

GENERAL ELECTRIC

COMPANY

Saltzer
SPECIALTY
CONTROL
DEPARTMENT

WAYNESBORO, VIRGINIA TELEPHONE 703-942-8161

April 3, 1969

Mr. Charles Clingen, Manager
Project MAC
General Electric Company
545 Technology Square
Cambridge, Massachusetts 02139

Dear Charlie:

I have enclosed a copy of our specification on the TermiNet 300 printer.

I have checked on when our terminal would react to a line feed and give an automatic carriage return. It looks like units shipped in September or October could include this feature.

I have been in contact with Wes Burner of MIT, and I will be forwarding some literature to him.

Pricing on the unit is as follows:

Basic Unit	\$3,400
Answerback	\$80
Long Print Line	\$310
Pin Feed Platen	
Short	\$75
Long	\$81
Horizontal Tabulation	\$190
Form Feed & Vertical Tabulation	\$240
Line Turnaround	\$175
Reader & Punch in Console	\$2,235
Reader in Console	\$1,272
Punch in Console	\$1,465
Parity Error Detection	\$180
Parallel Interface	\$160

All prices are F.O.B., Waynesboro, Virginia.

GENERAL  ELECTRIC

Mr. Charles Clingen April 3, 1969

Page 2

Delivery is on a first come, first serve basis and positions are still open in August.

Service can be provided by the Service Shops or by FED personnel on site. Our experience is that the TN 300 is extremely easy to service.

Please call if I can answer any questions.

Very truly yours,

Chuck Presto

C. A. Presto, Sales Specialist
Data Communication Sales
SPECIALTY CONTROL DEPARTMENT

CAP/as

Enclosure: 1 blue brochure
1 specification
1 Terms & Conditions of Sale

TERMI NET 300

DATA COMMUNICATION TERMINAL

Patented and Patents Pending

FUNCTIONAL SPECIFICATION #SCW 4444

FOR

GENERAL ELECTRIC TermiNet* 300

DATA COMMUNICATION TERMINAL

REVISED 12/15/68

***Trademark of General Electric Company, U. S. A.**

© Copyright General Electric Company, U. S. A. 1968

FUNCTIONAL SPECIFICATION
FOR
Terminet 300 TERMINAL
INDEX

1.0 SCOPE

1.1 Configuration

1.1.1 KSR Keyboard Send-Receive (Standard)

1.1.2 RO - Receive Only

1.1.3 ASR Automatic Send-Receive

1.2 Options

1.2.1 Half-Duplex Operation

1.2.2 Echo-Plex Operation

1.2.3 Long Print Line

1.2.4 Red and Black Ribbon

1.2.5 Horizontal Tabulation

1.2.6 Form Feed and Vertical Tabulation

1.2.7 Pin Feed Paper

1.2.8 Answerback

1.2.9 Tape Reader

1.2.10 Tape Reeler

1.2.11 Tape Punch

1.2.12 Upper/Upper Lower Case Switch

1.2.13 Character Parity Error Detection

1.2.14 Parallel Interface

INDEX (CONT.)

2.0 KEYBOARD

3.0 GENERAL

3.1 Application

3.1.1 Anticipated Use

3.1.2 Life

3.1.3 Overhaul

3.2 Environment

3.2.1 Temperature

3.2.2 Altitude

3.2.3 Humidity

3.2.4 Vibration and Shock

3.2.5 Dust

3.2.6 Electrical

3.3 Applicable Standards and Approvals

3.3.2 U.L.

3.3.2 CSA

3.3.3 FCC Rule 15

3.4 System Considerations

3.4.1 Interface

3.4.2 Data Sets (Modems)

3.4.3 Asynchronous

3.4.4 Parallel Interface

3.4.5 Transmitting and Receiving Speed

3.4.6 Code

INDEX (CONT.)

- 3.5 Terminal Controls
 - 3.5.1 Local
 - 3.5.2 Standby
 - 3.5.3 On Line
 - 3.5.4 Suppress Print/Transmission
 - 3.5.5 Interrupt
 - 3.5.6 Speed Changing Switch
 - 3.5.7 Auto L.F.
 - 3.5.8 Power "On/Off"
 - 3.5.9 Alarm
- Optional Controls -----
- 3.5.10 Ready
- 3.5.11 Here Is
- 3.5.12 Upper/Upper Lower Case Switch
- 3.6 Terminal Adjustments
 - 3.6.1 Key Sound
 - 3.6.2 Alarm
- 3.7 Transmission-Receiving Modes
 - 3.7.1 Full Duplex
 - 3.7.2 Half-Duplex
 - 3.7.3 Echo-Plex
- 4.0 PRINTING CHARACTERISTICS
 - 4.1 Printing Speed
 - 4.2 Print Character Set

INDEX (CONT.)

