 — Control Characters

DC1 — (Select) selects the printer, enabling it to receive data.

DC2 n — (Tab to Line) causes the paper drive system to slew to the line specified by n. n must be greater than the present line.

DC3 — (Deselect) deselects the printer, preventing it from receiving data.

DC4 n — (Tab to Address) causes spaces to be inserted in the line buffer from the present column up to the column specified by n. n must be greater than the present carriage position. If n is less than the present carriage position, this command will be ignored.

DEL — (Delete) clears the print buffer.

NUL — (NUL) terminates the tab setting sequence (see below), otherwise it is ignored.

ESC $1+n_1+n_2+...+n_K+NUL$ — (Set Vertical Tabs) clears all existing vertical tabs and sets new tabs at lines n_1, n_2, ..., and n_K.

ESC $2+n$ — (Set Form Length) sets the form length used by the FF command to n. Lines per form is set to a default value of 66 at power up.

ESC $3+n_1+n_2+...+n_K+NUL$ — (Set Horizontal Tabs) clears all existing horizontal tabs and set new tabs at locations n_1 n_2, ..., and n_K.

ESC4 — Sets paper drive system to 6 lines per inch. (2.5 cm.)

ESC5 — Sets paper drive system to 8 lines per inch. (2.5 cm.)

ESC6 — Sets carriage system to 10 characters per inch. (2.5 cm.)

ESC7 — Sets carriage system to 16.5 characters per inch. (2.5 cm.)

ESC8+N — Store vertical format in VFC channel N.

ESC9+N — Recall vertical format data from VFC channel N into working memory.

ESC+:+n — Converts printer from 132 column printer to one of n columns, where
$$2 \leq n \leq 127.$$
ESC+; — Returns printing to normal 132 columns.

BEL — Bell

BS — Back Space

CR — Carriage Return

FF — Form Feed

HT — Horizontal Tab

LF — Line Feed

SI — Shift In (opt.)

SO — Shift Out (opt.)

VT — Vertical Tab

NOTE — n, n_1, n_2 etc. used in the above commands represent 7-bit binary numbers. If the parity option is selected on the printer, correct parity must be supplied here also. N is an ASCII number, where $1 \leq N \leq 8$. + signs above are separators only, not transmitted characters.
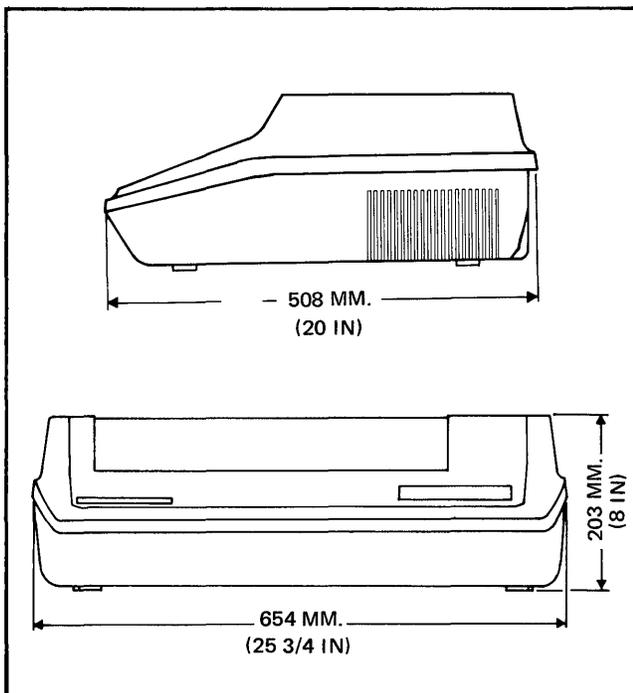
*Not functional with any line buffering option.

FIGURE 9 — Dimensions

— 508 MM. (20 IN)

203 MM. (8 IN)

654 MM. (25 3/4 IN)

FIGURE 10 — USASCII Character Set

System (ANSI X3.4-1968)

CHARACTERS WITHIN THE HEAVY LINE BOXES ARE NONPRINTABLE

The Model 810 Printer as a 990 Computer Peripheral

The 810 kit supplied by Texas Instruments for the 990 Minicomputer, Part Number 938120-0001, consists of the Model 810 Line Printer with full ASCII character set and vertical forms control with compressed print, a 9 meter (30-foot) cable, interface module, paper takeup tray and an installation and operation manual.

