WY-50/WY-50+ Maintenance Manual

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3 TROUBLESHOOTING

INTRODUCTION

This terminal is easy to troubleshoot. Chapter 3 describes its self-test, diagnostics, and hardware problems. It also explains how to fix problems at the board level.

POWER-ON SELF-TEST

Note--Self-test returns the terminal to default values.

The power-on self-test checks the terminal's RAM, CPU, and EAROM. The RAM test is a Write/Read test that checks all 4K of RAM. The CPU test checks 128 bytes of RAM in the CPU as well as the data and address lines. The EAROM test calculates the EAROM's checksum and compares it to the checksum bit stored in the ROM.

Each time a user turns the terminal on, the power-on self-test executes. If the test detects an error, an error message appears in the lower right-hand corner of the display. Table 3-1 defines these error messages. If any of these messages do appear, replace the microprocessor board.

Table 3-1 Error Message Definitions

Error Message	IC Location	Definition
0	1E	RAM failure in the first 2K block
1	1D	RAM failure in the second 2K block
P	1J	Control PROM error
R	3F or 1C	Display row buffer error
9	6J (TTL PCB) 5J (Gate Array PCB)	EAROM checksum error
X	NA	MODEM port error
Y	NA	AUX port error
Z	3K	CPU failure

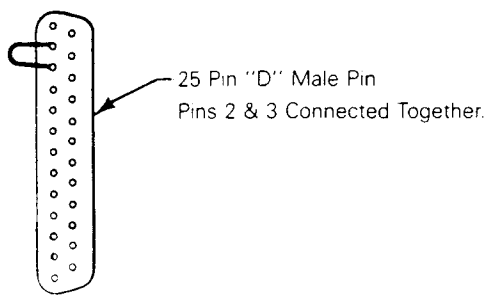
DIAGNOSTIC SELF-TEST

The you can start the terminal diagnostic self-test routine in setup. This test routine includes the power-on self-test and the telecommunications circuitry tests. Two special jumpers allow the communications test to function (see Figure 3-1 for jumper definitions). After you start it, the diagnostic test continues to run until you stop it. If the test detects an error, an error message appears in the lower right-hand corner of the CRT (see Table 3-1 for error message definitions).

Follow these steps to start the diagnostic self-test:

1. Plug in the terminal.
2. Install a test jumper on both the AUX and MODEM ports.
3. Turn the power switch ON.
4. Hold down SHIFT, then press SETUP.
5. Press ESC. This returns the terminal to default parameters.
6. Press ▼ key until the TEST parameter appears on the bottom row of the screen.
7. Press ► key until the cursor highlights the TEST parameter field.
8. Press the spacebar. This toggles the TEST parameter field to ON.
9. Start the self-test by holding SHIFT, while you press the SETUP and y keys. The test runs until you stop it.
10. To stop the self-test, hold down SHIFT, then press SETUP again, then remove the jumpers.

Figure 3-1 Test Jumper



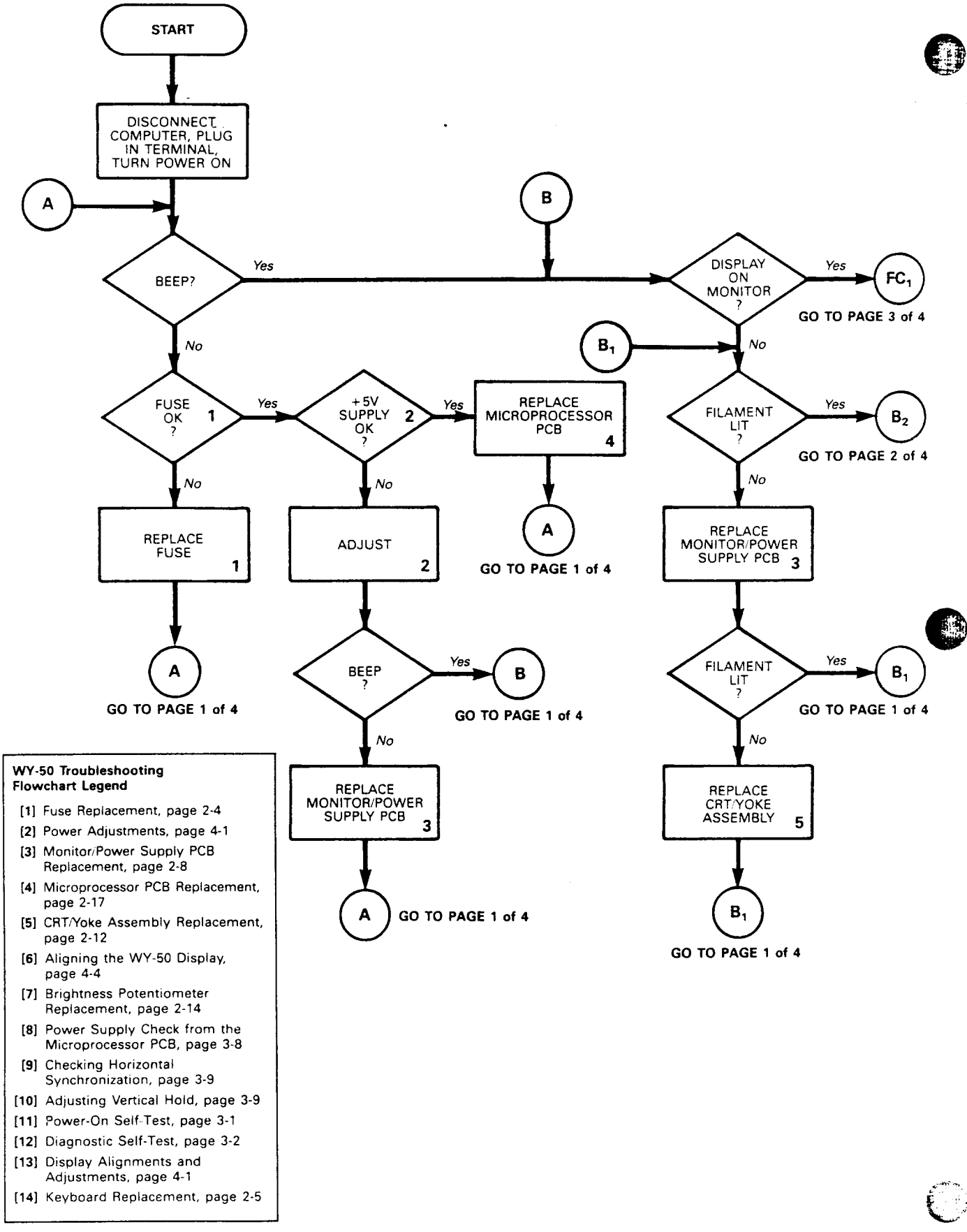
TROUBLESHOOTING

This section contains the troubleshooting flowchart, a power supply quick-reference procedure, a procedure to check the horizontal-synchronization signal, and a vertical-hold procedure for revision A monitor/power supply PCBs.