- 4.3 Print Quality
- 4.4 Horizontal Character Spacing
- 4.5 Vertical Line Spacing
- 4.6 Line Feed Distance
- 4.7 Noise
- 4.8 Print Line Length
- 4.9 Line Feed Time
- 4.10 Ribbon Mechanism
- 4.11 Print Line Visibility
- 4.12 Type Style
- 4.13 Copies
- 4.14 End of Line Alarm
- 4.15 Back Space
- 4.16 Print Line Entry Marker
- - - - - Optional Printing Characteristics - - - - -
- 4.17 Long Print Line
- 4.18 Red and Black Ribbon
- 4.19 Horizontal Tabbing
- 4.20 Form Feed and Vertical Tabbing
- 5.0 PAPER HANDLING
 - 5.1 Roll/Friction Feed and Single Sheets
 - 5.1.1 Paper Size
 - 5.1.2 Paper Roll Diameter
 - 5.1.3 Paper Release
 - 5.1.4 Paper Indication

INDEX (CONT.)

- 5.1.5 Paper Replacement
- 5.1.6 Multiple Copy Control
- Optional Paper Handling -----
- 5.2 Pin Feed Paper
 - 5.2.1 Paper Width
 - 5.2.2 Sprocket Design
 - 5.2.3 Paper Out Indication
 - 5.2.4 Multiple Copies
- 6.0 COMMUNICATIONS AND LOGIC
 - 6.1 Control Character Usage
 - 6.1.1 Definition of Codes Acted Upon
 - 6.2 Codes Always Acted Upon
 - 6.2.1 BEL
 - 6.2.2 LF
 - 6.2.3 CR
 - 6.2.4 BS
 - 6.2.5 SPACE
 - 6.2.6 NAK
 - 6.2.7 ENQ
 - 6.2.8 ACK
 - 6.2.9 EOT
 - 6.3 Codes Acted Upon Optionally
 - 6.3.1 DC1
 - 6.3.2 DC2

INDEX (CONT.)

- 6.3.3 DC3
- 6.3.4 DC4
- 6.3.5 ESC h or ESC H
- 6.3.6 ESC j or ESC J
- 6.3.7 ESC 4
- 6.3.8 ESC 3
- 6.3.9 ESC 1
- 6.3.10 ESC 2
- 6.3.11 DLE EOT
- 6.3.12 DLE ?
- 6.3.13 ETX
- 6.3.14 ESC ;
- 6.3.15 ESC :
- 6.3.16 ESC 0 (Zero)
- 6.4 Terminal to Terminal Communication
- 6.5 Answerback
- 6.6 Terminal Status
- 6.7 Character Parity Error Detection
- 7.0 TAPE UNIT
 - 7.1 Tape Reader
 - 7.1.1 Tape Width
 - 7.1.2 Code
 - 7.1.3 Speed
 - 7.1.4 Remote Control

INDEX (CONT.)

- 7.1.5 Reels
- 7.1.6 Stopping
- 7.1.7 Reverse
- 7.1.8 Switches
- 7.1.9 Protective Delays
- 7.2 Tape Punch
 - 7.2.1 Tape Width
 - 7.2.2 Life
 - 7.2.3 Speed
 - 7.2.4 Code
 - 7.2.5 Capacity
 - 7.2.6 Protection
 - 7.2.7 Back Space
 - 7.2.8 Chad
 - 7.2.9 Controls
- 8.0 PHYSICAL AND MECHANICAL PROPERTIES
 - 8.1 Size and Weight

1.0 SCOPE

This Specification describes the TermiNet 300 Data Communication Printer which can be used in various configurations.

1.1 Configuration

The three configurations below are general and do not include the options listed separately. The ASR configuration does include the tape reader and punch options.

- 1.1.1 Keyboard Send-Receive (KSR) is the standard terminal configuration with 75 print positions and friction feed paper. The standard has full simultaneous two-way transmission-receiving capabilities. See 3.7.1.
- 1.1.2 Receive Only (RO) is a standard terminal which does not have a keyboard.
- 1.1.3 Automatic Send-Receive (ASR) is a terminal with paper tape reader and punch included.

