



WILSON Laboratories, Inc.

CX-500 COMMUNICATION TESTER
OPERATION AND MAINTENANCE MANUAL

REVISIONS
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- Fig. 2-3 CX-500 used to trouble-shoot and test terminal
- Fig. 4-1 CX-500 Panel layout

APPENDIX A Operating procedure for self-test.

1.00 SCOPE OF MANUAL

This manual provides the information required to operate and maintain the CX-500 Communication Tester. This manual also provides the self-test procedure of checking the basic functional integrity of the Tester. (Appendix A)

2.00 CAPABILITY

The CX-500 Communication Tester is a portable, multi-purpose, self-contained digital service instrument. It can monitor, analyze, test and trouble-shoot data communications interface that conform to EIA standard RS-232-C or current loop. The CX-500 operates as a serial data transmission monitor or as a modern simulator for off-line testing of data terminal equipment (DTE) such as CRT, printer, etc.

A self-test feature is also built-in in the CX-500.

The CX-500 can be used as shown in the following block diagrams, FIG. 2 - 2 and FIG. 2 - 3.

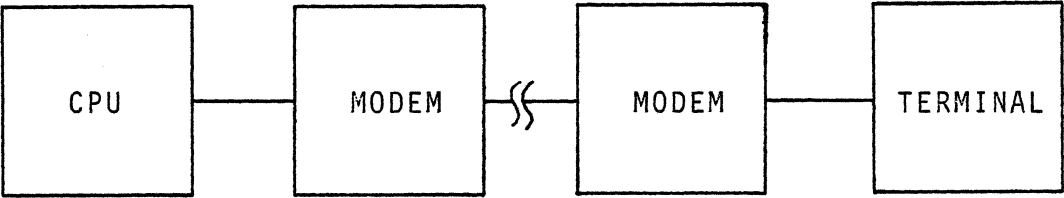


FIG. 2 - 1
SIMPLE COMMUNICATION SYSTEM

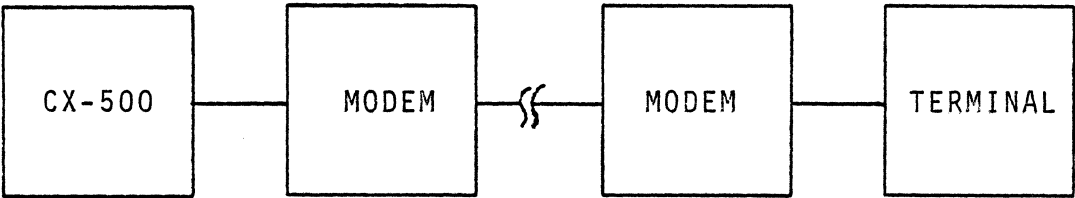
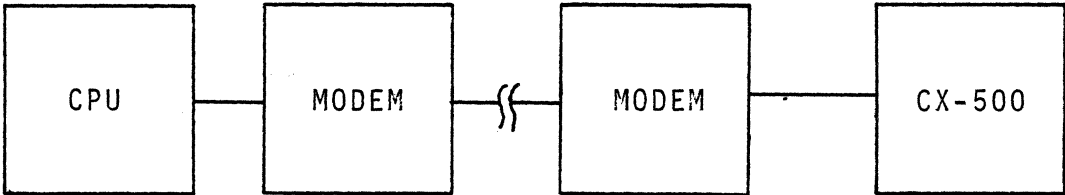


FIG. 2 - 2
CX-500 USED TO ANALYZE COMMUNICATION PROBLEMS

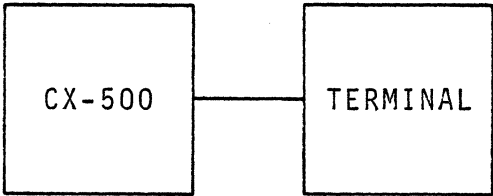


FIG. 2 - 3
CX-500 USED TO TROUBLE-SHOOT AND TEST TERMINAL

3 00 FEATURES

3.01 SPECIFICATION

Data mode - Asynchronous 1 or 2 step bits.

Parity - Odd, even or none.

Framing - 5, 6, 7 or 8 bits per character.

Data codes ASC II or optional any user defined code.

Communication mode - Full-duplex

Data transfer rate - (crystal controlled)

110, 150, 300, 600, 1200, 1800, 2400, 3600, 4800,
9600, and 19,200 bits per second.

3.02 DATA BUFFER AND CONTROLS

In the monitor mode, the CX-500 not only displays the input data to the 8 LED's but also captures the data and stores it in the 1K X 8 RAM. The data in the RAM can be read later by operate Buffer Control Section in single step or at a rate of 4, 20 or 100 characters per second, to identify the problem.

3.03 STORED STIMULUS PATTERN

Once the problem is identified, the CX-500 allows you to troubleshoot the suspected equipment (CRT, Printer, etc. off-line. "The quick brown fox....", 64 character set, 96 character set and an optional user-definable data pattern are stored in the CX-500. Single single character or continuous single character can be sent by setting the 8 data register switches.

3.04 EIA RS-232 SIGNALS

LED indicators and test points are used to report EIA interface status. Also patch-cord selecting various RS-232 control signals are provided to increase the versatility of CX-500.

3.05 SELF-TEST MODE

Loop back off-line tester "transmitted data" to "receive data" at EIA interface to verify correct operation of the tester.

4.00 PHYSICAL CHARACTERISTICS

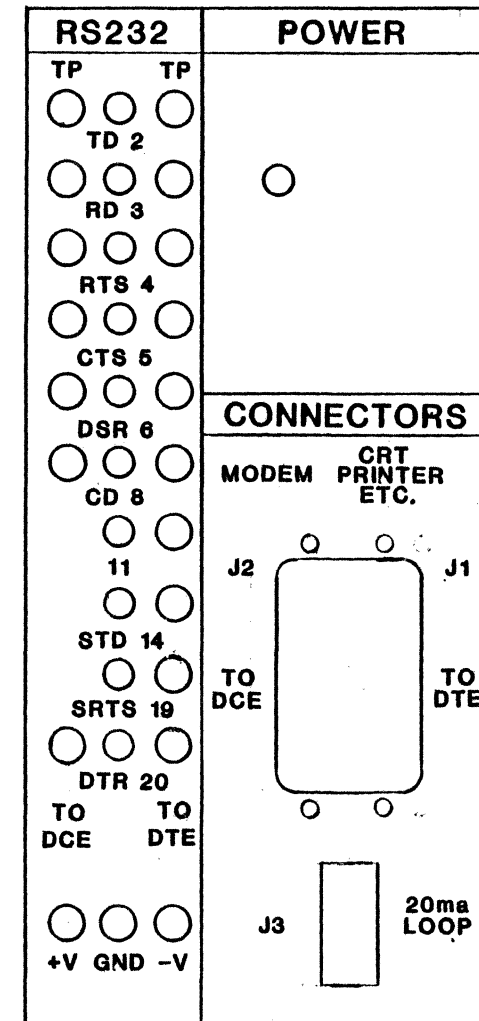
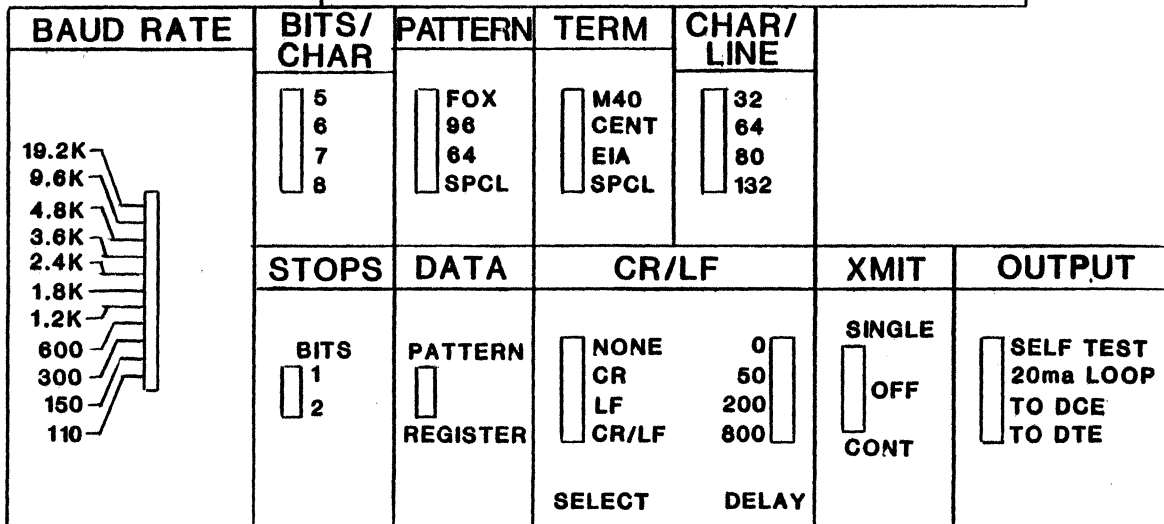
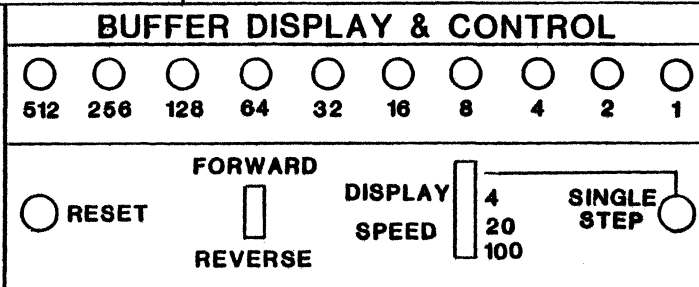
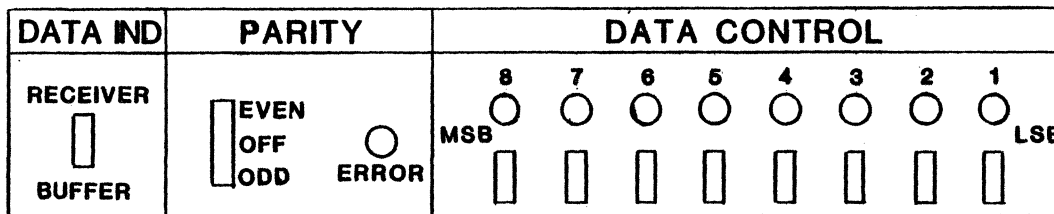
4.01 PACKAGING

