CCD-1006A

TermiNet*300 DATA COMMUNICATION PRINTER

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FUNCTIONAL SPECIFICATION

GENERAL ELECTRIC

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1.0 SPECIFICATION SCOPE

This Specification describes the operation, performance and physical characteristics of the keyboard-send-receive (KSR) configuration of the General Electric TermiNet 300 Data Communication Printer and its various options.

2.0 EQUIPMENT DESCRIPTION

2.1 General Description

The TermiNet 300 Printer is a compact, self-contained unit, similar in size to an electric typewriter. It provides terminal facilities for the exchange of communications in an attended or unattended mode via appropriate transmission facilities. It is capable of transmitting and receiving data at various speeds (110, 150 and 300 baud), in serial form, and prints on conventional paper by impact means. It is primarily electronic in design and contains a minimum number of moving parts, resulting in extremely quiet operation. It is completely modularized in construction, mechanically and electrically. Application flexibility is provided with easily added-on options, most of which are field installable.

2.2 Configuration Options

The TermiNet 300 Printer is also available without a keyboard in a receive-only (RO) configuration and in an automatic-send-receive (ASR) configuration with either paper tape equipment or a magnetic tape accessory. These configuration options are described in separate documents.

3.0 SPECIFICATIONS

3.1 Code Compliance

The TermiNet 300 Printer conforms to the following codes and standards:

Underwriters'Laboratory Standard 478
Canadian Standards Association
Federal Communications Commission Rule 15
Electronic Industries Association Standard RS-232
American National Standard USAS X3.4-1968

3.2 Performance

3.2.1 System Performance

3.2.1.1 Type of Transmission - Serial asynchronous

3.2.1.2 Transmission Code - The Printer shall be capable of generating all 128 codes of the USASCII code set as defined in Standard USAS X3.4-1968.

3.2.1.3 Transmission Speed - 10, 15, and 30 char/sec. An optional transmission speed of 120 char/sec may be specified at time of ordering for use with the accessory tape reader or magnetic tape unit.

3.2.1.4 Transmission Mode - Full duplex. An optional circuit module may be used for line control of half duplex circuits.

3.2.1.5 Code Level - Eight, seven intelligence bits plus parity (even).

3.2.1.6 Unit Code - 10 char/sec - 11 (1 start, 7 intelligence, 1 parity, 2 stop bits).
15 and 30 char/sec - 10 (same as above except 1 stop bit).
Straps are provided to optionally allow either 1 or 2 stop bits at each speed.

3.2.1.7 Communication Interface - Interface between the Printer and the data line shall conform to EIA Standard RS-232.

A 25 pin connector in accordance with this standard will be provided on the rear of the Printer. The following circuits shall be used:

PIN NO.	CIRCUIT	DESCRIPTION
1	AA	Protective Ground
2	BA	Transmitted Data
3	BB	Received Data
4	CA	Request to Send
5	CB	Clear to Send
7	AB	Signal Ground
20	CD	Data Terminal Ready

3.2.2 Printing Characteristics

3.2.2.1 Printing Speed - The printing speed is operator selectable for 10, 15 or 30 characters per second.

3.2.2.2 Print Character Set - The print character set will be comprised of the 94 graphic characters defined by USASCII.

3.2.2.3 Horizontal Character Spacing - The character spacing will be 10 characters per inch.

3.2.2.4 Vertical Line Spacing - The Vertical Line Spacing will be either 6 or 3 per inch, dependent on the position of the LINE FEED switch on the Printer's control panel.

3.2.2.5 Print Line Length - The Printer shall be available with either 75, or as a factory installed option, 80 or 118 print positions.

3.2.2.6 Margin Widths

Print Positions	Paper Width	Left*	Right*
75	8-1/2"	.573"	0.527"
80	9-1/2"	.573"	1.027"
118	12-27/32"	.573"	0.571"

* From edge of paper to centerline first character.

3.2.2.7 Type Style - The type style shall be as shown in Figure 1. Optional print styles may be furnished. It shall be possible to change individual print characters or complete character sets at the customer's site except that the left hand brace may only be changed at a properly equipped service shop.

3.2.2.8 Number of Copies - The Printer shall have the capability of producing an original and up to six copies using standard commercially available business forms. No adjustment of impact pressure shall be necessary regardless of the number of copies.

3.2.2.9 Ribbon - The ribbon will be of the standard business machine type and will be capable of easy replacement by the operator. It will automatically reverse when either the supply or take-up spool is depleted. A ribbon and spools will be supplied with the terminal.

3.2.2.10 Print Position Scale - A graduated scale shall be provided adjacent to the print line for operator reference. This will indicate in which column on the paper printing has occurred. A vertical line will be provided for indexing the left edge of the paper.

3.2.2.11 Printing Position Indicator - A digital display will be provided on the printer's control panel which will indicate the next column in which printing will occur.

3.2.2.12 End-Of-Line Alarm - A printer controlled end-of-line warning alarm will sound eight print positions before the end of the print line selected. Also, an end-of-line alarm will sound after the last print position has been used. Both alarms will be active for locally generated data, not received data.

3.2.2.13 Print Line Visibility - When printing action ceases, the ribbon will drop below the print line so that the printing may be read. Internal illumination will be provided to enhance the readability of this line.