1.2 Options

- 1.2.1 Half-Duplex Operation - See 3.7.2 and 3.5.10.
- 1.2.2 Echo-Plex Operation - See 3.7.3.
- 1.2.3 Long Print Line - See 4.17.
- 1.2.4 Red and Black Ribbon - See 4.18.
- 1.2.5 Horizontal Tabulation - See 4.19.
- 1.2.6 Form Feed and Vertical Tabulation - See 4.20.
- 1.2.7 Pin Feed Paper - See 5.2.
- 1.2.8 Answerback - See 6.5.
- 1.2.9 Tape Reader - See 7.1.
- 1.2.10 Tape Reeler - See 7.1.5.
- 1.2.11 Tape Punch - See 7.2.
- 1.2.12 Upper/Upper Lower Case Switch - See 3.5.12.
- 1.2.13 Character Parity Detection - See 6.7.
- 1.2.14 Parallel Interface - See 3.4.4.

2.0 KEYBOARD

The Keyboard Specification is a separate document. The keyboard shall be fully compatible with the TermiNet 300 terminal. It shall be easily detached from the printing mechanism for ease of repair and replacement.

3.0 GENERAL

3.1 Application

3.1.1 Anticipated Use - Typical use shall be 8-hour day, 40-hour week, 2,000 hrs./year. Continuous running shall not be detrimental to life.

3.1.2 Life - Units shall be capable of being kept in service for a period of five years. Modular design approach shall be used to facilitate easy updating.

3.1.3 Overhaul - The design goal shall be 4,000 hours motor on time.

3.2 Environment

The TermiNet terminal is capable of being used in non-air conditioned factory and office areas.

3.2.1 Temperature - $\neq 32^{\circ}\text{F}$ to $\neq 110^{\circ}\text{F}$ Operating
 -20°F to $\neq 160^{\circ}\text{F}$ Storage

3.2.2 Altitude - 0-12,000 feet Operating
0-50,000 feet Non-Operating

3.2.3 Humidity - 0-95% relative humidity, both operating and non-operating

3.2.4 Vibration and Shock - Unit is capable of withstanding its own induced vibration and shock without any deteriorating effect. Unit shall be capable of being shipped without damage or misadjustment when properly packed.

3.2.5 Dust - Normal office area dust content plus contamination caused by operation which includes paper chad from tape punch and dirt contained in roll type paper.

3.2.6 Electrical - United States: Operate from 60 Hz, 1 phase, 105-129 volts, 120 volts nominal. Normal line transients will be tolerated.

3.0 GENERAL (CONT.)3.3 Applicable Standards and Approvals

- 3.3.1 TermiNet 300 terminal shall have Underwriters' Laboratory approval.
- 3.3.2 TermiNet 300 terminal shall have CSA (Canadian Standards Association) approval.
- 3.3.3 TermiNet 300 terminal shall meet FCC Rule 15 for maximum electromagnetic radiation.

3.4 System Considerations

- 3.4.1 Interface - The TermiNet 300 terminal conforms to EIA Standard RS-232B with respect to the interface between the terminal and the Data Communication Equipment (Modems).
- 3.4.2 Data Sets (Modems) - TermiNet 300 terminal is capable of operation with Bell Data Set 103A, 103F, 103G, and 103H. The terminal shall also be compatible with the equivalent General Electric Data Sets and Acoustic Couplers.
- 3.4.3 Asynchronous Transmission - TermiNet 300 terminal will be used in asynchronous data transmission modes.
- 3.4.4 Parallel Interface - TermiNet 300 terminal has an optional parallel interface connection for adding accessories which require it. This option is available by adding a circuit board and plug connection to the terminal.
- 3.4.5 Transmitting and Receiving Speed - TermiNet 300 terminal is capable of transmitting and receiving at 30 characters per second (300 baud). In addition, the terminal can be used at 15 cps (150 baud) and 10 cps (110 baud) by adjusting a switch provided for this purpose. The accuracy of the clocking rate of bit generation and receiving shall be within ± 0.05 per cent of the nominal clock rate.
- 3.4.6 Code - TermiNet 300 terminal is operated from ASCII Code with extensions described herein.

3.0 GENERAL (CONT.)

3.5 Terminal Controls

The following switches and lights are easily accessible to the operator for control of the TermiNet 300 terminal. A column is not shown for an ASR configuration since this simply involves adding the tape reader and punch to the KSR. See Paragraph 7.1.9 for Tape Reader Controls and Paragraph 7.2.11 for Tape Punch Controls.