The CX-500 Communication Tester is a fully-contained unit packaged in a portable briefcase-type carrying case with cover. The bottom half of the case contains a control panel under which is attached a single P.C. board. A small power supply for the tester is also mounted below the panel. The cover provides storage space for cables, patch-cord and manuals. The CX-500 panel layout is shown in Figure 4-1.

4.02 POWER REQUIREMENTS

The CX-500 requires 0.5 amperes at 110/115 VAC and 0.25 amperes at 220/230 VAC.

FIG 4-1
-6-



WILSON Laboratories, Inc.

CX-500 COMMUNICATIONS EXERCISER

5.00 CONTROLS AND INDICATORS

The detailed functions of the CX-500 correspond to the five major sections of the tester front panel. The data section, the buffer control section, the control section, the EIA RS-232 Signal section and the connectors section. The CX-500 panel layout is shown in FIG. 4 - 1.

5.01 DATA SECTION

1. Data indicators--- 8 LED indicators will display received data or buffer data depends the data indicator select switch.
2. Data indicator select switch --- Selects the 8 LED data indicators to display the received data or buffer data.
3. Parity select switch --- The even or odd parity to be checked in receive mode and generated in transmitter mode. When the switch set in the off position, no parity will be checked or generated. In this case the stop bit or bits will immediately follow the data bit.
4. Parity error indicator --- Indicates an error in parity.

5. Data register switch --- 8 on off switches select the data code to be sent if operating in Data Register mode. If operating in Data Pattern mode these switches are ignored.

5.02 BUFFER CONTROL SECTION

CX-500 has a 1K X 8 data buffer to store the received data for data analyze and trouble-shoot data communications interface. The buffer control section is used to read the data off-line at the operators speed.

1. Buffers address indicator --- Indicates the buffer address, it is also the number of characters that received in binary count. The data is shown in Data section when the data indicator select switch is set in buffer position.
2. Reset switch---This is the general reset switch. It is used to initialize the Tester such as set the ROM and data buffer address to zero, reset UART I.C., etc.
3. Buffer direction select switch---The buffer data can be read either forward or reverse direction. This switch is used together with buffer display speed select switch.

4. Buffer display speed select switch---Display speed of SS, 4, 20, 100 characters per second can be selected. SS means single step and is used together with Single Step switch.
5. Single step switch---This momentary push button switch is used to read the buffer data at operator's speed.

5.03 CONTROL SECTION

This is the main control section of the CX-500.

1. Baud select --- This select switch selects one of the 11 different baud rate of the CX-500. The eleven baud rate are 110, 150, 300, 600, 1200, 1800, 2400, 3600, 4800, 9600, and 19,200.
2. Bits per character select switch --- 5, 6, 7, or 8 bits per character can be selected for the CX-500. Parity bit is not included.
3. Stop bit select --- 1 or 2 stop bit can be selected for the CX-500.

4. Data pattern --- A PROM is used to store the data patterns to be transmitted. There are four different types of data patterns.
 - A. THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS
BACK. 1 2 3 4 5 6 7 8 9 0
 - B. ASC II 64 character set.
 - C. ASC II 96 character set.
 - D. User defined pattern. (Optional)
5. Data pattern or Data Register select switch ---
The transmit data can be either one of the four stored data pattern or the data pattern selected by the data register switch.
6. Terminal select --- The terminal select switch combined with the patch-cord selecting various RS-232 control signals can test most of the EIA RS-232 compatible and 20 MA current loop terminals. (TTY, MOD 40, CENTRONICS, CRT terminals and most of the serial printers).

The four terminal select positions are defined as following:

- A. MOD 40 simplified EIA-bit Interface Circuit
Description:

PIN	DESCRIPTION
1	Protective Ground
7	Signal Ground
3	Received Data-10 bits per character (1 start, 7 information, 1 parity, 1 stop).
6	Data Set Ready (used for motor control).
20	Data Terminal Ready (indicates power ON and absence of alarm conditions. Low paper, paper out, jams, etc., cause this lead to turn OFF immediately.
14	Request Next Character (to be turned ON when a new character can be accepted).
11	Secondary Transmitted Data (indicates motor is ON and running at printing speed.

B. Centronics RS-232 Interface Circuit Description:

PIN	DESCRIPTION
1	Protective Ground
7	Signal Ground
3	Received Data
6	Data Set Ready
8	Carrier Detector
20	Data Terminal Ready
19	Reverse Channel (turn off when CR, LF, FF, EOM etc.).
4	Request To Send

C. EIA Commonly Used RS-232 Signals Circuit

Description:

PIN	Description
1	Protective Ground
2	Transmitted Data
3	Received Data
4	Request to Send
5	Clear to Send
6	Data Set Ready
7	Signal Ground
8	Carrier Detector
20	Data Terminal Ready

D. Special EIA terminal. (Optional)

7. Characters per line count select --- This switch selects the number of characters to be printed (displayed on a given line. 32, 64, 80 or 132 characters per line may be selected. At the end of the line, a carriage return and line feed may or may not be transmitted to the terminal depends on the selection of CR/LF select switch.
8. CR/LF select --- This switch has four positions:
 - A. NONE --- No CR or LF will be transmitted.
 - B. CR --- CR only will be transmitted.
 - C. LF --- LF only will be transmitted.
 - D. CR/LF --- Both CR and LF will be transmitted.
9. CR/LF delay --- a selective delay of 0 m sec., 50 m sec., 200 m sec., and 800 m sec. is provided after transmitted CR/LF so that it gives enough time for the printer to finish CR/LF before the next character will be transmitted.
10. Transmit character SINGLE/OFF/CONTINUOUS ---

When in the center OFF position, no characters will be sent. When in the CONTINUOUS POSITION, a steady stream of characters will be transmitted from either the stored data patterns or the data switch register. When the switch is moved to the SINGLE position, only one character is transmitted from either the switch register or the stored data pattern at the baud rate selected. One character will be transmitted each time when the switch is moved from OFF position to SINGLE position.

11. Output select --- There are four positions.
 - A. Self test --- This is a self-test feature. Characters transmitted will be looped back through the EIA circuit to the receiver and displayed on the DATA LED's and CX-500 data buffer.
 - B. 20 MA current loop --- Selects the 20 MA current loop interface.
 - C. TO DCE (Data Communication Equipment) --- In this position when CX-500 is used to replace the terminal for communication line trouble-shooting. The "TO DCE" connector on the connectors section should be used to connect to modem. CX-500 can be operated as a monitor to receive data and store it in the buffer or as a terminal simulator to send a message to the modem.
 - D. To DTE (Data Terminal Equipment)--- In this position when CX-500 is used to replace the modem for terminal testing, trouble-shooting. The "To DTE" connector on the connectors section should be used to connect to terminal. CX-500 can be operated as a modem simulator to send a message to the terminal or receive a message from the terminal, the received message will be stored in the buffer.

5.04 EIA RS-232 SIGNAL SECTION

There are 12 LED's to indicate the status of 10 EIA signals. The 10 signals are as following:

PIN	DESCRIPTION
2	Transmitted Data
3	Received Data
4	Request to Send
5	Clear to Send
6	Data Set Ready
8	Carrier Detector
11	Unassigned (Used by Teletype Model 40 Printer)
14	Secondary Transmitted Data
19	Secondary Request to Send
20	Data Terminal Ready

Also, there are 17 test points, they are connected to the EIA connectors, so that the EIA signals can be easily checked by scope. The test points also can be used for patch-cord selecting various RS-232 control signals to increase the versatility of CX-500. The +12V and -12V source are provided for patch-cord selecting RS-232 control signals.

5.05 CONNECTORS SECTION

There are three connectors: one 25 pin male EIA connector is used to connect to modem, one 25 pin female EIA connector is used to connect to terminal, and one 4 pin connector is used to connect to 20 MA current loop terminals.

6.00 OPERATING PROCEDURE

This section discusses the set-up and operation of the CX-500 when it is being used to trouble shoot a serial terminal or a modem. Paragraph 6.01, 6.02, and 6.03 includes an abbreviated listing of operating procedures for an operator already familiar with the tester. Section 5.00 described the functions of all the switches, LED's, test points and connectors on the CX-500 panel.