3.2.3 Paper Handling

3.2.3.1 Friction Feed - The standard printer will be suited for use with friction fed single sheets, individual form sets, or paper rolls.

3.2.3.1.1 Paper Width - Internal mounting shall be provided for 8-1/2" wide paper rolls with a maximum diameter of 5.00" and a core ID of 1.00". Provision shall be optionally made for rolls of narrower width. A kit shall be optionally available for exterior mounting of wider rolls. The maximum roll or individual sheet width shall be 12.85". See 3.5.1

3.2.3.1.2 Paper Length - The printer shall be capable of handling individual sheets with a minimum length of 5.00". The last line of printing shall be a minimum of 1.50" from the bottom of the page.

3.2.3.1.3 Paper Adjustment - A friction release lever shall be provided for use in paper loading and to correct for misalignment.

3.2.3.1.4 Low Paper Sensor - A sensor shall be provided to actuate an alarm when the roll paper supply is deplenished. This shall be latchable for use with other than a roll supply.

3.2.3.2 Pin Feed Option - An optional conversion kit shall be available to enable use of pin feed paper. The kit shall be capable of field installation without use of special tools and shall be suited for use with standard single or multiple part continuous business forms. At the user's choice, this kit may be factory installed, if so specified, at time of ordering.

3.2.3.2.1 Form Width - Three different width pin feed platens shall be available. These are intended for 8-1/2", 9-1/2", or 12-27/32" wide forms.

3.2.3.2.2 Sprocket Design - Pin design and hole spacing shall be in accordance with industry standards. The form shall have its holes spaced horizontally 0.25" from paper edge and spaced 0.50" vertically. Nominal hole diameter shall be 5/32".

3.2.3.2.3 Number of Copies - The printer shall be capable of handling up to a seven-part form set with a maximum form set thickness of 0.025".

3.2.3.2.4 Low Paper Sensor - A sensor shall br provided as part of an optional External Paper Handler (see 3.5.3) to detect that the forms supply is almost depleted. This shall be located approximately 19 inches from the line being printed. The action produced is the same as for friction feed paper.

3.2.4 Controls, Indicators, Adjustments

3.2.4.1 Control Panel - There shall be an operator's control panel mounted on the front of the printer. This shall include the following buttons, switches and indicators:

a) LOCAL This is a pushbutton switch which, when depressed, shall become illuminated and turn on the printer motor. The keyboard may be activated to print locally but no transmission shall occur, and interface circuit CD (Data Terminal Ready) shall be held in an Off condition so that the printer may not be called remotely.

b) STANDBY This is a pushbutton switch which, when illuminated, indicates that the printer is plugged in, power turned on, the electronics active, but the motor not running. If the

motor is on, pushing this button shall turn the motor off and illuminate the lamp. The printer shall be capable of being called and its motor controlled from a remote location.

c) ON LINE This is a pushbutton switch which shall, when depressed, illuminate the button, turn on the motor. By specifying the "Automatic Motor Control" option, the printer may be configured so that the light automatically lights and the motor turns on and off when circuit CB (Clear to Send) turns on and off. Also, the printer may be called remotely while in STANDBY and a Motor On code (ESC H) sent to put in ON LINE.

d) INTERRUPT This is a pushbutton switch which, when depressed with the printer in an ON LINE or STANDBY mode, shall transmit a 268 millisecond spacing signal or "break". While it is capable of being lit, this action shall not cause it to light. When an "INTERRUPT" is received over the incoming data line, the lamp shall light and the keyboard shall be inhibited. The minimum duration of the incoming "INTERRUPT" or "break" signal shall be one full character time including start and stop bits. Pressing the button after receipt of an interrupt shall turn off the lamp and restore the keyboard to operation. Under this condition a break signal shall not be transmitted.

e) ALARM This is a light which turns on when an "alarm" condition occurs and remains on until the condition has been corrected. When an "alarm" condition occurs, a "break" is automatically transmitted (see note) to advise the other end of the line of the difficulty. Also, when the ALARM light turns on, the motor will turn off and an audible alarm momentarily sounds as an additional warning to the operator.

Note: As an option, the "break" associated with a low-paper condition may be strapped out. When this is done, the ALARM light will turn on but the printer will continue to print. Refer to 3. 3. 10

3.2.4.1 Cont.

Those conditions which cause an alarm are listed below:

1) Low Paper A sensor detects when the printer's internal paper supply is low. The sensor may be latched off if the user desires.

2) Shield Up Raising the paper shield from its normal printing position on the platen will cause an ALARM.

3) Undervoltage Should the line voltage drop below 105 volts, an ALARM condition exists.

4) Underspeed on Print Belt Should the print belt be caused to slow down greater than 5% below its normal speed and remain that way for longer than 0.5 seconds, it shall cause an ALARM. When this happens, the motor will stop and the printer will go to STANDBY but the ALARM light will not turn on.