Troubleshooting Flowchart

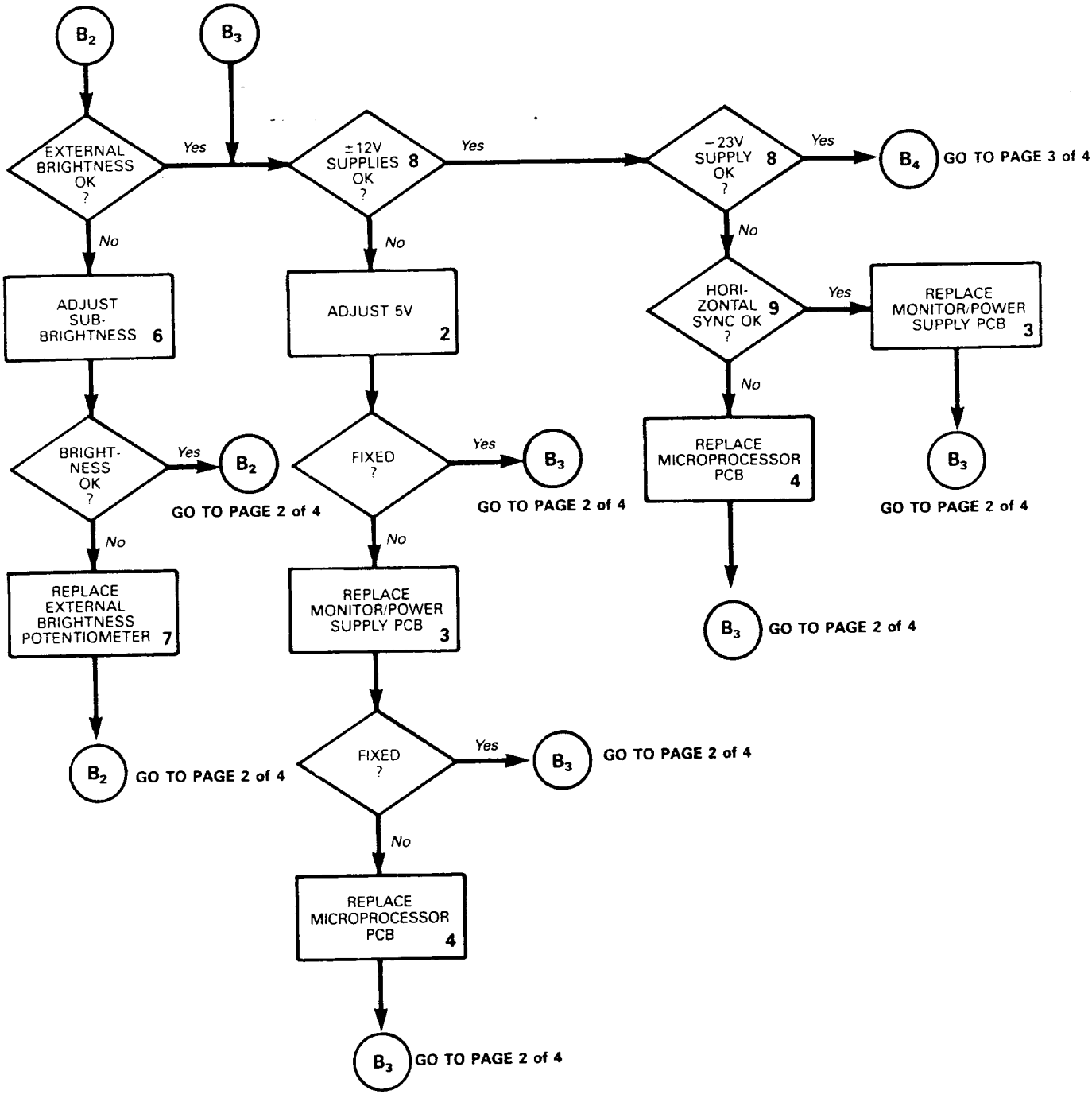
The troubleshooting flowchart can help you locate faulty modules. Start at the beginning, and follow the questions in the decision boxes. If any step requires a special procedure, you can find a reference number next to the block. We have keyed the reference numbers that appear in the flowchart to the legend at the bottom of the page. If the flowchart doesn't cover the symptoms the terminal shows, look at "Theory of Operations," Chapter 6 and Appendix C, "Schematics."