This section does not contain any instruction for setting up the tester to check any specific terminal or modem nor does it contain any listings of individual terminal or modem operating speeds, functions and parameters. For operating speed, functions and parameters for a specific terminal or modem consult the documentation supplied with the terminal or modem.

6.01

OPERATING PROCEDURE USE CX-500 TO TEST TERMINALS

1. Turn terminal off.
2. Disconnect terminal from system.
3. Plug CX-500 in with A/C power "OFF".
4. Connect terminal to CX-500 via correct connector.
(25 PIN "To DTE" connector or 20 MA current loop connector)
5. Set Data Indicator Select Switch to "RCV".
6. Select parity "EVEN", "ODD" or "OFF".
7. Set Data Register Switches to the character to be transmitted, if stored data pattern to be transmitted ignore these switches.
8. Set buffer display speed switch to S.S.
9. Set correct baud rate.
10. Select bits per character 5, 6, 7 or 8.
11. Select stop bit 1 or 2.
12. Select the data pattern, if the stored data pattern to be transmitted.
13. Select "Data Pattern" or "Data Register Switch" data to be transmitted.
14. Select the correct terminal. In some case patch-cord may be needed to control RS-232 signals.
15. Select characters per line of the terminal. 32, 64, 80 or 132.

16. Select "CR/LF", "CR" or "NONE" to be transmitted at the end of line.
 17. Select "CR/LF delay" of 0 MS, 50 MS, 200 MS or 800 MS.
 18. Turn Transmit Character Switch to "OFF".
 19. Select Output Switch to "To DTE or 20 MA Current Loop."
 20. Turn CX-500 A/C power "ON"
 21. Turn terminal "ON" and place on-line.
 22. Turn Transmit Character Switch from "OFF" to "SINGLE" or "CONTINUOUS" to start data transmissions.
- NOTE: Before changing any tester parameter, turn Transmit Character Switch to "OFF."

6.02 OPERATING PROCEDURE USE CX-500 TO TEST COMM LINE AND MODEM

1. Turn terminal off.
2. Disconnect terminal from system.
3. Plug CX-500 in with A/C power "OFF".
4. Connect modem to CX-500 via correct connector.
(25 PIN "To DCE" connector)

5. Set Data Indicator Select Switch to "RCV."
6. Select parity "EVEN", "ODD" or "OFF".
7. Set Data Register Switches to the character to be transmitted, if stored data pattern to be transmitted ignore these switches.
8. Set buffer display speed switch to SS.
9. Set correct baud rate.
10. Select bits per character 5, 6, 7, or 8.
11. Select stop bit 1 or 2.
12. Select the data pattern, if the stored data pattern to be transmitted.
13. Select "Data Pattern" or "Data Register Switch" data to be transmitted.
14. Select Terminal Select Switch to "EIA". In some case patch-cord may be needed to control RS-232 signals.
15. Characters per line switch may be ignored if the other side is CPU.
16. Select "R/LF switch" to "NONE".
17. Select "CR/LF Delay" to "0".
18. Turn Transmit Character Switch to "OFF".
19. Select Output Switch to "To DCE".
20. Turn CX-500 A/C power "On".
21. Turn modem "ON".
22. Turn Transmit Character Switch from "OFF" to "SINGLE" or "CONTINUOUS" to start data transmissions.

NOTE: Before changing any tester parameter, turn Transmit Character Switch to "OFF".

6.03 OPERATING PROCEDURE TO READ DATA IN THE CX-500 DATA BUFFER

1. Turn Data Indicator Select switch to "BUF"
2. Push Buffer Address Reset switch.
3. Set Buffer Direction Switch to "FWD".
4. Select Buffer Display speed switch to read buffer data. The DATA LED shows the data and the buffer address shows the number of characters received by the CX-500.

7.00 INTERFACE

There are three connectors in the connector section, one 25 pin EIA type male connector is used to connect to DCE (Modem), one 25 pin EIA type female connector is used to connect to DTE (Terminal) and one 4 pin MOLEX type connector is used to connect to 20 MA current loop terminals. The connectors pin out list is shown in the next three tables.

TABLE 7-1 DCE CONNECTOR

<u>PIN</u>	<u>SIGNAL</u>	<u>DESCRIPTION</u>
2	TD	Transmitted Data
3	RD	Received Data
4	RTS	Request to Send
5	CTS	Clear to Send
6	DSR	Data Set Ready
7	GND	Signal Ground
8	CDT	Carrier Detector
20	DTR	Data Terminal Ready

TABLE 7-2 DTE CONNECTER

PIN	SIGNAL	DESCRIPTION
2	TD	Transmitted Data
3	RD	Received Data
4	RTS	Request to Send
5	CTS	Clear to Send
6	DSR	Data Set Ready
7	GND	Signal Ground
8	CDT	Carrier Detector
11	M40	Special for Teletype Model 40 Printer
14	STD	Secondary Transmitted Data
19	SRTS	Secondary Request to Send
20	DTR	Data Terminal Ready

TABLE 7-3 20 MA CURRENT LOOP CONNECTER

PIN	SIGNAL	DESCRIPTION
1	SD -	Send Data Negative Side
2	RD +	Receive Data Positive Side
3	RD -	Receive Data Negative Side
4	SD +	Send Data Positive Side

8.00 LOGIC DESCRIPTION

This section provides a description of the major elements of the CX-500 logic implementation. The description is sub-divided into a sub-paragraph for each functional logic circuit. This section assumes the reader has a basic understanding of logic principles and digital integrated circuit technology.

All logic terms with a " - " suffix are low active (e.g. 0 volts = true); a " + " suffix denotes a high active (+5 volts = true) signal term. Refer to Section 8.00 for further explanation of each logic signal.

8.01 SWITCHES & CONTROLS

All functions of the CX-500 are initiated and controlled by the front panel switches which are mounted directly on the single P.C. board. The majority of switch generated logic terms are activated by the action of grounding a switch pole which has been pulled-up to +5V through a resistor. The Data Switches select either ground or a pull-up voltage for the logic level.

The Buffer Display Single Step Switch is debounced with cross-coupled inverters.

8.02 DISPLAYS

The Tester Data, Buffer Address Parity-Error Status as well as RS-232 signals LED's are connected to +5V through a 220 ohm current limit resistor. Each signal to an LED is active low and turns on the associated LED when sinking current in the low state.

8.03 RS-232 INTERFACE SECTION

The RS-232 Interface section contains the line drivers, line receivers and multiplexers that allow the Tester to be connected into an external RS-232 Interface without interfering with that interface.

8.04 20 MA CURRENT LOOP INTERFACE

A circuit is designed to convert 20 MA current loop to TTL level signal and vice versa for receive data and send data.

8.05 CLOCK

A 1.8432 M Hz oscillator is the source of most of the clocks. The different baud rate is divided down from that oscillator, through a baud rate selector switch to the UART I.C. The clock rate to the UART is 16 times the data transfer rate or the baud rate. The Buffer Data Display Clock is also divided down from that 1.8432 M Hz oscillator.

8.06 UART

Universal Asynchronous Receiver Transmitter (UART) is the heart of the CX-500 Tester. The TI TMS 6011 I.C. is used to do the job. Basically there are two sections in the I.C., the receiver section and the transmitter section. The receiver section of the TMS 6011 will accept serial data from the transmission line and convert it to parallel data. The serial word will have start, data and stop bits. Parity may be generated and verified. The receiver section will validate the received data transmission by checking proper start, parity, and stop bits, and will convert the data to parallel. The transmitter section will accept parallel data, convert it to serial form, and generate the start, parity, and stop bits. The details of this I.C. please refer to the T.I. specifications.

8.07 PROM AND DATA MUX

The Programmable Read Only Memory (PROM) is used to store the data that is used to send to the UART for transmitting. There are two types of data that can be sent to the UART, a predetermined data pattern stored in the PROM or switch selectable data bits. A multiplexer (MUX) is used to select one type of data to the UART for transmitting.

8.08 RAM

A 1K x 8-bits Random Access Memory (RAM) is used to store the received data for later recall and use. The RAM is a static memory and the data in the RAM is not permanent and is destroyed whenever the Tester is turned off. It is also meaningless when power is initially applied to the system as the data occurs as random bits. The process of storing data into the RAM is controlled by an address counter, as each byte of data is received that address counter will increment by one for the next address.

8.09 TERMINAL TESTING LOGIC

Characters per line - - A character counter and decoder is provided to detect the end of a line.

Carriage return/Line feed generation--- At the end of a line the Carriage return/Line feed code may be generated and added to the end of the line if so selected by the CR/LF select switch.

CR/LF Delay---A time delay may be added after send the CR/LF code, waiting for the terminal to be ready for the next line.