When the ALARM condition has been corrected, it is necessary to push either the LOCAL or ON LINE button to restart the motor.

f) READY This is a light which becomes illuminated when the clear to send lead (circuit CB) comes on. It is extinguished if a break is received. It is controlled by line turnaround control characters if that option is installed.

g) HERE IS This is a momentary pushbutton switch. It has no effect unless the optional ANSWERBACK option is included (see Section 3.3.6). When that option is installed, the "Answerback" message shall be printed and transmitted.

h) DIGITAL DISPLAY This is a two or three digit display (dependent on whether the printer is configured for a 75, 80 or 118 column line length). It lights when the printer motor is on and indicates in which print column the next character shall be printed.

i) INHIBIT This is a three position toggle switch. In the center position, operation shall be normal; that is, when information is either transmitted or received, it is printed simultaneously. In the INHIBIT PRINT position, the terminal is placed in a full duplex mode.

3. 2. 4. 1 Cont.

Information generated by the keyboard or optional tape reader may be transmitted while received data is being printed. In the INHIBIT TRANSMISSION position, data generated locally shall be printed but not transmitted.

j) RATE This is a three position toggle switch which is used to select the printing and transmission speed of the printer to either 10, 15 or 30 characters per second. When the associated paper tape equipment or magnetic tape unit is used, it also controls the speed of these devices. The 120 marking is substituted for 15 unless otherwise specified.

k) LINE FEED This is a two-position toggle switch which in the "1" position provides single line spacing and in the "2" position provides double line spacing upon recognition of a line feed code.

l) AUTO LF This is a two-position toggle switch which, in the On position, automatically generates a carriage return line feed code sequence when the keyboard RETURN key is depressed. In the OFF position no automatic LF action occurs. The position of this switch has no effect on received data.

3. 2. 4. 2 Additional Printer Controls

The following additional controls and adjustments shall be provided on the printer.

a) POWER SWITCH A switch shall be provided on the right rear of the printer to control AC power to the machine.

b) CAPS ONLY A switch shall be provided on the rear of the printer which in the ON position shall limit the keyboard to generation of the ASCII 96-character subset (63 printable graphics). The switch shall have no effect on incoming data.

c) PLATEN KNOB A knob shall be provided on the left side of the printer which, when depressed, shall allow rotating the platen in either direction.

3. 2. 4. 2 Cont.

d) PRESSURE RELEASE LEVER A lever shall be provided on the right side of the platen which, when moved forward, shall release the pressure between the paper and the platen.

e) KEY SOUND A potentiometer shall be accessible through the rear cover to vary the volume of the constant frequency "beep" produced when a keyboard key is depressed. The volume shall be adjustable to a completely "off" condition.

f) AUDIBLE ALARM An additional potentiometer, also accessible through the rear cover, shall be provided to vary the level of the constant frequency alarm "beep".

3. 2. 5 Keyboard

The printer shall be provided with a standard four-row keyboard as shown in Figure 2. It shall be capable of generating all 128 ASCII characters. The keys shall be electronically interlocked so that it is not possible to generate two codes simultaneously. An audible tone shall be generated each time a key is depressed (with the exception of the CTL, ESC and RPT keys) as an indication to the operator that an action has occurred. The tone shall be volume adjustable from the rear of the printer and may be completely turned off if so desired.

The key buttons shall be easily removable and individually replaceable. The character markings shall be molded in place rather than imprinted and thus will not wear off with use. The actions of the several keys which are somewhat special are described below.

a) ESC This key produces the ESCAPE sequence code and is used in combination with several other keys. Since the ESC code is not actually generated until a second key is depressed, the two keys must be held down together. This key and those most often used with it, namely, HT SET, HT CLEAR, MTR ON, MTR OFF, and RDR REV are uniquely color-coded for easy use recognition.

b) CTL As with the ESC key, this key is depressed and held down while another key is used. Rather than generating a code of its own, however, it modifies the code pattern produced by the other keys. The following ASCII control characters are marked on the appropriate key top: ENQ, DLE, NUL, EOT, BEL, SUB, CAN, ETX. Additional markings are provided for RDR on (DCI), PCH on (DC2), RDR Off (DC3) and PCH Off (DC4).

3. 2. 5 Cont.

c) RPT This key is also depressed along with a second key to repeat the character or function produced by the other keys. To facilitate control of the character being repeated, the repeat rate shall be limited to approximately five characters per second regardless of the selected printing speed.

d) RETURN (CR) Depressing the key shall return the printing to the beginning of the print line or, if the horizontal tab option is included and tabs are set, to the first tab setting. When the AUTO LF switch on the control panel is in the ON position, depressing this key will produce a LINE FEED as well as a CARRIAGE RETURN code.

e) LF Depressing this key shall cause the paper to advance one line with the LINE FEED switch in the "1" position or two lines with the switch in the "2" position.

f) SHIFT AND SHIFT LOCK With the shift key held depressed, upper case characters shall be developed as the various keys are depressed. The shift lock key shall hold these in a shift mode until the adjacent shift key is depressed.

NOTE: When the CAPS ONLY switch at the rear of the printer is in an "ON" position, upper case letters shall be generated regardless of the position of the SHIFT key.

3. 2. 6 Control Codes

The TermiNet 300 keyboard shall be capable of generating all USASCII control codes. Listed below are those specific codes which cause terminal action. Those not listed shall cause no action. In the description of the code action, the term "receipt" or "when received" refers to signals received over the data line from a remote point and not generated locally. The term "recognition" or "when recognized" refers to signals received from a remote point as well as to those generated locally.

a) ETX (End-Of-Text) This control code is effective only when the Line Control option is installed. When the terminal is in a transmit mode, local generation of ETX shall place it in a receive mode. When in a receive mode, receipt of ETX shall place it in a transmit mode.