Controls always included:

RO

Motor On
Motor Off
Alarm
Interrupt
Local Line Feed
Speed Changing Switch
Power "On-Off"
Single/Double Space

KSR

Local
Standby
On Line
Suppress Print/Transmission Alarm
Interrupt
Speed Changing Switch
Auto - Line Feed
Power "On-Off"
Single/Double Space

Controls optionally included:

RO

Local CR
Interrupt
Here Is

KSR

Upper/Upper Lower Case
Here Is
Ready

3.5.1 Local - A lighted pushbutton that energizes the keyboard and the terminal motor when depressed. The terminal is strictly in the local mode and would not be on line even if the Data Set "Data" button were pushed. The "Local" button will be lighted when the terminal is in the "Local" mode. The "Data Terminal Ready" lead to the Data Set will be "Off" so the terminal cannot be turned on remotely when in "Local".

3.5.2 Standby - This lighted pushbutton, when depressed, turns the motor power off. The electronics will always be energized when the terminal is in the "Standby" mode and the terminal will be able to receive data. The "Standby" button will be lit when the terminal is in the "Standby" condition and can be activated remotely.

3.5.3 On Line - This switch is a lighted pushbutton. When depressed, the button becomes lighted, and the motor is started. The terminal can be turned "on Line" from a remote location by the use of the "Motor On" code.

X

3.0 GENERAL (CONT.)3.5 Terminal Controls (Cont.)

- 3.5.4 Suppress/Print Transmission - This is a three-position toggle switch on the front panel. In the center position, operation is normal; that is, when information is either transmitted or received, it is printed simultaneously. If this switch is in the Suppress Print position, information generated by either keyboard or tape reader will be transmitted but not printed. This condition also allows two-way simultaneous data flow in that data could be received and printed or punched while data can be transmitted concurrently.

When this switch is in the Suppress Transmission position, information generated locally by either tape reader or keyboard will be printed but not transmitted. This same function can be code controlled; see Section 6.0.

- 3.5.5 Interrupt - A lighted pushbutton that, when depressed by an operator, will transmit a "break". The duration of the "break" signal is 268 milliseconds spacing signal. When the operator pushes the switch to transmit a break, the button shall not light. A break, when received, is identified as one full character of spacing, including the start and stop bit time.

If a "break" or "NAK"* signal is received by the terminal, the "Interrupt" light comes on and an audible alarm sounds for approximately 0.5 seconds and the keyboard is disabled and the interrupt button must be pressed to reactivate it. The reader is stopped by the "break" or "NAK" code, but can be restarted on receipt of the "Reader On" code. If the "Interrupt" light is lit and the button is pressed, no "break" signal is transmitted, but the light goes out and communication can be restored.

- 3.5.6 Speed Changing Switch - A switch is provided that allows printing and transmission speeds of 110, 150, and 300 baud. The 110 baud rate will contain two stop bits per character; the other two rates contain one stop bit.

- 3.5.7 Auto - Line Feed - A switch is provided that changes the effect of the CR key from generating the Carriage Return code only to generation of both Carriage Return and Line Feed code in that order. This switch is easily accessible to the operator.

* When option is included.

3.0 GENERAL (CONT.)3.5 Terminal Controls (Cont.)

3.5.8 Power "On-Off" - A switch is provided in an inconspicuous location which interrupts the input power to the terminal.

3.5.9 Alarm - This is a lighted pushbutton that becomes lit whenever a paper out, abnormal voltage, or belt speed condition is detected. When a paper out or speed condition occurs, the terminal shall take the following actions:

1. The "Alarm" light comes on.
2. The motor stops to end printing.
3. An alarm sounds momentarily.
4. The terminal transmits a "break" signal.
5. Transmission from the tape reader ceases.

For an abnormal voltage condition, the terminal will do all of the above except send a break signal.

Although the "Alarm" sound is momentary, the lamp will remain lit and transmission from the tape reader will be stopped until the incorrect condition is corrected. After the abnormal condition has been corrected, normal operation can continue either from keyboard, tape reader input, or receipt of data. It will be necessary to restart the motor by pushing the correct control switch or by receiving the motor start code.

NOTE: The "break" signal that is transmitted because of paper out or belt speed will not light the "Interrupt" light on the transmitting terminal.

NOTE: When either the paper out or voltage and speed protection circuits operate, the terminal will not disconnect the line. Also, during this condition, the Data Set cannot respond with its automatic answer option.

NOTE: During normal terminal start-up, these protective features will not interfere with operation.