9.00 CIRCUIT MNEMONICS

CLK+	Clock (16 times the selected band rate)
TI1-TI8+	Transmitter Inputs, parallel input data for the UART.
TBRL+	Transmitter Buffer Register Load
RD+	Received Data
RST+	Reset
DRR-	Data Ready Reset and RAM Address Clock when Data Ind. Sel. Switch in RCV Mode.
DR+	Data Ready
TRE+	Transmitter Register Empty
TD+	Transmitter Data
BI-B8+	Parallel output data from UART

RBUF <u>±</u>	Read Buffer Mode
RACK -	ROM Address Clock
ENDAT-	Enable data output
ENCR <u>±</u>	Enable Line Feed
AO-A9	RAM Address Lines
WBUF-	Write Buffer Mode
MRB -	RAM Address Clock when Data Ind. Sel. Switch in BUF Mode.
ACE+	Buffer Display Speed Counter Reset
CR/LF DLY -	Carriage REturn or Line Feed Delay Pulse
EIA+	EIA Transmitting Data Condition Met.
REQS-	Request to Send Data
LF <u>±</u>	Line Feed Mode
CR <u>±</u>	Carriage Return Mode
RDYD+	20 MA Current Loop Ready to Output a Character
RDY+	Self Test REady to Output a Character
RDYE+	EIA Ready to Output a Character
RDYOUT+	Ready to Output a Character
32CL-	32 Characters per Line
64CL-	64 Characters per Line
80CL-	80 Characters per Line
132CL-	132 Characters per Line
ELC+	End of Line Count
CLRST-	Enable CR/LF F/F Reset
TD	Transmitted Data
RTS	Request to Send
DTR	Data Terminal Ready

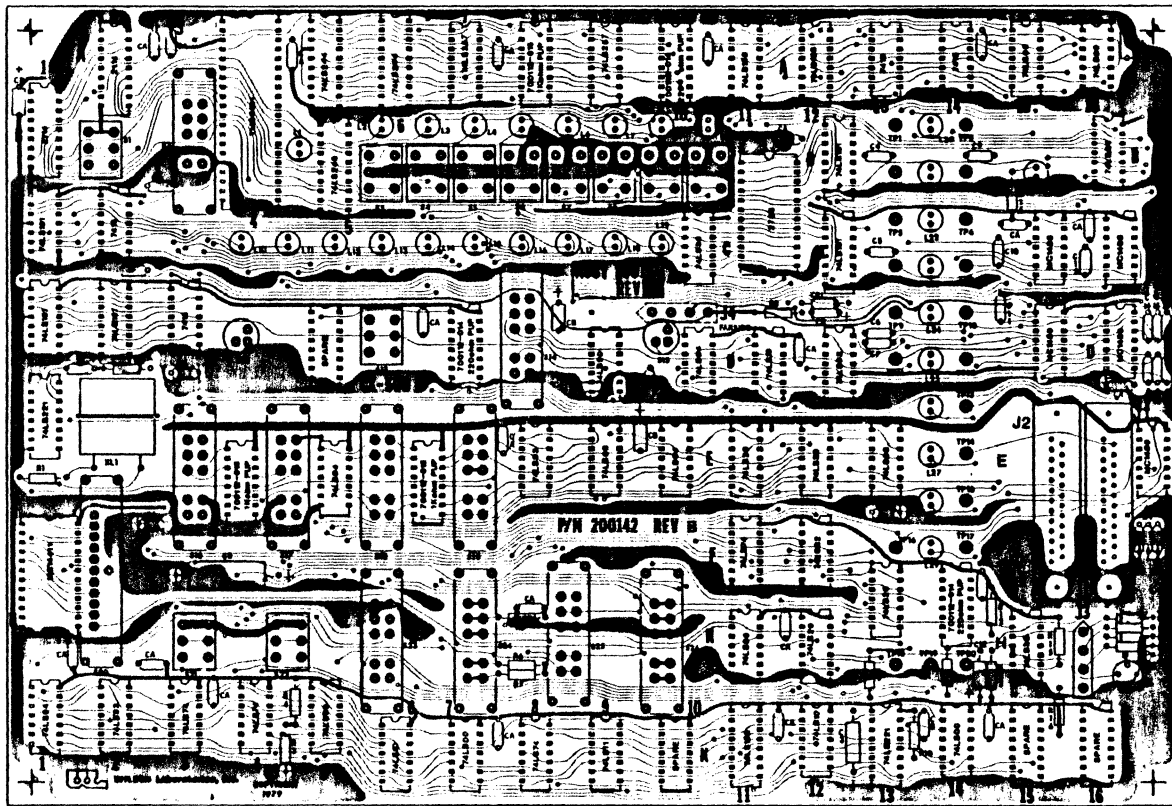
M40	Teletype MODEL 40 Signal
STD	Secondary Transmitted Data
SRTS	Secondary Request to Send.
SDCE-	Selected DCE (Data Communication Equipment)
SDTE-	Selected DTE (Data Terminal Equipment)
TTD+	Transmitted Data from DTE
TRTS-	Request to Send from DTE
TDTR-	Data Terminal REady from DTE
TM40+	Teletype MODEL 40 Signal from DTE
TSTD+	Secondary Transmitted Data from DTE
TSRTS+	Secondary Request to Send from DTE
STD-	Selected Transmitted Data
SRTS+	Selected Request to Send
SDTR+	Selected Data Terminal Ready
S20MA+	Selected 20MA Current Loop
CRD+	Received Data from DCE
CCTS-	Clear to Send from DCE
CDSR-	Data Set Ready from DCE
CCDT-	Carrier Detector from DCE
20MADI+	20MA Data Input
SRD+	Selected Received Data
SCTS+	Selected Clear to Send
SDSR+	Selected Data Set Ready
SCDT+	Selected Carrier Detector
CTS	Clear to Send

DSR	Data Set Ready
CDT	Carrier Detector
RD	Received Data

10.0 LOGIC DIAGRAM


See the following 9 pages.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
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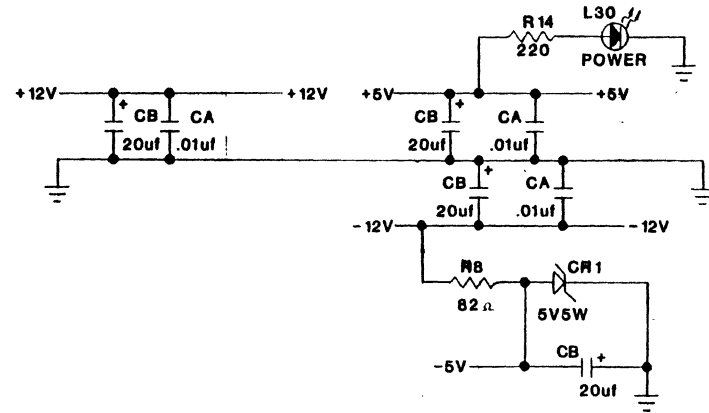
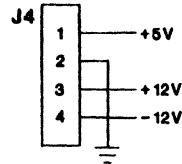
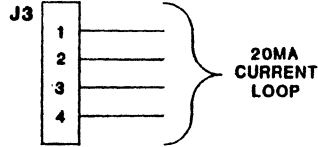
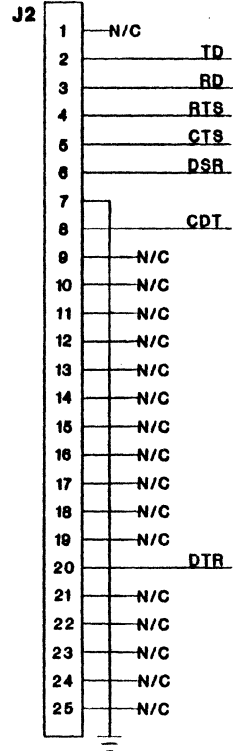
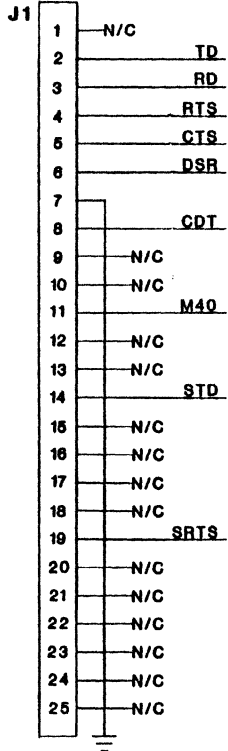


NOTE: UNLESS OTHERWISE SPECIFIED

1. REFERENCE DOCUMENTS
ASSEMBLY: 100191
PRODUCT SPEC: 650052
2. SYMBOLS ARE PER NATIONAL STANDARD.
3. RESISTORS ARE IN OHMS $\pm 5\%$, 1/4W.
4. CAPACITORS ARE IN MICROFARADS AT 10V, $\pm 10\%$
5. DIODES ARE 1N914 OR EQUIVALENT.