3. 2. 6 Cont.

b) EOT (End-Of-Transmission) When recognized, this code causes the condition of the terminal to go to STANDBY and turns off the Request to Send lead (circuit CA).

c) ENQ (Enquiry) When the ANSWERBACK option is installed and the Clear-To-Send lead (circuit CB) is on, receipt of this code shall cause the "Answerback" message to be triggered. Additionally, if the LINE CONTROL option is installed, the status of the terminal shall be indicated by the transmission of ACK or NAK following the "Answerback" message and the line shall turn around.

d) ACK (Acknowledgement) The code is acted upon only when the LINE CONTROL option is installed . Recognition of ACK shall turn the line around. A terminal shall transmit ACK as a response to ENQ if the status is positive and it is capable of receiving a message.

e) BEL (Bel or Alarm) When recognized, this code shall sound an audible alarm for approximately 0. 5 seconds. Any BEL received during a 0. 5 second alarm shall be ignored; i. e., successive BEL codes do not generate a cumulative time value of tone.

f) BS (Backspace) Recognition of this code shall move the printing position one print column to the left.

g) HT (Horizontal Tab) When this option is installed, recognition of HT shall advance the printing action to the position where the next tab has been set, or, if no tabs are set, to the end of the print line. Without this option, the code shall have no effect.

h) LF (Line Feed) Recognition of this code shall advance the paper in the printer either one or two lines, depending on the position of the LINE FEED switch on the printer's control panel.

i) VT (Vertical Tab) When this option is installed, recognition of VT shall advance the paper in the printer to the vertical position where the next printing is to occur.

j) FF (Form Feed) When this option is installed, recognition of FF shall advance the paper in the printer to the desired starting point on the next form.

3.2.6 Cont.

k) CR (Carriage Return) Recognition of CR shall return the print character position to the left-hand margin. The left-hand margin is hardware fixed except when the horizontal tab option is present, at which time the tab set farthest to the left is the left-hand margin.

l) DLE (Data Link Escape) When the LINE CONTROL option is installed, DLE is used in combination with the following codes:

1) DLE EOT When recognized, these codes initiate the automatic disconnect sequence by turning the "Data Terminal Ready" signal to the Dataset off until "Data Set Ready" is off. The terminal shall also be placed in the STANDBY mode.

2) DLE ? Receipt of these codes constitutes a "Wait before Transmit" condition. These codes shall suppress printing and de-energize the READY lamp. The terminal automatically responds to DLE? with the code ENQ.

m) DC1, DC2, DC3, DC4 (Device Control 1, 2, 3, 4) These codes are used for control of the optional paper tape and magnetic tape accessories.

n) NAK (Negative Acknowledgement) This code is acted upon only when the LINE CONTROL option is installed. Receipt of a NAK shall turn the line around, light the interrupt lamp, and de-activate the keyboard. A terminal shall transmit NAK on receipt of ENQ, should it be powered but incapable of receiving a message.

o) ESC (Escape) This escape sequence code is used in combination with other codes to produce the following action:

1) ESC 0 (Zero) This code is used to cause the optional paper or magnetic tape reader to reverse.

2) ESC 1 If the horizontal tab option is present, recognition of ESC 1 shall set a tab at the print column position where this code is recognized.

3) ESC 2 If the horizontal tab option is present, recognition of ESC 2 shall clear all tabs which have been set.

3.2.6 Cont.

4) ESC ; Receipt of this code shall place the printer in a SUPPRESS PRINT mode and allow two-way simultaneous data flow. Locally generated data shall be transmitted but not printed while received data is being printed. Optionally, an internal strap may be removed to allow recognition of the code when generated by the keyboard (see note).

5) ESC : Receipt of this code shall cancel the effect of ESC; and restore the printer to its normal condition. That is, printing shall occur whether data is being received or locally generated. Normal operation may be restored under local control by momentarily moving the INHIBIT switch on the front panel to the PRINT or TRANS position, by pushing the LOCAL pushbutton, or by turning off AC power.

6) ESC H Receipt of this code shall turn on the printer motor. Optionally, an internal strap may be removed to cause the same action when the code is locally generated (see note).

7) ESC J Receipt of this code shall turn off the printer motor. Optionally, an internal strap may be removed to cause the same action when the code is locally generated (see note).

Note: The strap referred to in 4, 6, & 7 above is a common strap. That is, its removal shall cause action by local generation of ESC; ESC H and ESC J.

3.2.7 Timing Characteristics

Since a finite amount of time is required to allow the motor to come up to speed when initially turned on, to allow characters in memory to be printed before commanding motor off, and to allow the paper to advance with line feed, vertical tab, or form feed, it is necessary to allow extra time to insure that no data will be lost when these events occur. This extra time may be a finite time delay or it may be accomplished with "fill" characters. Listed below are those functions requiring use of a time delay or fill characters and the amount of time associated with each.