The Model 990 Computer System provides control of the line printer and sends data at a 4800 baud burst rate via the interface module to the line printer for printing. The interface is a full-duplex, RS-232-C circuit, half-size printed-circuit board that installs in a communications register unit (CRU) slot of the Model 990 Computer. The interface module receives serial data and commands from the computer CRU, converts them to EIA levels and sends them to the line printer. The interface module also receives status from the printer and routes these signals to the computer. The half-size interface board may be installed in either side of a Model 990 Computer CRU slot or in a Model 990 I/O expansion chassis slot.

Versatility of locating the printer remotely is provided via the optional extension cables available in increments up to 1000 feet (304.8 M.).

Operating in conjunction with the appropriate Model 990 Computer Operating System software, the printer provides reliable hard copy of high-speed data output from the computer.

Software Support

To operate a line printer, software routines must provide initialization, character transfer, and end-of-data reporting. Standalone software programs for printer operation may be easily designed and implemented; however, other than operational tests, output to the printer is normally accomplished by calling the device service routine of the 990 Computer DX10 or TX990 Operating System. Service routines implemented under the operating systems use SBO, SBZ, TB, LDCR and STCR instructions of the 990 Computer instruction repertoire.

Because the module can be inserted into any of the available CRU chassis locations wired for predefined addresses, the base address becomes a variable that depends on the module chassis location.

Before selecting a chassis location, the user must determine the address that the software handling routine expects the module to recognize. Full details for chassis locations and jumper configurations are provided in the 990 hardware reference manual.

The line printer diagnostics verify proper operation of the printer when it is connected to a 990 Computer. These diagnostics greatly simplify maintenance and troubleshooting, whether performed by trained, experienced Texas Instruments Service Engineers or by the user's maintenance personnel. The diagnostics provided verify the performance of the line printer as well as the interconnecting cable, the interface module and the CRU interface with the computer system.
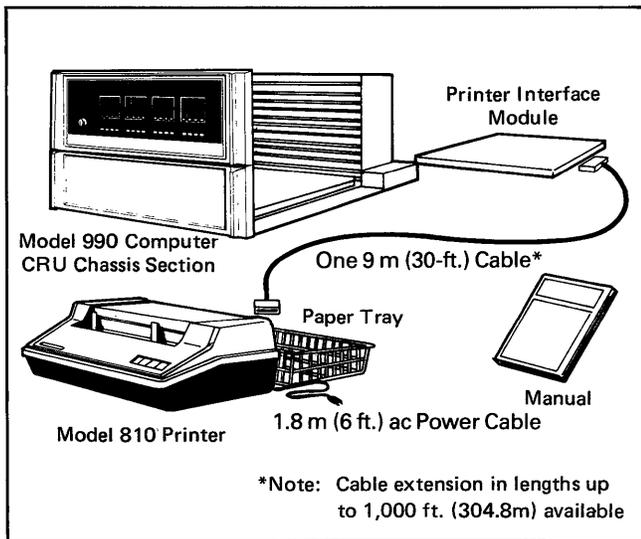

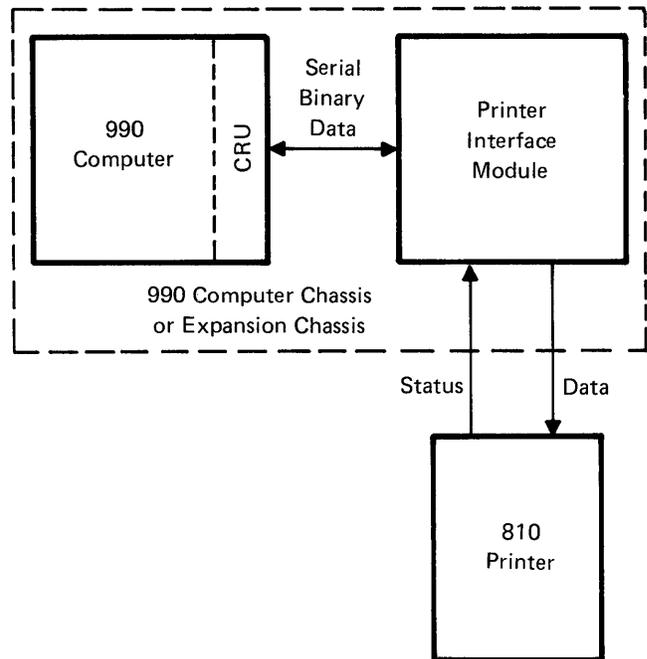FIGURE 11 — Installation with Model 990 Computer System

FIGURE 12 — Model 990 Block Diagram

Supporting Documentation For Model 990 Computer System

Additional information on the Model 810 Line Printer interfacing equipment and applicable software is contained in the following manuals:

Model 990 Computer Family Systems Handbook, Manual No. 945250-9701.

Model 990 Computer Model 810 Line Printer Installation and Operation, Manual No. 939460-9701.