3.5.10 Ready - This light indicates to the operator whether the system is ready for transmission from the terminal. The conditions this light will indicate are:

1. In half-duplex, this light will light when the terminal is in the "Transmitting" mode.

3.0 GENERAL (CONT.)3.5 Terminal Controls (Cont.)3.5.10 Ready (Cont.)

2. This light will go out when the DLE? (Wait Before Transmit) code is received, indicating that the system wants the terminal to wait before transmitting. However, the keyboard and tape reader are not disabled. Receipt of the DLE? code will result in automatic retransmitting of ENQ. This procedure (distant end sending DLE? and terminal replying with ENQ) may be continued until the system is ready. At that time, the distant end will transmit an ACK, lighting the lamp.

3.5.11 Here Is - This is a momentary switch that transmits the terminal Answerback when depressed. This switch will not send the terminal's status - see 6.7.

3.5.12 Upper/Upper Lower Case Switch - A switch is available on an optional basis which enables either upper case only printing or allows the normal full ASCII operation which includes upper and lower case.

3.5.13 Character Parity Error Detection - TermiNet 300 terminal has character parity error detection available as an option. When an error in character parity is detected, a break signal will be transmitted, the interrupt light will come on, and the reader will stop. This action occurs at both terminals, if two terminals are communicating. If a computer and terminal are communicating, the terminal shuts down in exactly the same manner and the computer stops transmitting data until the terminal is reactivated. This is available on an optional basis.

3.6 Terminal Adjustments - Certain adjustments can be made but will not be readily accessible to the operator.

3.6.1 Key Sound - An adjustment will be provided that varies the audible sound which is generated on key depression. This adjustment shall go all the way to "Off" or no key sound.

3.6.2 Alarm - The audible alarm volume will be adjustable all the way to "Off" or no sound.

3.7 Transmission-Receiving Modes

The following transmission-receiving modes are available on the terminal:

3.0 GENERAL (CONT.)

3.7 Transmission-Receiving Modes (Cont.)

- 3.7.1 Full Duplex - The standard TermiNet 300 terminal is wired for two-way simultaneous (full duplex) data flow.
- 3.7.2 Half-Duplex - TermiNet 300 terminal will operate in an alternate data flow (half duplex) mode if the line turnaround option is included.
- 3.7.3. Echo-Plex - TermiNet 300 terminal will also operate in an Echo-Plex mode which is a variation of Full Duplex. In the Echo-Plex mode codes which are generated at the keyboard are sent to the computer and then "echoed" back to the printer. The terminal will operate in this mode by placing the Inhibit switch in the Inhibit Print position. This mode can also be permanently wired in.

4.0 PRINTING CHARACTERISTICS

- 4.1 Printing Speed - The basic printing speed is established at 30 characters per second. The unit is also capable of operating at 10 characters/second and 15 characters per second.
- 4.2 Print Character Set - The print character set is comprised of 94 alphanumeric characters, as defined by ASCII.
- 4.3 Print Quality - The quality of the printing of the TermiNet 300 terminal is better than existing teletypewriters.
- 4.4 Horizontal Character Spacing - The character spacing is 10 characters per inch.
- 4.5 Vertical Line Spacing - The print lines are spaced 6 lines per inch.
- 4.6 Line Feed Distance - Normal operation provides single line advance on command of the Line Feed Code. In addition, an operator set adjustment is provided that allows double line spacing on receipt of the Line Feed Signal.
- 4.7 Noise - The noise level of the TermiNet 300 terminal shall be kept to a minimum and be less than present office typewriters or other teleprinters.
- 4.8 Print Line Length - The basic model of the TermiNet 300 terminal has a print line length of 75 characters. Printing will begin with the center of the first character 0.65" from the left edge of the paper.