REVISION FOR EACH SHEET														
X1	X1	X1	X1	X1	X1	X1	X1	X1						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS DEC ANGLES										 WILSON Laboratories, Inc. LOGIC DIAGRAM- CX500 ELECTRONICS				
APPROVALS		DATE												
DRAWN <i>[Signature]</i>		6/23/80												
CHECKED <i>[Signature]</i>		6/23/80												
DO NOT SCALE DRAWING										SIZE C	DRAWING NO. 300057	REV X1	SHEET 1 OF 8	

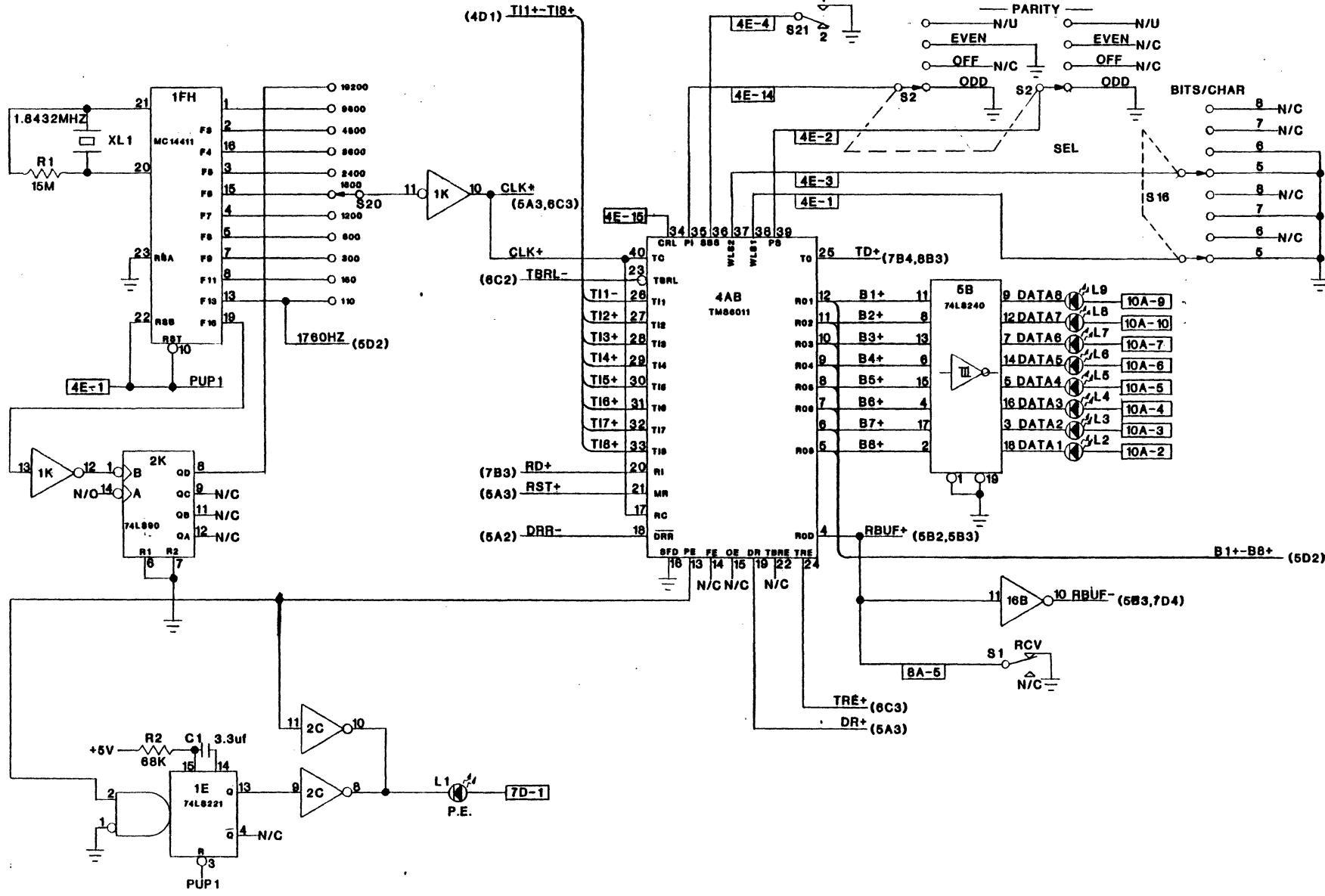
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
X1		ENG. RELEASE	7/29/80	



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±	±	±	LOGIC- CX500 ELECTRONICS	
APPROVALS	DATE			
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CHECKED			DRAWING NO. 300057	REV X1
DO NOT SCALE DRAWING			SHEET	2 OF 8

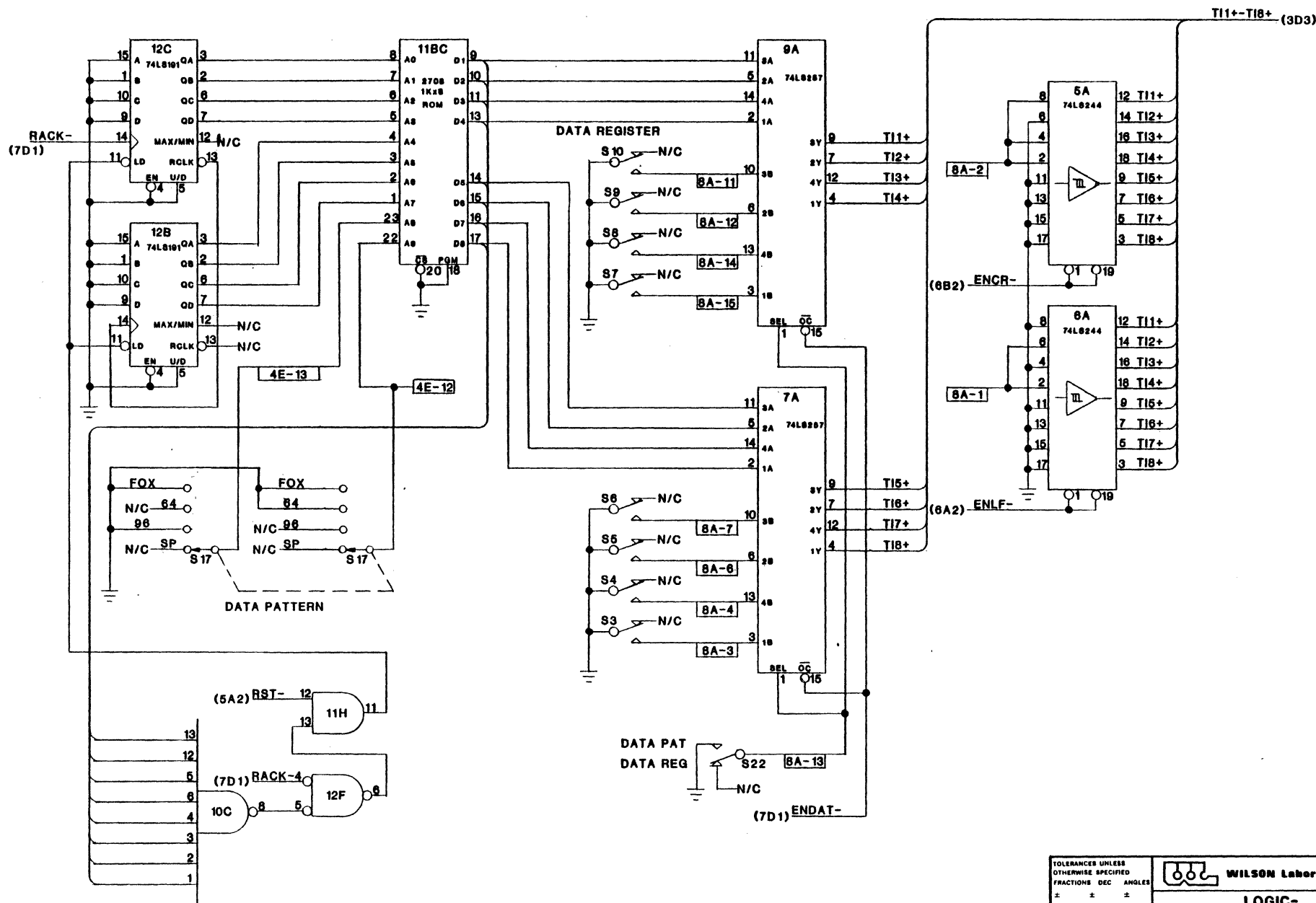
D
C
B
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REVISIONS				
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	X1	SEE SHEET 1 FOR REV	7/29/80	



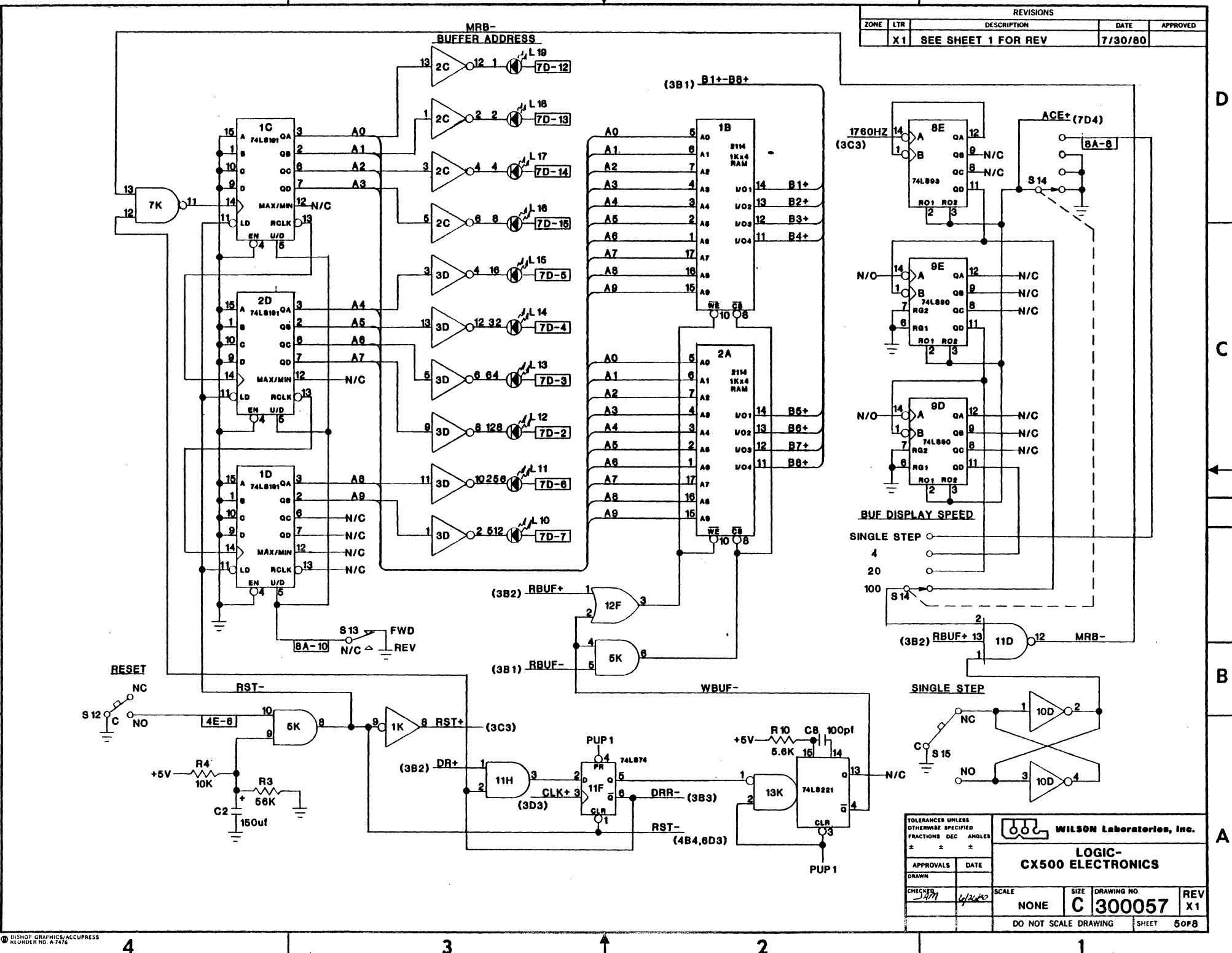
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REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	X1	SEE SHEET 1 FOR REV	7/29/80	