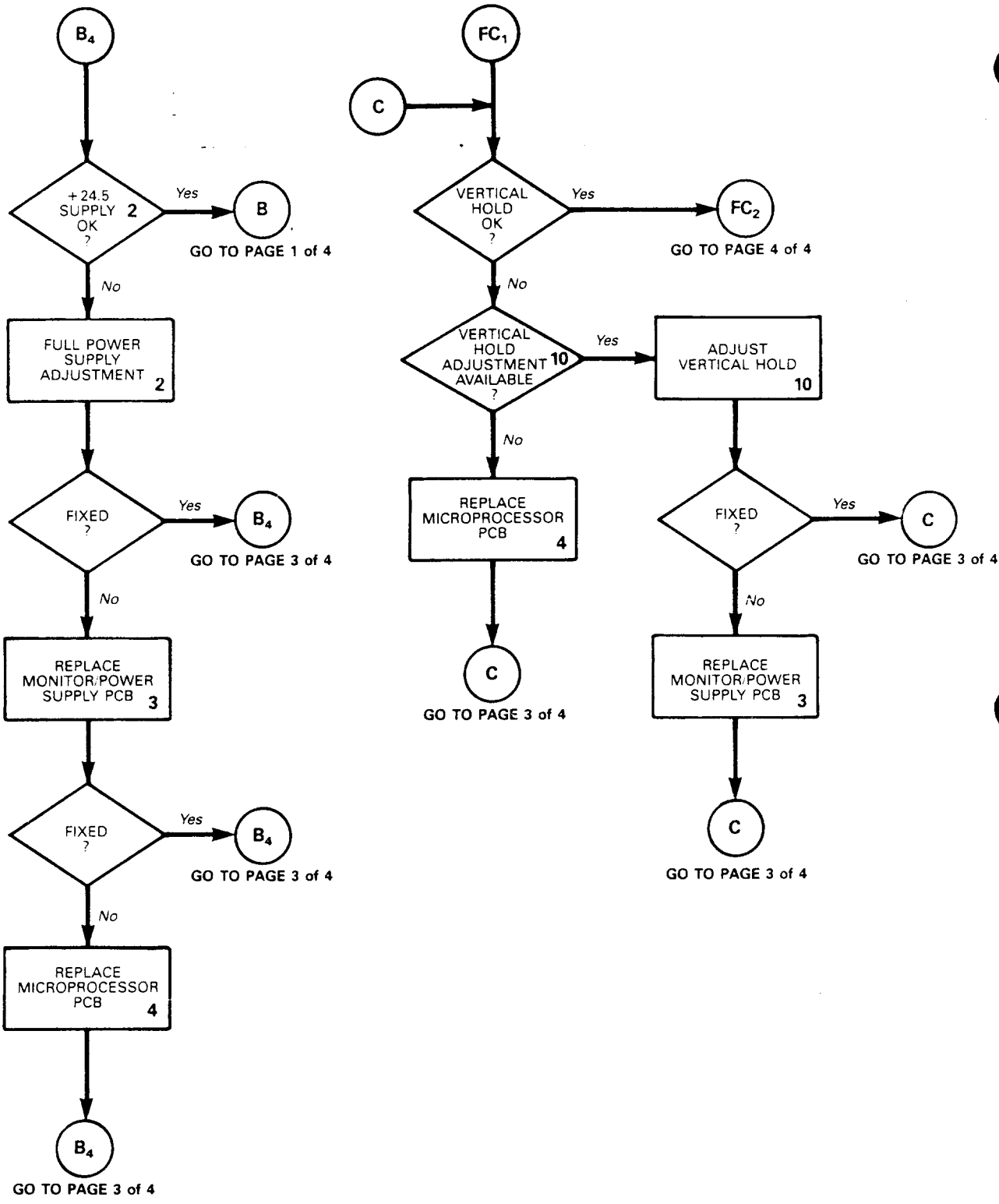
Figure 3-2 Troubleshooting Flowchart

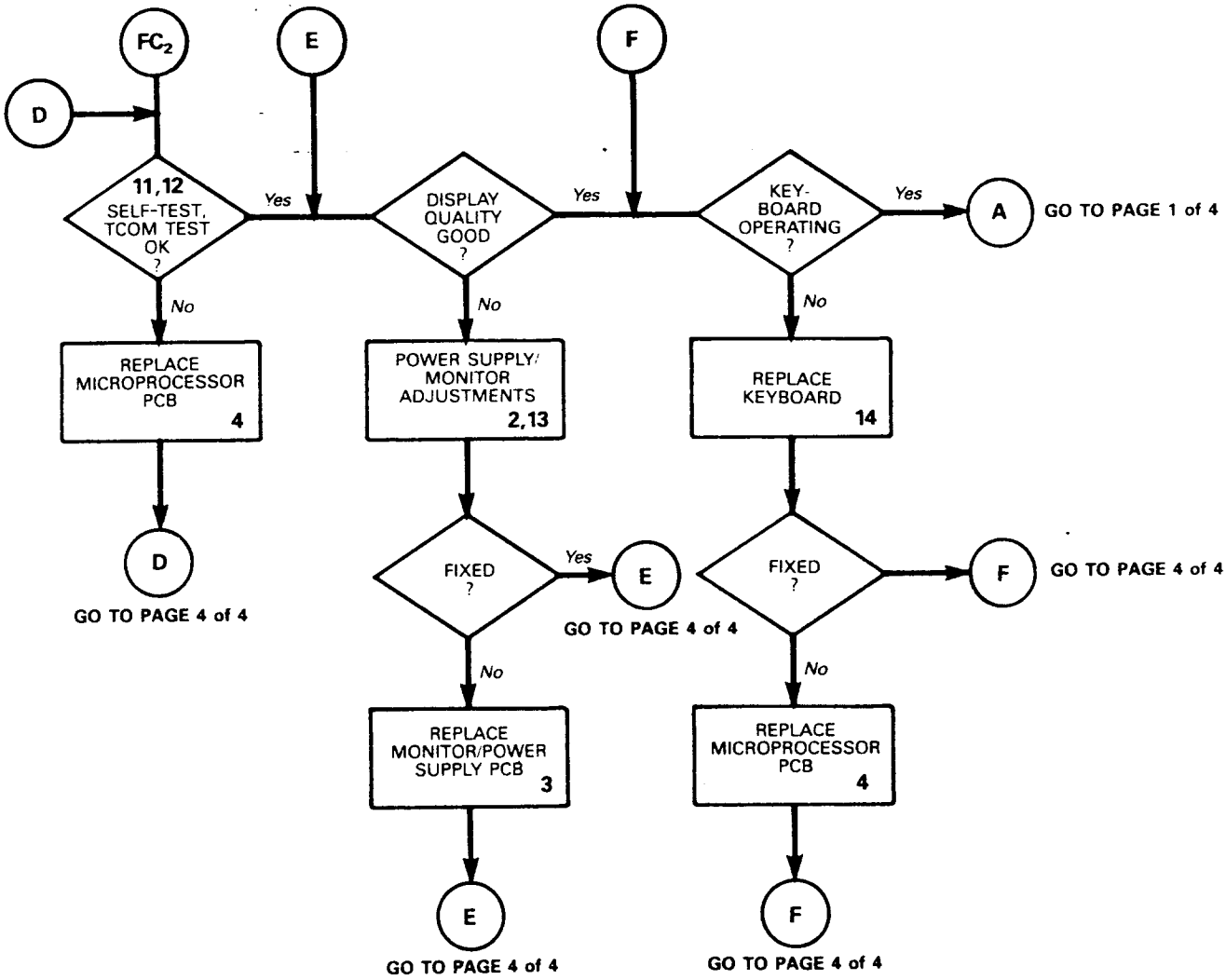


WY-50 Troubleshooting Flowchart Legend

- [1] Fuse Replacement, page 2-4
- [2] Power Adjustments, page 4-1
- [3] Monitor/Power Supply PCB Replacement, page 2-8
- [4] Microprocessor PCB Replacement, page 2-17
- [5] CRT/Yoke Assembly Replacement, page 2-12
- [6] Aligning the WY-50 Display, page 4-4
- [7] Brightness Potentiometer Replacement, page 2-14
- [8] Power Supply Check from the Microprocessor PCB, page 3-8
- [9] Checking Horizontal Synchronization, page 3-9
- [10] Adjusting Vertical Hold, page 3-9
- [11] Power-On Self-Test, page 3-1
- [12] Diagnostic Self-Test, page 3-2
- [13] Display Alignments and Adjustments, page 4-1
- [14] Keyboard Replacement, page 2-5


B2
B3
EXTERNAL BRIGHTNESS OK ?
Yes
No
±12V SUPPLIES OK ? 8
Yes
No
−23V SUPPLY OK ? 8
Yes
B4
GO TO PAGE 3 of 4
No
ADJUST SUB-BRIGHTNESS 6
ADJUST 5V 2
HORI-ZONTAL SYNC OK ? 9
Yes
REPLACE MONITOR/POWER SUPPLY PCB 3
No
BRIGHT-NESS OK ?
Yes
B2
GO TO PAGE 2 of 4
FIXED ?
Yes
B3
GO TO PAGE 2 of 4
REPLACE MICROPROCESSOR PCB 4
B3
GO TO PAGE 2 of 4
No
REPLACE EXTERNAL BRIGHTNESS POTENTIOMETER 7
REPLACE MONITOR/POWER SUPPLY PCB 3
B2
GO TO PAGE 2 of 4
FIXED ?
Yes
B3
GO TO PAGE 2 of 4
No
REPLACE MICROPROCESSOR PCB 4
B3
GO TO PAGE 2 of 4


B4
+24.5 SUPPLY OK ? 2
Yes
B