4.0 PRINTING CHARACTERISTICS (CONT.)

Handwritten note:
Time goes long

- 4.9 Line Feed Time - Even though there is no mechanical carriage, a time is required at the end of a print line to allow for printing all characters received and advancing paper. At a printing speed of 30 cps, seven "fill" characters are required after LF. CR, ETB, or other control characters could be part of the seven, or an equivalent time delay could be used. If consecutive LF's are sent to the terminal, two "fill" characters should be between each LF to result in proper operation at a printing speed of 30 cps. The compatible tape reader will accommodate all delay automatically.
- 4.10 Ribbon Mechanism - The ribbon cartridge shall be capable of easy replacement by the operator. The ribbon mechanism shall automatically reverse when either of the ribbon spools is depleted. A ribbon will be furnished with the terminal to provide two weeks of satisfactory operation under normal operating conditions.
- 4.11 Print Line Visibility - The characters on the line being printed shall be visible to the operator when using the keyboard at relatively slow speeds. The print line may be obscured when the operator or computer-directed information is being rapidly typed, provided that it becomes visible after a short time interval.
- 4.12 Type Style - A wide variety of type styles will be available. It is possible to change both individual print characters and complete character sets at customer locations. (This is a serviceman change.)
- 4.13 Copies - TermiNet 300 terminal has the capability of producing an original, plus six copies of standard commercially available business forms.
- 4.14 End of Line Alarm - Adjustable margins will not be provided on the basic unit. When adjustable margins are not provided, the operation of the TermiNet 300 terminal shall be such that when receiving, the printing action will cease after the last print position has been printed. When transmitting, printing will cease after the last print column has been printed, but transmission will continue. The bell shall ring seven print positions from the end of the line and also ring every time a key is struck after the last print position when transmitting only, not receiving.
- 4.15 Back Space - TermiNet 300 terminal is capable of backspacing one print position to the left at a time from command of either the keyboard or from the incoming data line. After striking the backspace key, there shall be a time interval of 222 ms before reprinting at any character position previously printed in that line.

4.0 PRINTING CHARACTERISTICS (CONT.)

- 4.16 Print Line Entry Marker - A digital indicator shall describe exactly the column number where the next character will appear. This indicator tracks the printer portion of the terminal, not the keyboard.
- 4.17 Long Print Line - It shall be possible to add longer print lines. The maximum length is 118 characters and 12.85 inch wide paper.
- 4.18 Red and Black Ribbon - It shall be possible to use red and black ribbon to obtain two-color printing. A time delay of 222 ms is of another color. Non-printable characters can make up some of this time.
- 4.19 Horizontal Tabbing - This is an optional feature of the TermiNet 300 terminal. This feature allows either the operator or the sending station to set the tabs. The time required for moving from one tab position to the next is less than one character time. The tabs can be set at any position on the print line. The first horizontal tab position is the left hand margin set.
- 4.20 Form Feed and Vertical Tabbing - This feature will be defined by 12/15/68.

5.0 PAPER HANDLING

5.1 Roll/Friction Feed and Single Sheets

TermiNet 300 terminal is capable of handling roll feed as well as single sheets of paper. Single sheets may consist of bond paper, stencils, individual tickets, individual labels, etc. Convenience of insertion is approximately equal to that of an electric typewriter.

- 5.1.1 Paper Width - Either 8.5 inches or 12.85 inches.
- Paper Length - Minimum 5 inches. Last line of printing shall be no closer to the bottom of the page than 1.5 inches.
- 5.1.2 Paper Roll Diameter - The maximum diameter of the paper roll is 5 inches (Teletype style). The roll type paper may be an original plus two copies.
- 5.1.3 Paper Release - A provision is made to allow manual paper adjustment to correct for skew, line registration, and similar problems.
- 5.1.4 Paper Indication - Paper out indication is provided. An audible signal is provided (tone). The signal transmits a Break or Interrupt. During Paper Out Indication, the terminal will not accept a call. For details, see Paragraph 3.5.10.

5.0 PAPER HANDLING (CONT.)

5.1 Roll/Friction Feed and Single Sheets (Cont.)

- 5.1.5 Paper Replacement - Shall be able to replace the paper supply easily by the operator.
- 5.1.6 Multiple Copy Control - It is not necessary to make an adjustment to obtain correct printing on multiple copies.

5.2 Pin Feed Paper

The TermiNet 300 terminal has the capability of adding a mechanism which converts the unit from a roll/friction feed to a sprocket-fed device for business forms applications. This modification is accomplished as a filed change. The sprocket drive is uni-directional and has the following features:

- 5.2.1 Paper Width - Either 8.5 inches or 12.85 inches.
- 5.2.2 Sprocket Design - Sprocket/pin spacing and design is compatible with BEMA Standards to handle the paper sizes listed in 5.2.1.
- 5.2.3 Paper Out Indication - A paper out indication is provided when the TermiNet 300 terminal is being used in the sprocket feed mode. This feature operates in the same manner as when used with roll feed paper.
- 5.2.4 Multiple Copies - TermiNet 300 terminal is capable of handling business forms with an original and six copies.

6.0 COMMUNICATION AND LOGIC

6.1 Control Character Usage

Following is a tabulation of ASCII Control Characters showing which codes are acted upon by the TermiNet 300 terminal, which codes are acted upon optionally, and which are not acted upon at all. Detailed explanations follow those codes which are always acted upon and acted upon optionally. In the case of the tape punch used in the ASR configuration, all codes received or generated locally will be punched on tape regardless of whether the terminal logic takes action on the code.