3.2.7 Cont.

FUNCTION	INTERVAL BETWEEN	APPROX. INT. IN MILLISEC.	NON-PRINTING FILL CHARACTERS 30 cps	15 cps	10 cps
Normal single line feed*	Last char. on old line and first char. on new line.	300	6	2	0
Repeated line feeds	a) Last char. on old line & second LF code.	350	8	3	1
	b) Subsequent LF codes.	67	2	1	0
Backspace**	Printing and then reprinting in same position.	230	6	3	2
Startup***	Commanding motor on and printing.	430	12	6	4
Shutdown****	Last data char.	300	9	4	3
Vertical Tab & Form Feed	VT or FF command and 1st char.	275 + 25 x No. of Lines			

* If there is no CR, one fill character should be added to that shown.

** If BACKSPACE code is used more than once, it may take the place of "fill" characters; e.g., at 30 cps, to type and underscore "AND", send "A, N, D, BS, BS, BS, fill, fill, fill, _, _, _". The delay is required to insure hammers have recovered from the previous actuation.

*** The TermiNet 300 Printer will go from a motor off state to a printing or "ON LINE" state in response to the two code sequence ESC h or H, or also in the case of automatic motor on from the Dataset. The delay is required to allow synchronization to the belt.

**** The TermiNet 300 Printer will go from a printing "ON LINE" state to a motor off state in response to the two code sequence ESC j or J, by the EOT code (when strapped), or also in the case of automatic motor off from the Dataset. The delay that precedes the motor off command is required to allow time to print any characters that are in memory waiting for the proper registration of the hammers and belt.

3.3 Optional Circuit Modules

The following optional circuit modules shall be available and shall plug into the logic rack at the rear of the Printer. Reference should be made to separate specification sheets for more detailed data on each of the options.

3.3.1 Parity Error Detection

This optional board examines each locally generated or received character to determine whether or not there is EVEN parity. In FULL DUPLEX, received data only is checked for parity errors. Should a given character have an odd number of "1's" rather than an even number, it is considered to be in error and action is taken to bring attention to the error. On detection, the interrupt light shall go on and, if the character were a printable one, a diamond shall be printed. Additionally, at the option of the user, a jumper may be installed which shall cause the motor to stop and a break to be transmitted.

The board is provided with a two-position toggle switch, accessible through the rear cover, to allow switching the error detection function off if so desired.

3.3.2 Line Control (Line Turnaround)

This option is accommodated with an optional group of one of the circuit boards in the logic rack and allows control of a one-way alternate or half-duplex communication line. It allows changing the status of the Dataset from a transmit to a receive mode. Refer to Section 3.2.6 for a description of the code action which occurs. Not usable with automatic motor control.

3.3.3 Vertical Tabulation and Form Feed

This option includes the addition of extra parts to the printer frame as well as a circuit board which plugs into the logic rack. It provides the capability to set vertical tabs at any line increment over an 11 inch length and to feed any form which has a length of 11 inches or a length uniformly divisible into 11 inches. It is supplied with an operator-programmable disc which easily snaps into place inside the machine. Twenty-five programmable discs shall be supplied along with a punch for doing the programming. The disc has a space on which to mark the form identity for which it has been programmed. When changing forms, the programmed control disc is changed.

3.3.3 Cont.

With the proper disc in place, both Vertical Tab and Form Feed may be controlled either locally or remotely.

3.3.4 Modem

This optional board serves the same purpose as an originate only Dataset. It allows direct connection between the 25-pin interface connector on the rear of the printer and a data line using a MDAA (Manual Data Access Arrangement). It is suited for two-way simultaneous data flow (full duplex), at rates of 300 baud, using frequency shift key modulation techniques.

Operating frequencies are as shown below:

Transmit:	Mark - 1270 Hz.
	Space - 1070 Hz.
Receive:	Mark - 2225 Hz.
	Space - 2025 Hz.

Straps are provided on the board to allow setting initial transmit level.

3.3.5 Horizontal Tab

This allows setting tabs at any character position across the width of the print line. Tabs may be set locally or remotely by use of ESC 1 code sequence. The first tab set becomes the left hand margin. It shall be possible to override this setting with the back-space code. The time to advance from one tab setting to the next is less than one character time.

All horizontal tab settings shall be cleared upon recognition of the ESC 2 code sequence. Additionally, removal of AC power from the printer shall result in clearing the tabs.

3.3.6 Answerback

This optional board has the ability to transmit an Answerback message of up to twenty (20) characters. It is coded through use of diodes which are assembled in a matrix pattern on the board. The diodes are inserted into friction-type terminals and thus the message code may be readily changed in the field without use of special tools.

3.3.7 Selective Addressing

This board is for use in a party-line network and allows unique addressing of up to 96 printers using a single character address. Provision is also made for group addressing and for "all-call". Straps are provided to disable both the "all-call: and group address recognition if desired. Address codes are field programmable and readily changed without use of special tools.

3.3.8 Parallel Interface

This board allows inputting data to the printer in parallel form from an auxiliary device. It is provided with a separate interface connector and cable for device attachment. Remote on-off control is provided with an ESC code sequence. Operation may be either open or closed loop.

3.3.9 Automatic Motor Control

This option is accomodated with an optional group of one of the circuit boards in the logic rack. It allows use of interface circuit CB (Clear to Send) to control the motor. When CB comes on, the motor is turned on and when CB turns off, the motor is turned off.