GO TO PAGE 1 of 4
No
FULL POWER SUPPLY ADJUSTMENT 2
FIXED ?
Yes
B4
GO TO PAGE 3 of 4
No
REPLACE MONITOR/POWER SUPPLY PCB 3
FIXED ?
Yes
B4
GO TO PAGE 3 of 4
No
REPLACE MICROPROCESSOR PCB 4
B4
GO TO PAGE 3 of 4
FC1
C
VERTICAL HOLD OK ?
Yes
FC2
GO TO PAGE 4 of 4
No
VERTICAL HOLD ADJUSTMENT AVAILABLE ? 10
Yes
ADJUST VERTICAL HOLD 10
No
REPLACE MICROPROCESSOR PCB 4
C
GO TO PAGE 3 of 4
FIXED ?
Yes
C
GO TO PAGE 3 of 4
No
REPLACE MONITOR/POWER SUPPLY PCB 3
C
GO TO PAGE 3 of 4

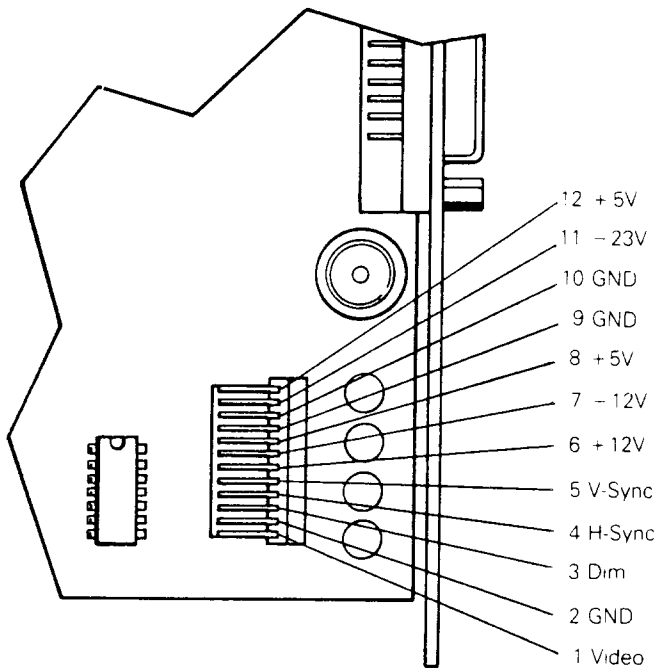

FC2
E
F
D
11,12
SELF-TEST, TCOM TEST OK ?
Yes
DISPLAY QUALITY GOOD ?
Yes
KEY-BOARD OPERATING ?
Yes
A
GO TO PAGE 1 of 4
No
No
No
REPLACE MICROPROCESSOR PCB
4
POWER SUPPLY/ MONITOR ADJUSTMENTS
2,13
REPLACE KEYBOARD
14
D
GO TO PAGE 4 of 4
FIXED ?
Yes
E
GO TO PAGE 4 of 4
FIXED ?
F
GO TO PAGE 4 of 4
No
No
REPLACE MONITOR/POWER SUPPLY PCB
3
REPLACE MICROPROCESSOR PCB
4
E
GO TO PAGE 4 of 4
F
GO TO PAGE 4 of 4

Power Supply Check from the Microprocessor PCB

You can quickly isolate problems if you check voltages on the microprocessor board. If all voltages at connector J4 are within tolerance, the microprocessor board is at fault (Figure 3-3). If they aren't within tolerance, go to "Adjustments and Alignments," Chapter 4, and adjust the power supply. If you can't adjust the power supply to meet the tolerances, you may need to replace it.