6.0 COMMUNICATION AND LOGIC (CONT.)

6.1 Control Character Usage (Cont.)

	<u>Communication or Control Character</u>	<u>Format Effector</u>	<u>Information Separator</u>
Codes Always Acted Upon by Terminal Logic	BEL	LF	
	NAK	CR	
	ACK	BS	
	EOT	Space	
	ESC h or ESC H		
	ESC j or ESC J		
Codes Acted Upon Optionally By Terminal Logic	DLE EOT	HT	
	DLE?	VT	
	ENQ	FF	
	ETX		
	DC1 (numeral 1)		
	DC2		
	DC3		
	DC4		
	ESC4		
	ESC3		
	ESC2		
	ESC1 (numeral 1)		
	ESCO (zero)		
	ESC: (colon)		
ESC; (semicolon)			
Codes Never Acted Upon by Terminal Logic	SYN	FS	
	NUL	GS	
	DEL	RS	
	SUB	US	
	EM		
	CAN		
	STX		
	SOH		
	ETB		

6.1.1 Definition of Codes Acted Upon

In descriptions following, "receipt" or "when received" refers to signals received, not those generated at keyboard or on local tape. "Recognition" refers to signals received or to signals generated locally.

6.0 COMMUNICATION AND LOGIC (CONT.)

6.2 Codes Always Acted Upon

- 6.2.1 BEL - When recognized, this code sounds an audible alarm for 0.5 seconds.
- 6.2.2 LF - Recognition of this code advances paper in printer one print line.
- 6.2.3 CR - Recognition of this code returns the printing to the beginning of the print line.
- 6.2.4 BS - Recognition of this code moves the printing position one print column to the left.
- 6.2.5 Space - Recognition of this code moves the printer one print column to the right without printing a character.
- X 6.2.6 NAK - Receipt of this code lights the "Interrupt" light and stops transmission and printing. Normal operation can be restored by depressing the "Interrupt" light.
- 6.2.7 ENQ - Receipt of this code will trigger the answer-back, when answerback is included. In addition, if line turnaround option is used, ENQ will trigger either ACK or NAK, depending on the status of the terminal, and results in line turnaround.
- X 6.2.8 ACK - This code, when recognized, results in line turnaround when this option is included. It will also turn the ready light on if the ready light option is included.
- 6.2.9 EOT - When recognized, this code causes the condition of the terminal to go to "Standby".

6.3 Codes Acted Upon Optionally

- 6.3.1 DC1 (One) - On ASR versions of the TermiNet 300 terminal, DC1 is used when received to turn the tape reader "On".
- 6.3.2 DC2 - On ASR versions of the TermiNet 300 terminal, DC2 is used when received to turn the tape punch "On".
- 6.3.3 DC3 - On ASR versions of the TermiNet 300 terminal, DC3 is used when recognized to turn the tape reader "Off".

6.0 COMMUNICATION AND LOGIC (CONT.)

6.3 Codes Acted Upon Optionally (Cont.)

- 6.3.4 DC4 - On ASR versions of the TermiNet 300 terminal, DC4 is used when recognized to turn the tape punch "Off".
- 6.3.5 ESCh or ESCH - Used when recognized to turn the printer motor "On".
- 6.3.6 ESCi or ESCJ - Used when recognized to turn the printer motor "Off".
- 6.3.7 ESC4 - When two-color printing is used, recognition of ESC4 will enable black printing.
- 6.3.8 ESC3 - When two-color printing is used, recognition of ESC3 will enable red printing.
- 6.3.9 ESC1 (One) - If Horizontal Tab is used, recognition of ESC1 sets a tab at the print column position where this code is recognized.
- 6.3.10 ESC2 - When Horizontal Tabbing is used, recognition of ESC2 will act as a tab clear code.
- 6.3.11 DLE EOT - When recognized, these codes initiate the automatic disconnect sequence by turning the "Data Terminal Ready" signal to the Data Set off until "Data Set Ready" is off. The terminal will also be placed in the "Standby" mode.
- 6.3.12 DLE? - Receipt of these codes constitutes a "Wait Before Transmit" condition. When a Ready lamp is included on the terminal, these codes will de-energize the Ready lamp. The terminal automatically responds to DLE? with the code ENQ.
- 6.3.13 ETX - ETX will "turn the line around" on half-duplex systems when recognized.
- ✓ ? 6.3.14 ESC; (Semicolon) - This code, when recognized, will separate locally generated codes from the printer. This will allow two-way simultaneous data flow (full duplex); also, the effect to an operator will be that of suppressing printing.
- 6.3.15 ESC: (Colon) - This code, when recognized, will restore normal operation; that is, restore the condition caused by receipt of ESC;. This means normal condition is that data is printed or punched or both concurrently with either transmitting or receiving.