3.3.10 Status Monitor and Paper Out Break Suppression

This option is also accomodated with an optional circuit board group. It allows use of circuit CA (Request to Send) as an indicator of the printer being in an "up" condition, ON LINE, with motor running, with a paper supply and ready to receive a transmission. The board may also be used, with a jumper change, to provide automatic motor control as in 3.3.9 in which case, the "up" comdition is defined as in STANDBY with CB off or ON LINE with CB on and with a paper supply ready to receive a transmission.

This same optional circuit board group allows suppression of the "break" which is normally transmitted with a paper out condition. Suppression of other alarm-caused break signals (see 3.2.4.1 e) is not provided.

3.4 Strapping Options

Application flexibility is further provided through interchange of jumpers on certain of the circuit board. These options are summarized below:

3.4 Cont.

3.4.1 Stop Bits

Jumpers are provided to optionally allow one instead of two stop bits at 10 characters/second and two instead of one stop bit at 15 and 30 characters/second.

3.4.2 Motor Control with EOT

A jumper may be removed so that the printer does not recognize EOT.

3.4.3 Echo-Plex

A jumper may be changed to provide an echo-plex mode of operation.

3.4.4 Motor On-Off Codes and Print Suppression

A jumper may be added so that the local motor will not respond to ON and OFF codes generated by the local keyboard or to a SUPPRESS PRINT code generated by the keyboard.

3.4.5 Speed

Jumpers may be changed if so specified at time of ordering to allow operating the accessory tape reader at either 600 or 1200 baud. No printing or punching shall be possible at these speeds. In the event one of these higher speed options is used, it is exchanged for one of the three standard speeds and the control panel RATE switch is marked accordingly.

3.4.6 Print Line Length

The 118 column printer is provided with a strap which may be removed to stop printing action at column 75. By doing this, the end-of-line alarm and warning is also shifted to correspond.

3.5 Miscellaneous Options

Several additional options other than those accomplished with added circuit boards or through interchange of internal jumpers are also available. These are listed below.

3.5 Cont.

3.5.1 Wide Paper Roll Holder

This mounts on the rear of the printer and allows use of paper rolls of greater than an 8-1/2" width. This option may be installed in the field. A roll of 4.00" maximum OD and a 5/8" core ID may be used.

3.5.2 Pin Feed Platen Kit

This option may be field installed and allows use of continuous pin fed business forms (refer to 3.2.3.2).

3.5.3 External Paper Handler

This option is used in conjunction with both the external wide paper roll and with a pin feed platen. It mounts at the rear of the printer and guides the paper properly into the platen. It is continuously adjustable for up to 12-27/32" wide paper. This assembly also includes the paper-out sensor associated with external roll paper and with continuous forms.

3.5.4 Transparency Switch

This option includes the addition of a toggle switch on the printer's control panel. It is used in conjunction with the optional paper or magnetic tape equipment to enable reading and/or punching or recording of other than ASCII coded data. When it is in the ON position, the printer's logic is "transparent" to other codes so that no action shall occur other than processing by the tape equipment. In this mode of operation, there shall be no printing or control code action.

3.6 Interface Definitions

3.6.1 Protective Ground (AA)

This lead shall be tied to machine frame and enclosure.

3.6.2 Signal Ground (AB)

This lead shall establish the common ground reference potential for all interchange circuits (except PROTECTIVE GROUND).

3.6 Cont.

3.6.3 Transmitted Data (BA)

Signals on this lead are generated by the data communication terminal equipment and are connected to the transmitting signal converter in the Dataset. This lead shall be held in the " marking" condition when no signals are to be transmitted.

3.6.4 Received Data (BB)

Signals received on this lead are generated by receiving signal converter in the Dataset.

3.6.5 Request to Send (CA)

Signals on this lead are generated by the data communication terminal equipment. When ON, CA turns on the transmitter carrier of the Dataset arranged for line turnaround or HALF DUPLEX operation. When off, CA holds HALF DUPLEX Datasets in RECEIVE mode. This circuit shall be turned on by the ON LINE pushbutton, or when the LINE CONTROL option is included, by DLE ? or turnaround character received. This circuit shall be turned off by low voltage condition, STANDBY or LOCAL pushbuttons, EOT recognized (may be strapped to have no effect), or when the LINE CONTROL option is included by Turnaround character transmitted.

3.6.6 Clear to Send (CB)

Signals on this lead are generated by the transmitting Dataset to indicate that it is prepared to transmit data. This lead, when on, shall light the READY lamp unless the INTERRUPT lamp is on. Optionally, with use of LINE CONTROL, it shall be turned off by recognition of a "turnaround" character.

3.6.7 Data Terminal Ready (CD)

Signals on this lead are generated by the printer to indicate that it is capable of receiving a call. This lead shall be held in the off condition when printer power is off, the printer is in LOCAL, or when a low paper condition has occurred with CB off. Also, when the LINE CONTROL option is included, this lead shall be turned off for 67 milliseconds to initiate forced disconnect by the Dataset upon recognition of DLE EOT. Data Terminal Ready shall be in the ON condition at all other times.