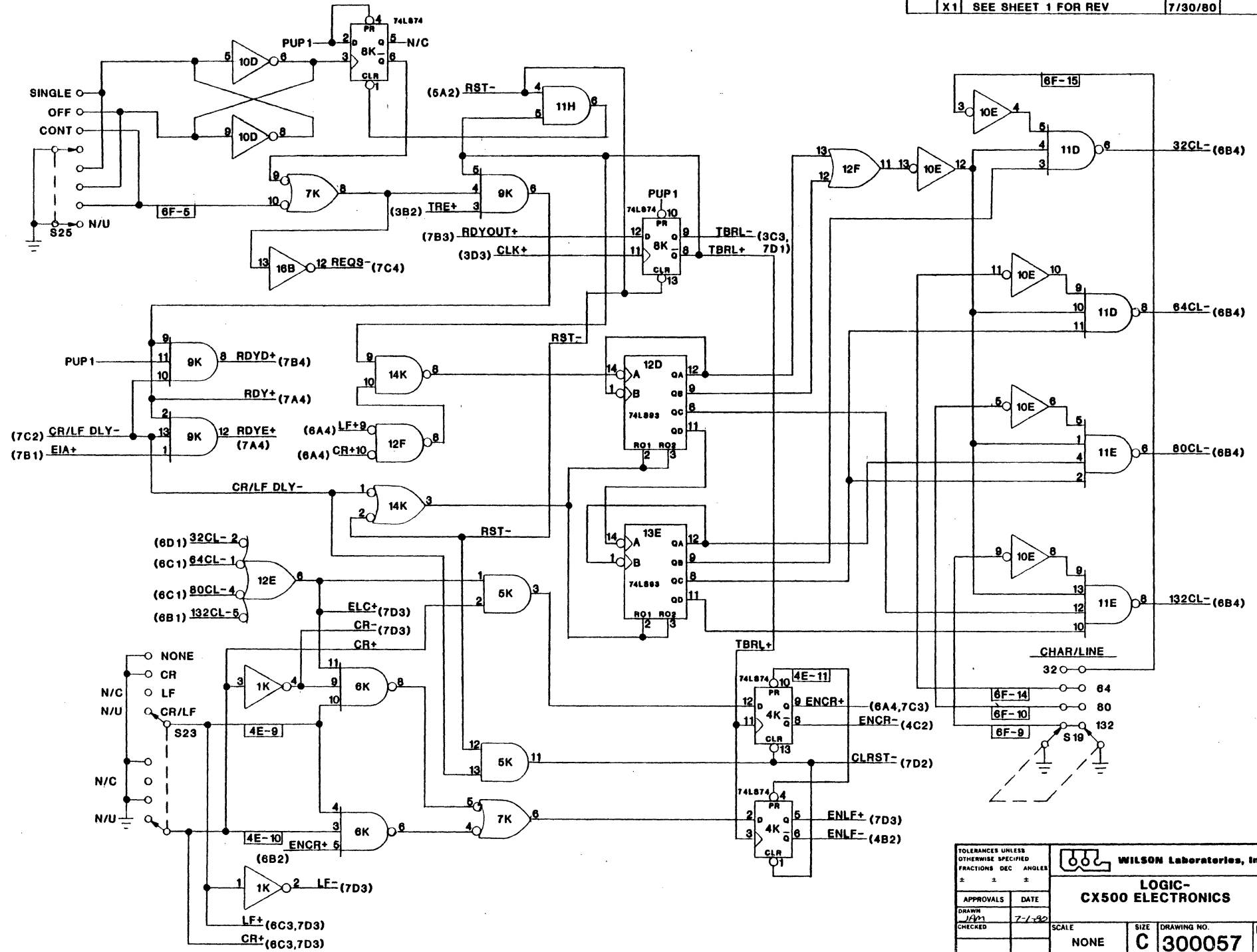
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±	±	±	±	LOGIC- CX500 ELECTRONICS	
APPROVALS	DATE	SCALE	SIZE	DRAWING NO.	REV
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CHECKED		DO NOT SCALE DRAWING		SHEET	4 OF 8

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
X1		SEE SHEET 1 FOR REV	7/30/80	



TOLERANCES UNLESS OTHERWISE SPECIFIED		FRACTIONS DEC ANGLES			
±	±	±	±		
APPROVALS		DATE		SCALE	
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CHECKED		SCALE	SIZE	DRAWING NO.	REV
			C	300057	X1
DO NOT SCALE DRAWING			SHEET 5 OF 8		

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	X1	SEE SHEET 1 FOR REV	7/30/80	



TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS DEC ANGLES		WILSON Laboratories, Inc.	
		LOGIC- CX500 ELECTRONICS	
APPROVALS	DATE	SCALE	SIZE
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CHECKED		DRAWING NO.	REV
		300057	X1
DO NOT SCALE DRAWING		SHEET 60FB	