For quick reference, you can check four of the five power supply voltages on the microprocessor board without opening the cover on the monitor (the fifth, +24.5V, never reaches the microprocessor PCB).

Figure 3-3 Power Connector at the Microprocessor PCB



Tools required:
Voltmeter, Phillips screwdriver

1. Turn the monitor OFF.

2. Remove two No. 1 Phillips screws holding the rear panel in place. Pull the microprocessor PCB two inches out of the unit.

3. Find connector J4 on the microprocessor board.

4. Attach one lead from the DVM to J4-10, ground.

5. Turn the monitor on.

6. Check the +5V power supply on J4-12. Look for +5V, ±2 percent. See the troubleshooting flowchart if the signal isn't within tolerance.

7. Check the +12V power supply on J4-6. Look for +12V, ±5 percent. See the troubleshooting flowchart if the signal isn't within tolerance.

8. Check the -12V power supply on J4-7. Look for -12V, ±5 percent. See the troubleshooting flowchart if the signal isn't within tolerance.

9. Check the -23V power supply on J4-11. Look for -23V, ±5 percent. See the troubleshooting flowchart if the signal isn't within tolerance.

Checking Horizontal Synchronization

Checking the horizontal synchronization helps determine which PCB to replace: either the microprocessor PCB or the monitor/power supply PCB.

Tools Required:
Oscilloscope

1. Find connector J4 on the microprocessor PCB (see Figure 3-3).

2. Touch J4-4 with the oscilloscope probe. Look for a 44 µs, ±10 percent, pulse, 4.8 to 5Vp-p. If the horizontal synchronization signal is within tolerance, replace the monitor/power supply PCB. If it isn't within tolerance, replace the microprocessor PCB. See the troubleshooting flowchart.

Adjusting Vertical Hold

On a few early terminals, the monitor/power supply PCB has an extra potentiometer to adjust vertical hold. You can find it next to HGT, VR302, directly below the anode cap. If you need to adjust it, this is the procedure:

1. Display a full screen of E's (see "Adjustments and Alignments," Chapter 4).

2. Turn the vertical hold potentiometer until the display rolls in one direction.

3. Turn the vertical hold potentiometer until the display rolls in the other direction.

4. Center the potentiometer; the display should be steady. If it isn't steady, see the troubleshooting flowchart.

APPENDIX D SERVICING THE WY-50+

INTRODUCTION TO WY-50+ MAINTENANCE

Servicing the WY-50+ is nearly the same as servicing the WY-50. Major feature differences include the amber screen, additional compatible modes, a bi-directional AUX port, Wyseword standard, and multiple pages of memory (two standard, four optional). New servicing features include an expanded set of field diagnostics, a keyboard function test, a test to check all character sets, and two new built-in test patterns for display alignment.

TROUBLESHOOTING

Added troubleshooting features include an improved self-test, a new diagnostic self-test, a communication port test, a keyboard function test, an attribute/character font test, and a new display to check all attributes.

Note--Running the diagnostic tests described here (other than the power-on self-test) defaults all setup parameters and function keys.

Power-On Self-Test

When a user turns the terminal on, it performs a self-test of the logic PCB. If the self-test discovers a failure, an alphanumeric error code indicating failure type will appear in the lower-right corner of the display. An error code usually indicates logic PCB replacement. Table D-1 lists and explains the error codes.

Table D-1 Power-On Self-Test Error Codes

Error Message	Error Type
0	RAM bank 0
1	RAM bank 1
K	Reinitialize EAROM (Press the SETUP key to continue or turn off the terminal, then on again. Replace logic PCB only if error appears repeatedly.)
P	Code ROM checksum
Z	Processor RAM

The self-test checks RAM, EAROM, and the CPU. The RAM test is a read/write test that checks all 8K of RAM, or all 16K if additional memory is installed on the logic PCB. The CPU test checks 128 bytes of RAM in the CPU, the data lines, and the address lines. The EAROM test calculates the EAROM's checksum, and compares it to the checksum bit stored in the ROM.

FIELD DIAGNOSTICS

The WY-50+ contains four new field diagnostics:

- The System Diagnostic Test, an expanded version of the diagnostic self-test on page 3-2 of the WY-50 Maintenance Manual.
- A Transmit/Receive Test for the communications ports.
- A Keyboard Function Test.
- An Attribute/Character Font Test

The following sections describe the diagnostic procedures, the new error codes, and the new test connectors and cables.

System Diagnostic Test

This test is an expanded version of the power-on self-test. It checks memory, buffers, the CPU, and communications.

Follow these steps to perform the system diagnostic test:

1. Turn off the terminal.
2. Install the system diagnostic test connectors on the AUX and MODEM ports (see page D-4 for connector definitions).
3. Turn on the terminal.
4. Hold down the SHIFT key, then press the SETUP key.
5. Press the cursor DOWN key until the TEST parameter appears on the bottom line of the screen.
6. Press the cursor LEFT key once. The cursor highlights the TEST field.
7. Press the spacebar. This toggles the test field on.
8. Leave setup mode by holding down the SHIFT key and pressing the SETUP key again.
9. Save the selection by pressing the Y key. This starts the diagnostic self-test.

If the system diagnostic test doesn't find any errors, a flashing pattern should appear on the screen.

If it does find an error, the screen will blank and an error code will appear in the lower-right corner of the display. Replace the logic PCB.

Table D-2 lists and describes the system diagnostic test error codes.

Table D-2 System Diagnostic Test Error Codes

Error Message	Error Type
0	Buffer RAM, IC 0
1	Buffer RAM, IC 1 (if memory is expanded)
9	EAROM
R	Row Buffer
K	No initialization on power-up
A	Modem, RTS to CTS
C	Modem, DTR to DCD
E	AUX Ready to AUX RTS
P	Control PROM
Z	8031 processor
X	MODEM port loopback
Y	AUX port loopback

Caution--If you save the ON test parameter, turn off the power, and remove the test connectors, an error condition will result the next time someone turns on the terminal. Remember to default the terminal before returning it to the user.