3.7 Electrical Characteristics

3.7.1 Voltage - 105-129 VAC, single phase

3.7.2 Power
- Standby: 40 watts
- Motor On: 85 watts
- Printing (30 cps): 110 watts

3.7.3 Frequency - 60 Hz - 1.5 Hz, + 1 Hz

3.7.4 Total Harmonic Distortion

The unit shall be designed to operate properly on a line voltage having a total harmonic content no greater than 5% of the fundamental.

3.7.5 Inrush Current

The startup inrush current shall not exceed 15 times the nominal value and shall not exceed six times the nominal value after 0.5 seconds.

3.8 Mechanical Characteristics

3.8.1 Size - 20-3/8"W x 26-1/2"D x 7-1/2"H. (See Figure 3)

3.8.2 Weight - 70 lbs.

3.8.3 Exterior Finish

All surfaces except keyboard and control panel: greige, textured, baked vinyl.

Keyboard and Control Panel: ivory, satin, baked vinyl.

Keyboard buttons and platen knob: molded ABS, parchment color.

Paper Shield: clear Lexan with black markings.

3.9 Environment Specifications

The printer with its various options shall be suited to use in non-airconditioned factory and office environments with the following characteristics:

3.9.1 Temperature - +32°F to +110°F operating.
-20°F to +160°F storage.

3.9.2 Relative Humidity - 10 to 95% operating and non-operating.

3.9.3 Altitude - 0 - 12,000 feet operating.
0 - 50,000 feet non-operating.

4.0 ORDERING INFORMATION

4.1 Basic Equipment

Unless otherwise specified, the following items shall be supplied:

a) Printer with keyboard.

b) Ribbon and spools, installed.

c) Dataset Cable, 5 feet long.

d) Power Cable, 8 feet long, 3 conductors with attached grounding type plug.

e) Vinyl Dust Cover.

4.2 Optional Items

Optional circuit modules, desired position of jumpers, and other required options as defined in Sections 3.3, 3.4, and 3.5 must be separately specified.