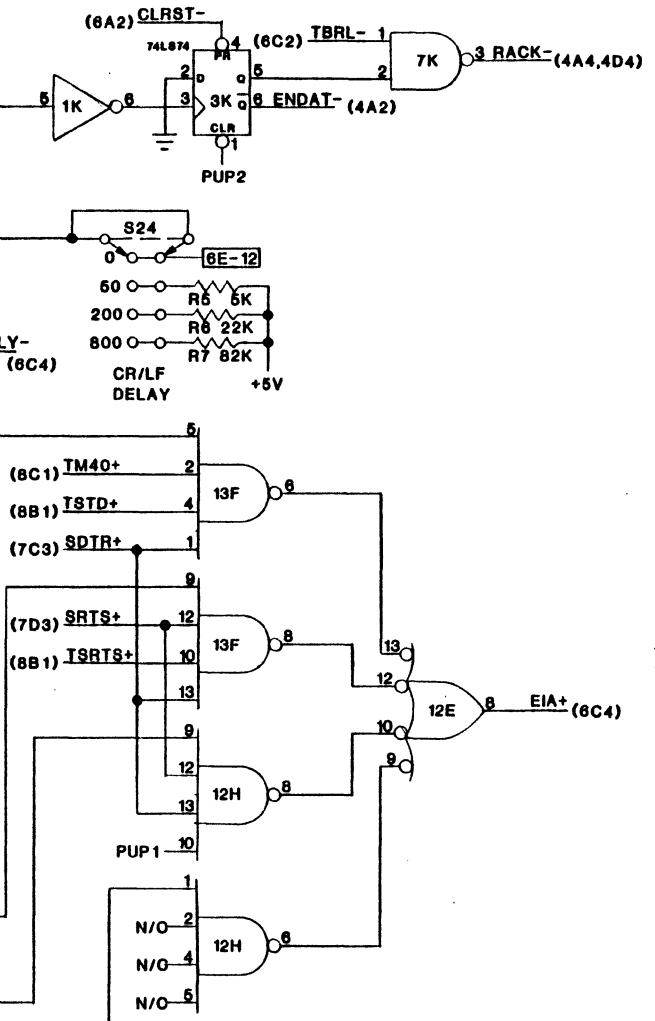
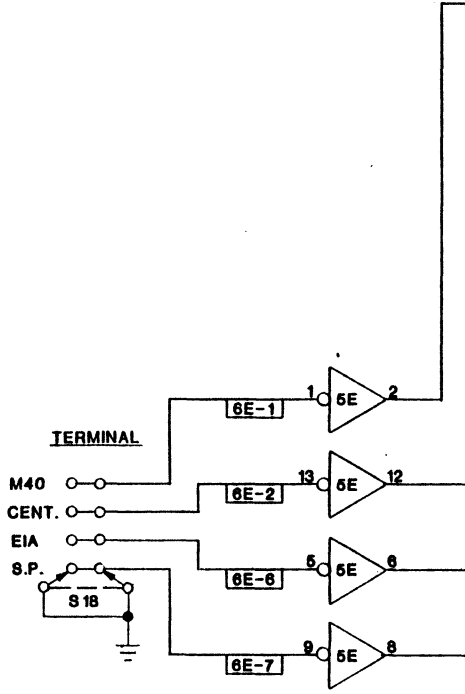
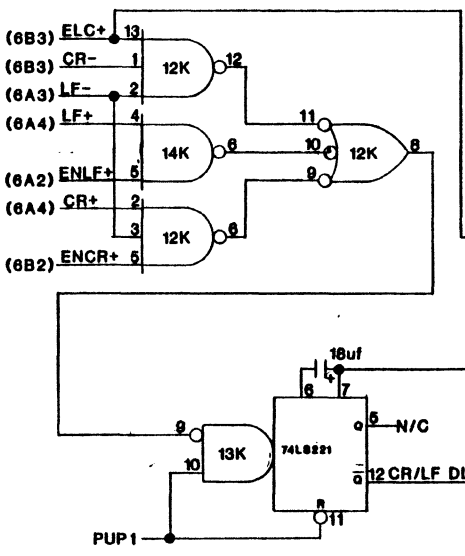
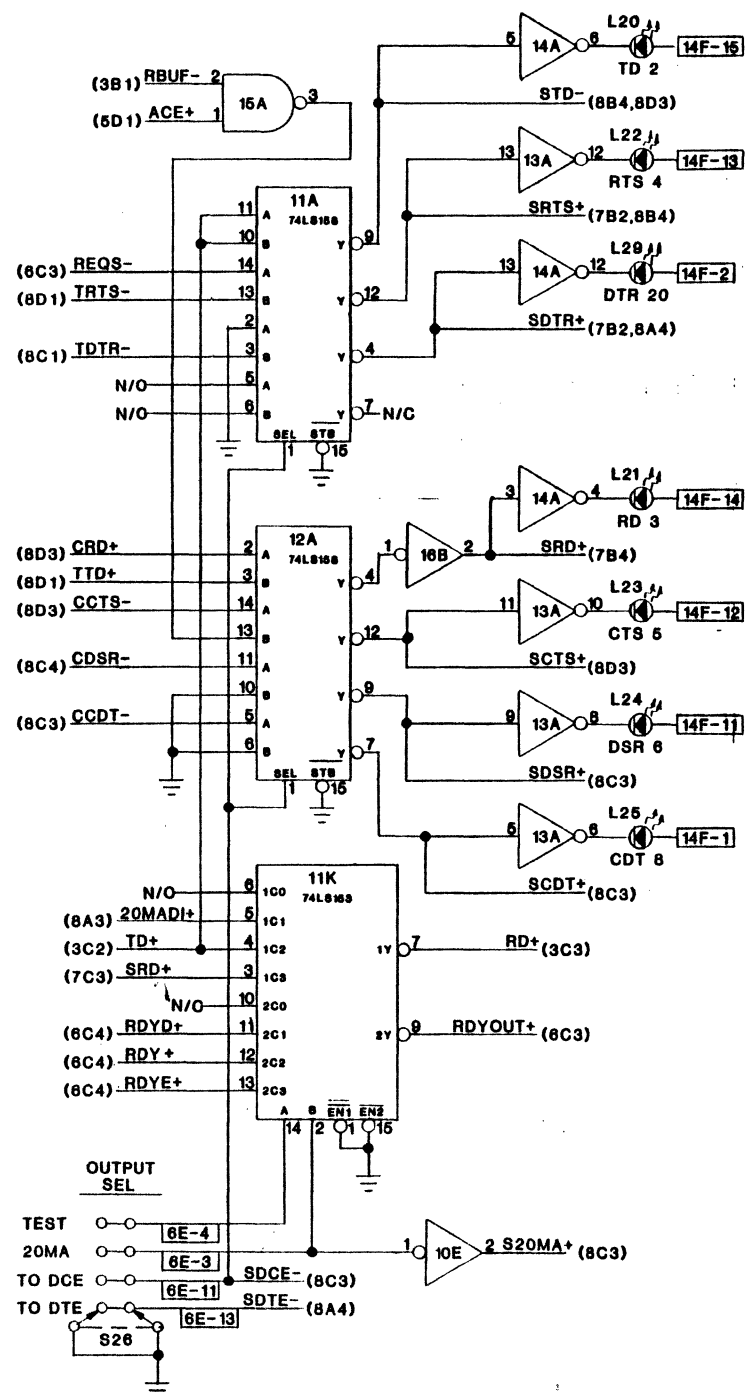
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D

C

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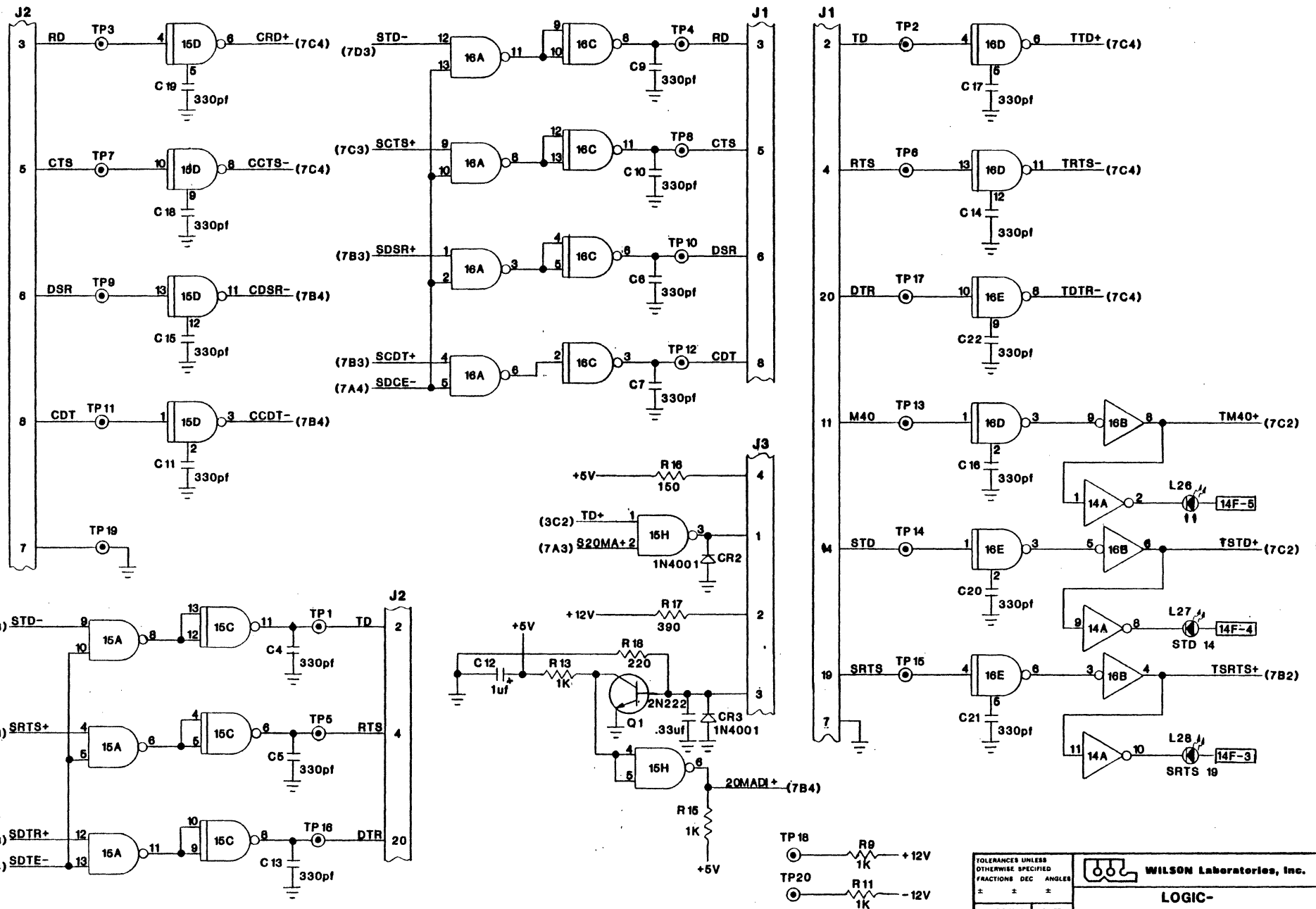
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TOLERANCES UNLESS OTHERWISE SPECIFIED		FRACTIONS DEC ANGLES	
±	±	±	±
APPROVALS	DATE	SCALE	
DRAWN	8-25-80	NONE	SIZE
CHECKED		C	DRAWING NO.
		300057	REV
		X1	SHEET
		7 of 8	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
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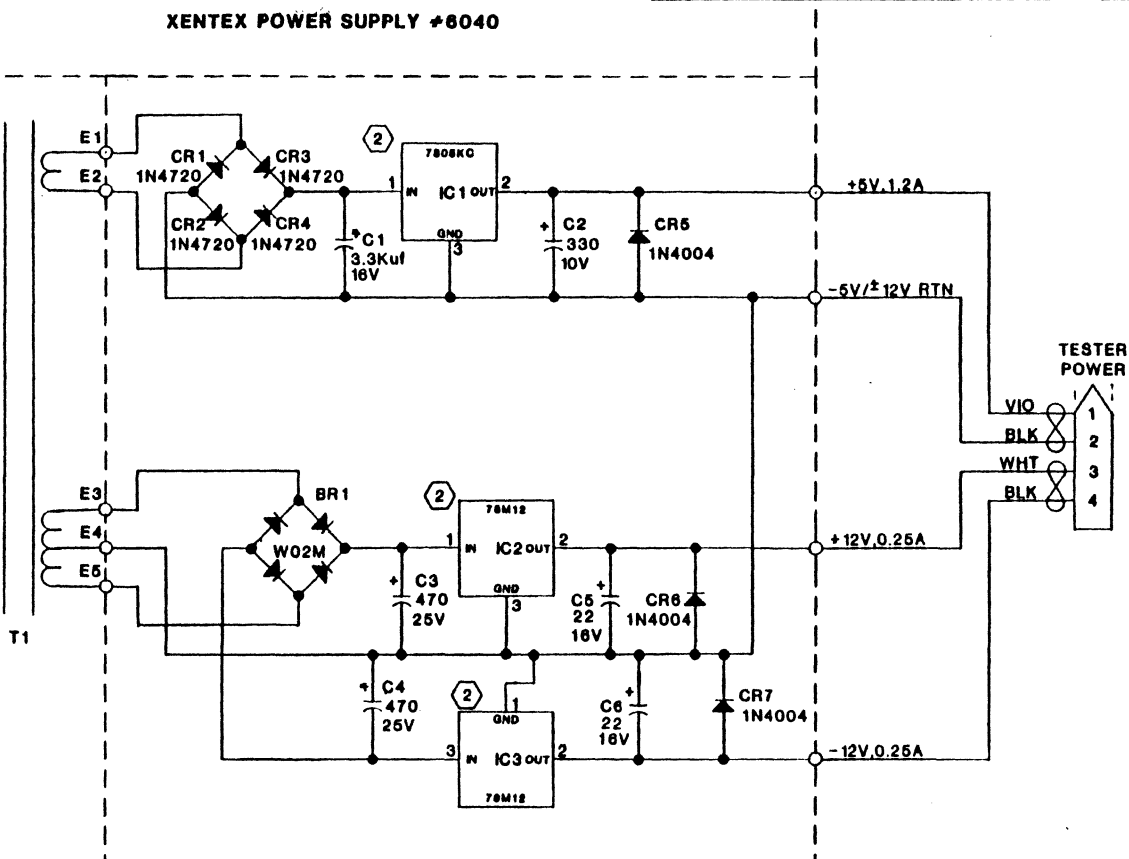
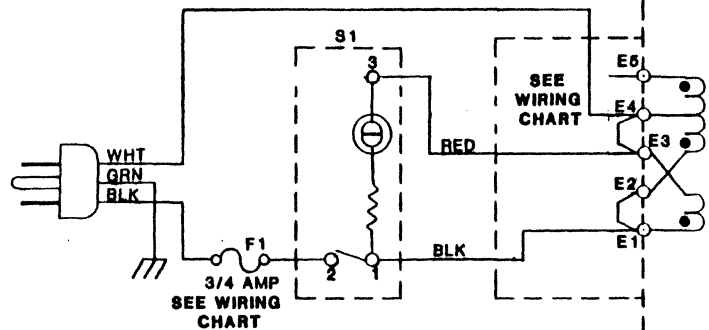