Follow these steps to stop the system diagnostic test:

1. Hold down the space bar until the flashing pattern stops.
2. Turn the terminal off.
3. Remove the test connectors. Default the terminal.

System Diagnostic Test Connector Definitions--The diagnostic self-test connectors for both the MODEM and the AUX ports are made from 25-pin, male, D-type connectors. (You can find information to order ready-made connector sets under Parts List on page D-10.)

Connect these pins:

MODEM Port	**AUX Port**
Pin 2 to Pin 3 (TxD to RxD)	Pin 2 to Pin 3 (TxD to RxD)
Pin 4 to Pin 5 (RTS to CTS)	Pin 6 to Pin 20 (DSR to DTR)
Pin 8 to Pin 20 (DCD to DTR)	

Tramsmit/Receive Communication Port Test

This test transmits data between the MODEM and AUX ports. If either port doesn't receive or recognize the data from the other port, an error code will appear on the screen.

Follow these steps to perform the test:

1. Turn off the terminal.
2. Install the communication port test cable on the AUX and MODEM ports (see page D-5 for a cable definition).
3. Turn on the terminal.
4. Hold down the SHIFT key, then press the SETUP key.
5. Press the cursor DOWN key until the TEST parameter appears on the bottom line of the screen.
6. Press the cursor LEFT key once. The cursor highlights the TEST field.
7. Press the spacebar. This toggles the test field on.
8. Leave setup by holding down the SHIFT key and pressing the SETUP key again.
9. Save the selection by pressing the Y key. This starts the communications port test.

   If the communication port test doesn't find any errors, a flashing test pattern should appear on the screen.

   If the communication port test does find an error, the screen will blank and an error code will appear in the lower-right corner of the display. Replace the logic PCB. Table D-3 lists and describes the error codes.

Table D-3 Transmit/Receive Communication Port Test Error Codes

Error Message	Error Type
W	Xmit/Rcv error, MODEM to AUX
Z	Xmit/Rcv error, AUX to MODEM

Note--Error messages listed on other tables may appear when this test runs, but most errors will be those listed above.

Caution--If you save the ON test parameter, turn off the power, and remove the test connectors, an error condition will result the next time someone turns on the terminal. Remember to default the terminal before returning it to the user.

Follow these steps to stop the test:

1. Hold down the SETUP key until the flashing pattern stops.
2. Turn the terminal off.
3. Remove the test cable. Default the terminal.

Transmit/Receive Communication Port Test Cable Definitions--The transmit/receive communication port test cable requires two 25-pin, male, D-type connectors, and wire to connect pins on each connector and to connect the two connectors together. (You can find information to order ready-made cables under Parts List on page D-10.)

Connect these pins:

MODEM Port (DTE)		**AUX Port (DCE)**
Pin 2 (TxD)	to	Pin 2 (RxD)
Pin 3 (RxD)	to	Pin 3 (TxD)
Pins 4 to 5		Pins 6 to 20
Pins 8 to 20		

Keyboard Function Test

The keyboard function test checks the keyboard.

Note--The keyboard function test does not test the following keys: SHIFT, FUNCT, CAPS LOCK, SETUP, BREAK, or CTRL. If you press ENTER, the terminal will return to the system diagnostic test. Pressing function keys F1 through F16 will change attributes on portions of the test screen.

Follow these instructions to perform the keyboard test:

1. Start the system diagnostic test described on page D-2.

2. Hold down the space bar until the test pattern stops flashing.

3. Hold down the CTRL key, then press the A key until you see the screen in Figure D-1.

4. Find the bottom line of "m"s. Press the letter keys that you are testing, and watch the letters change in the middle of the bottom line.

   If the letter keys in question don't work, replace the keyboard PCB.

   If the letters do change during the test, but fail to respond during normal operation, check the logic PCB or the computer.

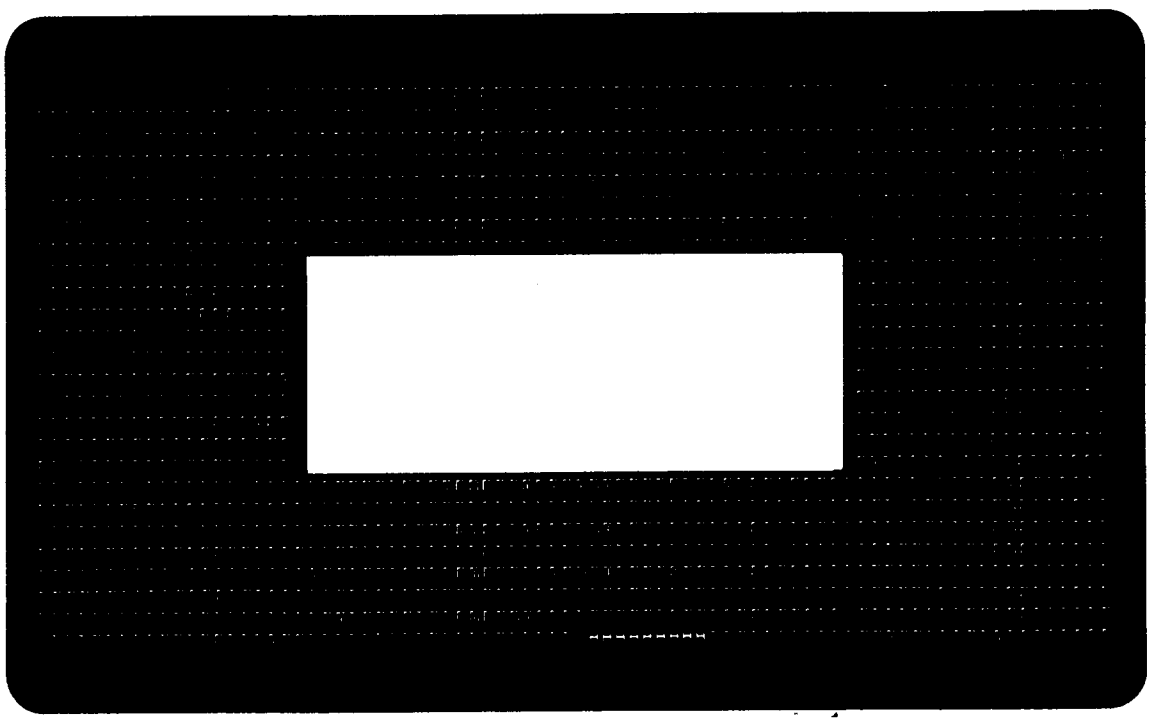
Follow these steps to stop the test:

1. Press the SETUP key until the flashing pattern stops.

2. Turn the terminal off.

3. Remove the test connectors. Default the terminal.

Figure D-1 Keyboard Function Test Pattern



Attribute/Character Font Test

This test allows you to check all the attributes and the character font.