Model 990 Computer DX10 Operating System Programmer's Guide, Manual No. 945257-9701.

Model 990 Computer TX990 Operating System Programmer's Guide, Manual No. 945416-9701.

Model 990 Computer TTY/EIA Terminal Module Depot Maintenance, Manual No. 945408-9701.

Model 990/10 Hardware Reference, Manual No. 945417-9701.

Model 990/4 Hardware Reference, Manual No. 945251-9701.

Texas Instruments provides a full range of support for the Model 810 Line Printer, including a worldwide sales and service network, full documentation, user training programs, purchase plans and applications.

MODEL 810 SPECIFICATIONS

PRINTER

METHOD — Microprocessor controlled, bi-directional wire matrix printhead. Prints 64 limited ASCII characters in 9x7 dot pattern.

SPEED — 150 cps.

FORM WIDTH — 77 to 881mm (3 to 15 inches).

LINE SPACING — 6 or 8 vertical lines per 2.5 cm (inch). Selectable either by operator via switch on auxiliary control panel or by software.

LINE LENGTH — Up to 132 characters at 10 characters-per-inch.

PAPER DRIVE — Tractor pin feed.

MULTI-COPY FORMS — Up to six parts.

CONTINUOUS FORMS — Feeds from either the rear or from the bottom of the printer.

LINE FEED TIME: 33 milliseconds with a maximum paper slew rate of 178 mm per second (7 inches-per-second).

OFF-LINE TEST — Initiated by operator actuation of switch on auxiliary control panel. Prints a rotating alphanumeric pattern to test machine (excluding interface).

INTERFACE

SERIAL EIA RS-232-C — A standard 25-pin female EIA compatible connector is mounted on the back of the printer.

BAUD RATES — Operator selectable rates of 110, 150, 300, 1200, 2400, 4800, or 9600 baud via a switch setting on the auxiliary control panel.

PARITY — Checking for odd, even, or none is operator selectable on auxiliary control panel.

PAPER-OUT — Sensor detects paper out condition and lights paper out indicator and generates a busy signal.

BELL — An audible tone is sounded whenever a fault is activated and/or when the *BEL* control character is received at the printer.

LINE BUFFER — 256 characters.

TAB CONTROL

Vertical tabs are hardware and software programmable. Horizontal tabs are software programmable

FRONT CONTROL PANEL SWITCHES AND INDICATORS

POWER — Indicator light.

ON-LINE — Select-deselect switch with lighted indicator.

LINE FEED — Switch for line-at-a-time form advance when off-line.

FORM FEED — Switch causes form to advance to the next top-of-form.

FORM ALIGN UP/DOWN — Provides vertical forms positioning. The advance up switch causes either inching or rapid advance of the form. The down switch causes downward inching of the form.

PAPER OUT — Indicator illuminates whenever the printer is out of paper.

ERROR INDICATOR — Lights whenever a parity error is sensed. Blinks whenever carriage positioning is jammed or fails.

RESET SWITCH — Resets ERROR or PAPER OUT Indicator after paper is loaded or other fault is corrected.

AUXILIARY CONTROL PANEL

The automatic LINE-FEED with each carriage return signal may be disabled by the operator via switches such that line feed occurs only upon receipt of the LINE-FEED signal.

Automatic PERFORATION SKIP-OVER can be disabled by the operator via a switch.

TOP-OF-FORM setting is provided by control switches located on the front and auxiliary control panels.

BAUD RATES are operator selectable.

PARITY is operator selectable.

LINE SPACING is also operator selectable.

OFF-LINE TEST — Actuated by operator

PHYSICAL

POWER — Four selectable voltage ranges:
100V rms, +10 -15%, 47-63 Hz.
120V rms, +10 -15%, 47-63 Hz.
220V rms, +10 -15%, 47-63 Hz.
240V rms, +10 -15%, 47-63 Hz.

Power Requirement: 200 W.

A 1.8m (6-foot) power cord with a NEMA standard 120V 3-pin connector is standard.

AMBIENT TEMPERATURE — Operating: +5° to +40°C. Storage: —30° to +70°C, not including ribbon and paper.

SHOCK — Operating: 0 max.; Storage and Handling: 30g for 11 msec. (in shipping container)

VIBRATION — Operating: 10 to 60 Hz, 0.5g max., Non-Operating: 10 to 300 Hz, 2g max.

HUMIDITY — Operating: 5% to 90% (no condensation); Storage: 5% to 95% (no condensation).

DIMENSIONS — 654mm x 203mm x 508mm (25 ¾ inches wide x 8 inches high x 20 inches deep).

WEIGHT — 25Kg (55 pounds), (excluding options).

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