6.0 COMMUNICATION AND LOGIC (CONT.)

6.3 Codes Acted Upon Originally (Cont.)

6.3.16 ESCO (Zero) - This code, when recognized, will cause the paper tape reader to reverse if the reader is stopped. The reader will reverse until a stop code or end of the tape condition is detected. If the paper tape hold-down lever is up, the reader is deactivated and will not respond to the code. If the tape reader is reading when it receives the code, it will continue until it reaches a stop code. Then the reader will be immediately reversed. The local tape reader will act on this code only if it is "On".

6.4 Terminal to Terminal Communication

Terminet 300 terminals should be able to communicate with other ASCII-oriented terminals.

6.5 Answerback

The Answerback option shall be 20 characters. The coding of the Answerback function shall be easily accomplished as a field change.

6.6 Terminal Status

Upon receipt of the ENQ code, the terminal will generate its answerback message if the Answerback option is included. If the line turnaround option is included, the terminal will generate ACK or NAK, depending on the terminal's status.

6.7 Character Parity Error Detection

This optional feature on the terminal results in checking for correct parity of each character. If an error is detected, the receiving machine sends an interrupt signal and stops transmission from the sending terminal or computer indicating an error has occurred. The character can then be retransmitted.

7.0 TAPE UNIT

7.1 Tape Reader

7.1.1 Tape Width - The reader shall be suitable for reading one-inch-wide EIA tape.

7.1.2 Code - ASCII Code format is used.

7.1.3 Speed - The reader will operate at fixed speeds of 10, 15, and 30 characters per second. The maximum speed of the tape reader shall be 120 characters per second.

7.0 TAPE UNIT (CONT.)

7.1 Tape Reader

- 7.1.4 Remote Control - Provisions are included in the TermiNet 300 terminal to allow the tape reader to be controlled from a remote location.
- 7.1.5 Reels - No take-up or supply reels are supplied with the basic tape reader but are available optionally.
- 7.1.6 Stopping - The reader has the ability to stop in one character time.
- 7.1.7 Reverse - The tape reader has the ability to reverse.
- 7.1.8 Switches - The following buttons and switches are provided:

Basic Controls -

Pushbuttons

1. Off - Stops reader.
2. Run - Starts reader.
3. BS/Load - Will energize tape reader motor and lamp. Also will reverse reader one character for each time it is depressed.

Editing Controls -

Toggle Switches

1. Skip Deletes - When in the "On" position, will skip delete codes at the rate of 120 characters per second.
2. Read Next-Omit Next - Depending on the position of this switch, the operation of three push-buttons will be controlled. These three push-buttons are "Character", "Word", and "Line". Operation shall be such that a single character, word, or line can be either omitted or read by placing this toggle switch in the appropriate position and pushing the required pushbutton.

- 7.1.9 Protective Delays - All time delays required for the proper operation of the tape reader and terminal are provided for automatically. Therefore the operator does not need to punch any fill characters before or after calling for control functions such as red-black ribbon, carriage return, line feed, etc.

7.0 TAPE UNIT (CONT.)

7.2 Tape Punch

7.2.1 Tape Width - The tape punch is suitable for punching one-inch-wide tape.

7.2.2 Life - The tape punch life is 100 million characters punched on paper tape and 20 million characters punched on mylar tape.

7.2.3 Punching Speed - The unit is capable of punching at speeds of 10, 15, and 30 cps.

7.2.4 Code - The primary code is ASCII format, including the parity bit.

7.2.5 Capacity - The size of the standard tape supply reel is 8.5 inches diameter.

7.2.6 Protection - Protection is provided that senses the end of tape condition, which will de-energize the punch. If the punch is in the "On" mode or is turned "On" when Tape Out occurs, a signal is fed to the terminal to cause a duplicate action to that for Paper Out.

7.2.7 Back Space - Provision for manually backing the tape up one character at a time is provided.

7.2.8 Chad - A chad box is provided.

7.2.9 Controls - The following standard control shall be provided on all punch models:

1. On - Starts punch.
2. Off - Stops punch.

8.0 PHYSICAL AND MECHANICAL PROPERTIES

8.1 Size and Weight

Over-all dimensions of the TermiNet 300 terminal are 7 inches x 19-3/4 inches wide x 26-1/2 inches long. The weight is approximately 55 pounds.