A B C D E F G H I J K L M N O P

Q R S T U V W X Y Z

a b c d e f g h i j k l m n o p

q r s t u v w x y z

0 1 2 3 4 5 6 7 8 9

@ & ? $. * + , % # ! ( ) : ; =

_ – ' \ ~ " { } ^ [ ] < > ¦ \ /

Figure 1

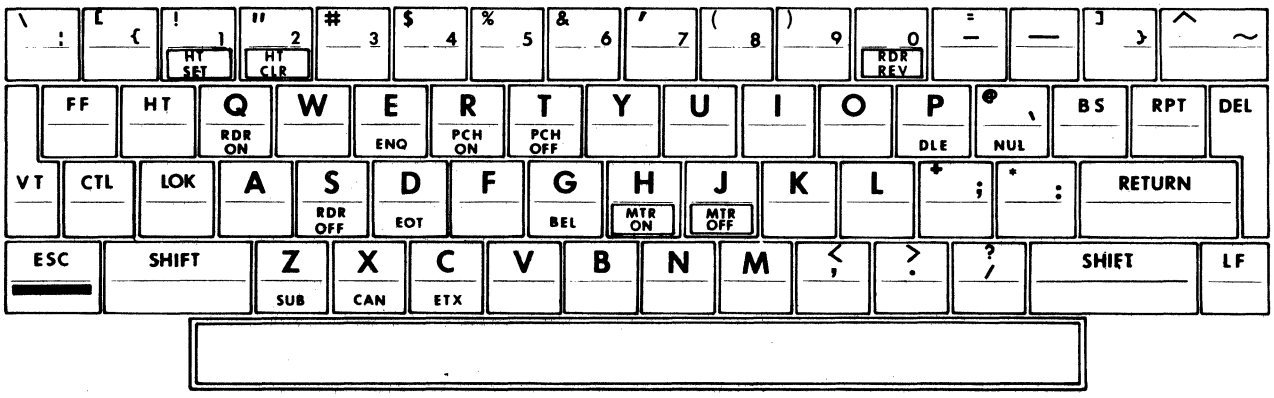


Figure 2

OUTLINE DRAWING

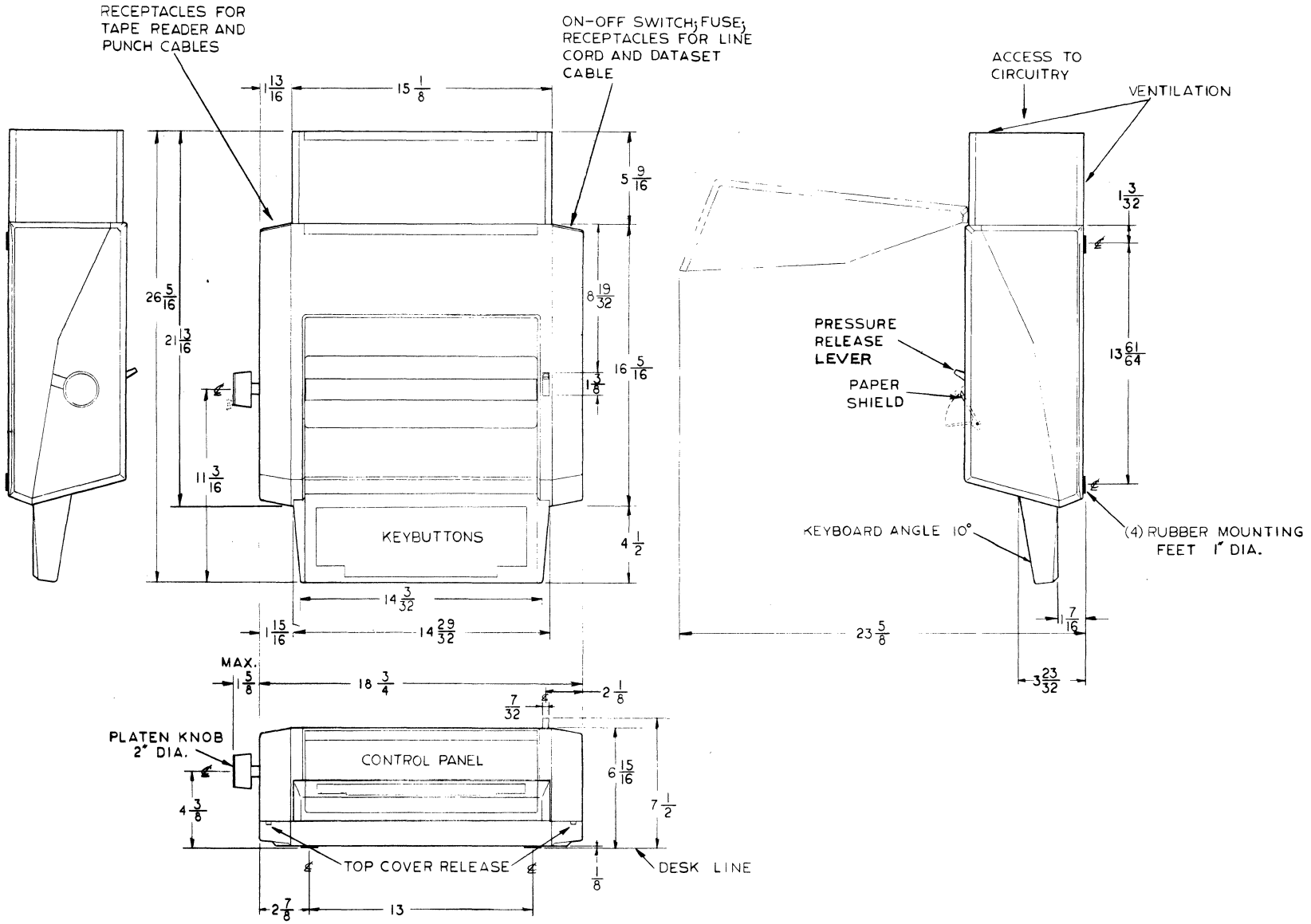
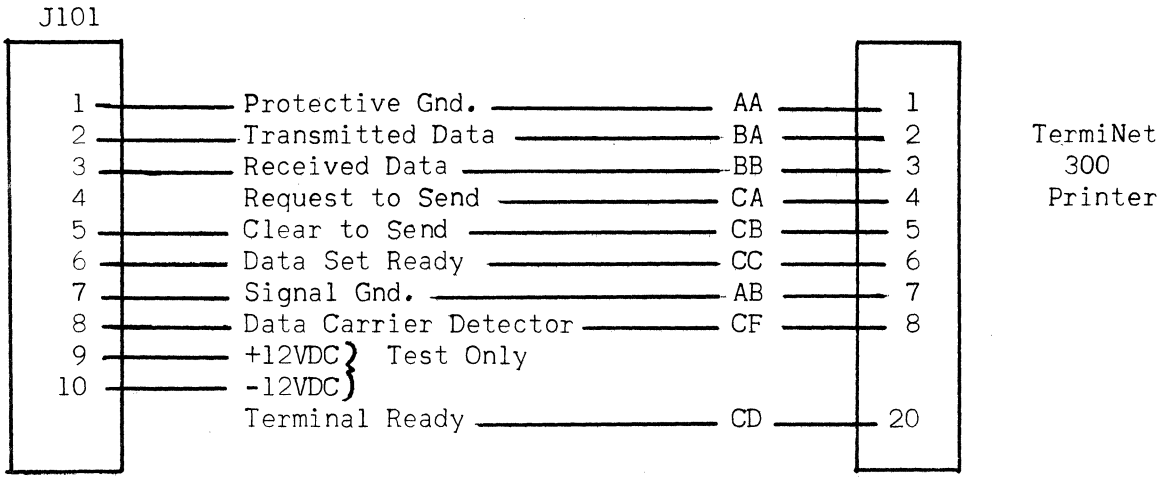


Figure 3

DATA SET TDM-114
AND INTERFACE CONNECTIONS (RS232)

TDM-114



To operate the TDM-114 Data Set with the TermiNet 300 Printer, the following changes must be made to the TDM-114.

Jumper RS-232-B	A J22	B J8	C J11	D J10	E J28

Note!

The TDM-114 is not equipped with an ON-OFF switch. A 117 VAC source should be selected which will allow the TDM-114 to be turned on or off by the associated terminal data equipment.

Two TermiNet 300 Printers can be operated back to back by reversing pins 2 & 3 of one machine at the data cable. If the Ready light is needed, reverse pins 5 & 20 also.