TOLERANCES UNLESS OTHERWISE SPECIFIED		FRACTIONS DEC ANGLES		± ± ±	
APPROVALS		DATE		SCALE	
DRAWN <i>JRM</i>		7-1-80		NONE	
CHECKED				SIZE C	
				DRAWING NO. 300057	
				REV X1	
				DO NOT SCALE DRAWING	
				SHEET 8 OF 8	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
A		PRODUCTION RELEASE	9/22/80	
B		REVISED AC WIRING TO UL STANDARDS, ADDED WIRING CHART	1/15/81	DA

WIRING CHART		
VOLTAGE	WIRING	FUSE
100V	SW AC LINE TO 1 TO 2, 3 TO 4, AC LINE TO 5	3/4A
115/120V	SW AC LINE TO 1 TO 2, AC LINE TO 4 TO 3	3/4A
215V	SW AC LINE TO 1, 2 TO 3, AC LINE TO 5	3/8A
230/240V	SW AC LINE TO 1, 2 TO 3, AC LINE TO 4	3/8A

XENTEX POWER SUPPLY #6040



NOTES: UNLESS OTHERWISE SPECIFIED.

1. REF TO ASSY DWG: 100224
2. COMPONENTS MOUNTED ON CHASSIS.
3. ALL CAPACITANCE VALUES IN MICROFARADS.

TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS DEC ANGLES IN * *			
APPROVALS DATE DRAWN <i>WJM</i> 7-27-80 CHECKED <i>[Signature]</i> 9-26-80		WILSON Laboratories, Inc. SCHEMATIC- CX500 POWER SUPPLY	
SCALE	SIZE	DRAWING NO.	REV
NONE	C	300071	B
DO NOT SCALE DRAWING		SHEET 1 OF 1	

APPENDIX A

Operating procedure for self-test.

1. Plug CX-500 in with A/C power "OFF".
2. Set data indicator select switch to "RCV".
3. Select parity "EVEN", "ODD" OR "OFF".
4. Set data register switches to the character to be transmitted, if stored data pattern to be transmitted ignore these switches.
5. Set buffer display speed switch to S.S.
6. Set band rate select switch to 110 or any other band rate if you wish.
7. Select bits per character to 8.
8. Select stop bit to 1.
9. Select the data pattern, if the stored data pattern to be transmitted.
10. Select "Data Pattern" or "Data Register Switch" data to be transmitted.
11. Terminal select switch to EIA.
12. Character per line 32, 64, 80 or 132.
13. Select "CR/LF" switch to NONE.
14. Select "CR/LF Delay" switch to 0.
15. Turn transmit character switch to "OFF".
16. Select output switch to SELF-TEST.
17. Turn CX-500 A/C power "ON".
18. Press RESET switch.
19. Turn transmit character switch from "OFF" to "SINGLE" or "CONTINUOUS" to start data transmissions. The transmitted data will be displayed by the data indicator LED'S and also stored in the Data Buffer. To read the data in the data buffer, refer to Section 6.03 of this manual.

APPENDIX B

SITA Network Special Option (#13 - Ramtek)

The SITA Network option for the CX-500 provides the capability for the test and exercise of data terminal equipment operating on the SITA (or similar) network. The following modifications to the basic CX-500 are provided:

1. 60 ma current loop interface (optical isolated) operating as a neutral current loop in full or half duplex mode.
2. BAUDOT coded data pattern for "canned message" with SITA-type SOM sequences.
3. 50 and 75 baud rates selection (replaces 3.6K and 4.8K baud selection on standard unit).
4. Pushbutton "Single Transmit" capability for ease of special character generation.

The incorporation of this "SITA" option affects the operating procedure detailed in the manual, and this appendix supercedes the manual in those areas affected.

Detailed Description and Operation

1. 60 ma Current Loop: The 60 ma current loop is present at the 4-pin MOLEX-type connector as defined in Table 7-3. The transmitter data is sourced from a high voltage (24 Volts), and both transmit and receive are optically-coupled.

The recommended connections for attachment of "SITA-type" equipment is:

J1-1 to J1-3 (jumper together)

J1-2 to terminal Transmit-

J1-4 to terminal Receive+

This provides a three wire, half duplex connection which results in receive activity during transmit at the CX-500.

2. BAUDOT Code: The Baudot message is selected with the SPECIAL position of the DATA PATTERN switch. The message consists of :

- SOM sequence: ↓↓↓↓<≡↓
per SITA network protocol.
- "The quick brown fox....." message
- CR, LF = <≡
- All numerics and special characters
- CR, LF = <≡
- Alphabet
- CR, LF = <≡
- 8 blanks

For transmission of the message the following CX-500 configuration is required:

BITS/CHAR = 5
PARITY = OFF
DATA PATTERN = SPECIAL
CR/LF SEL = NONE
CR/LF DELAY = 0

STOP BITS = 2

OUTPUT SEL = 20 ma LOOP

XMIT = SINGLE or CONTINUOUS

TERM = EIA

BAUD RATE = per terminal configuration

The data terminal must be properly enabled for reception of the message prior to its transmission. The enable is performed by either sending the proper code sequence (with DATA SWITCHES and single step capability of CX-500) or by configuration of the terminal.

To insure the transmission of the entire message initially, press the BUFFER RESET pushbutton.

3. 50, 75 BAUD: The BAUD RATE selections available under switch control will include 50 and 75 baud. The 50 baud setting replaces the standard 3.6K setting, and the 75 baud selection replaces the 4.8K baud switch position.

4. Single Transmit Pushbutton: For ease in transmitting the special code sequences required by the SITA terminals, the single step transmit feature is provided with the SINGLE STEP pushbutton in the display area of the CX-500 panel. The XMIT CHAR switch must be in the SINGLE position to enable use of the pushbutton for transmit. The XMIT CHAR switch must be returned to the OFF position when the SINGLE STEP pushbutton is to be used for buffer display stepping.