Follow these steps to perform the test:

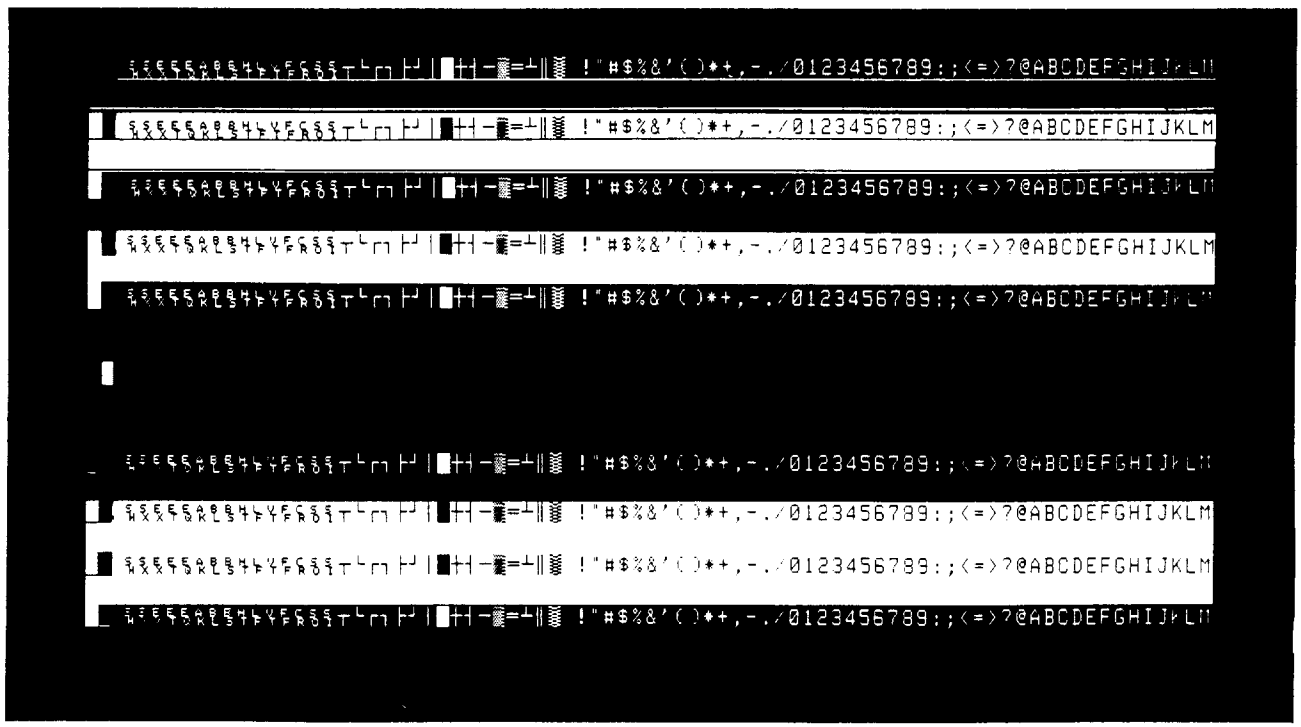
1. Start the system diagnostic test described on page D-2.
2. Hold the SETUP key down until the test pattern stops flashing.
3. Hold the CTRL key down, then press the A key until you see the screen in Figure D-2.
4. Look for the following features:

   Attributes: Normal, Blank, Blink, Underline, Dim, and Reverse

   A full character set

   If one or more of the features doesn't appear, replace the logic PCB.

Figure D-2 Attribute/Character Font Test Pattern



Follow these steps to stop the test:

1. Press the SETUP key until the flashing pattern stops.

2. Turn the terminal off.

3. Remove the test connectors. Default the terminal.

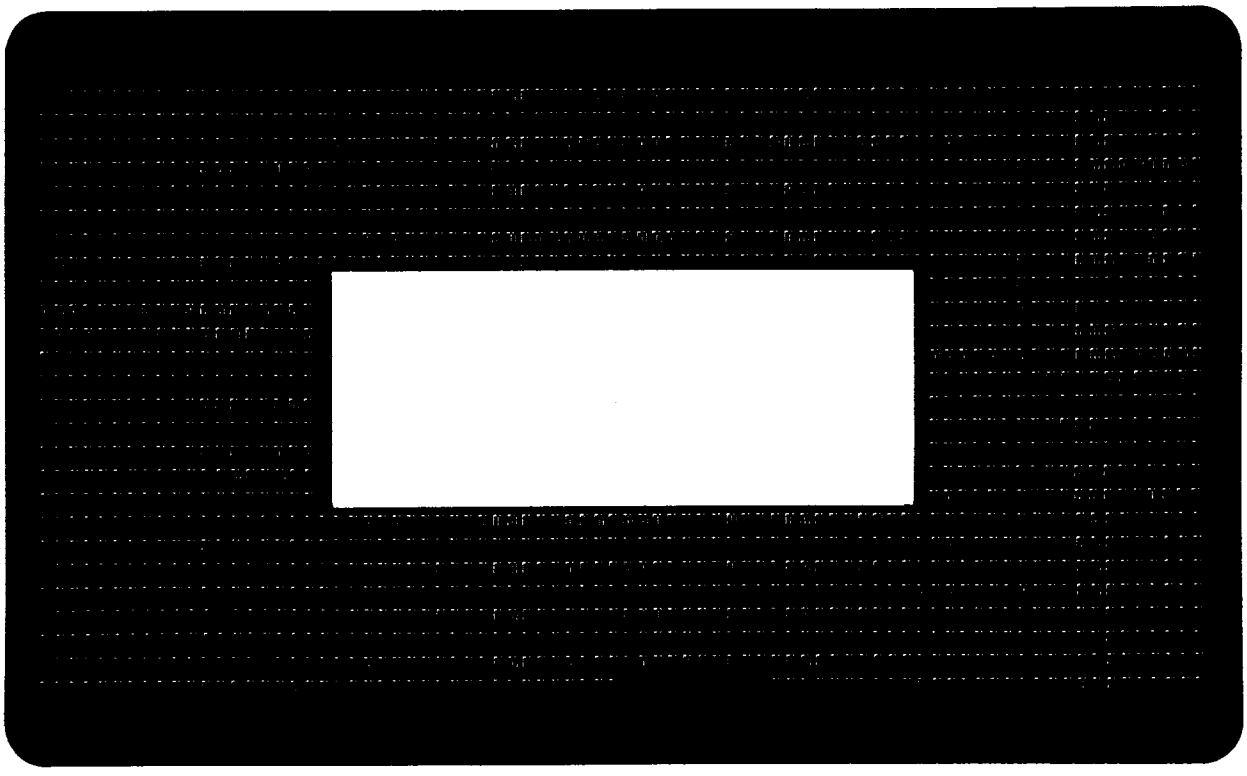
ALIGNMENT AND ADJUSTMENT

This terminal has two new test patterns, which you can call to align the display more accurately and quickly: Pattern M and Pattern O.

Pattern M

Pattern M helps you detect and correct linearity, brightness, and focus (see Figure D-3). This pattern is an 80-column display of characters. Two blocks in the center of the pattern indicate brightness: dim and normal.

Figure D-3 Pattern M



Pattern 0

Pattern 0 helps you detect and correct pincushion, tilt, centering, and size problems (see Figure D-4). This pattern is a full-reverse, normal brightness display in 80-column format. Two pairs of parallel lines cross in the center, making four quadrants. Two additional vertical lines, one on either side of the pattern, indicate brightness intensity levels.

Note--You can verify the display tolerances using a display reticle, available from WYSE, Part No. 09-001-03. Instructions to use the reticle are included with it.

Figure D-4 Pattern 0

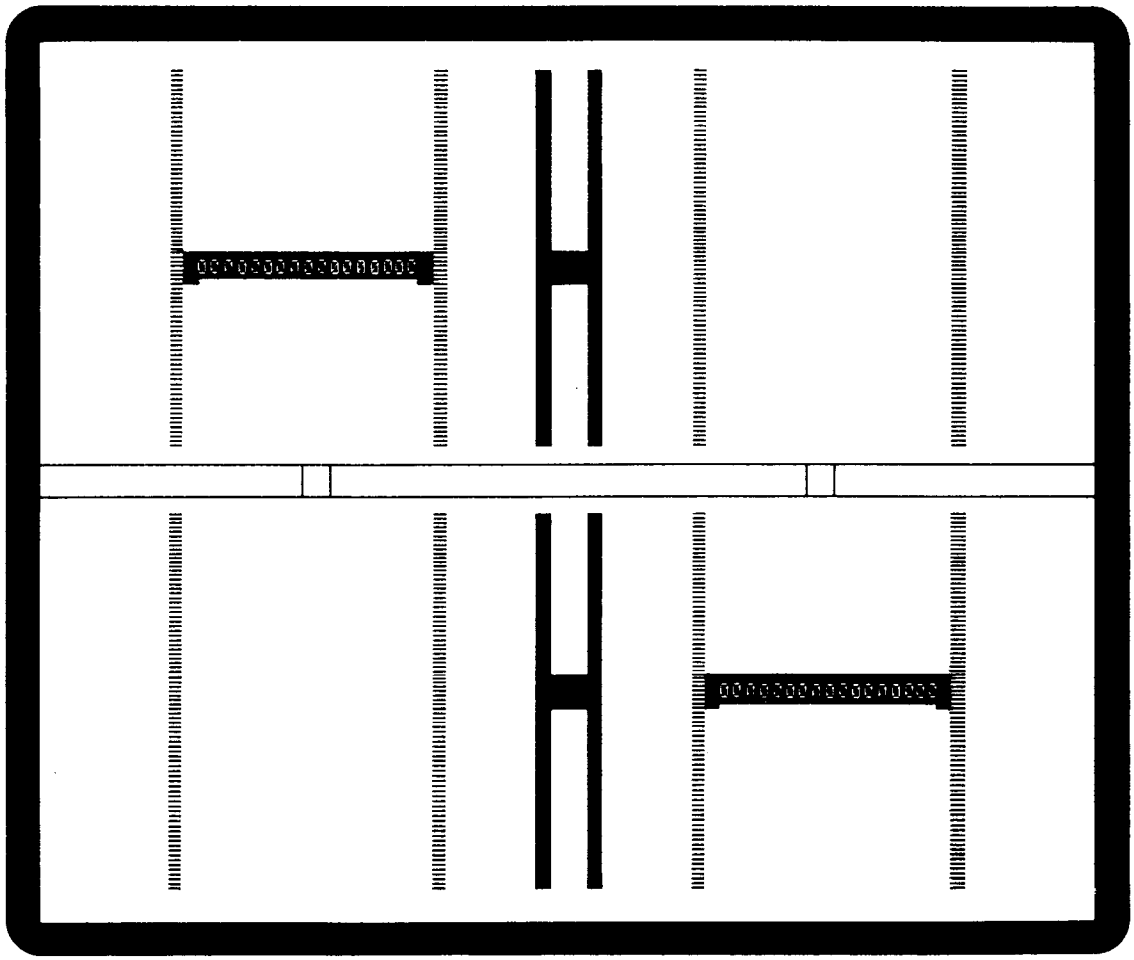


Table D-4 lists adjustments, display problems, and the pattern that is best suited to make the adjustment.

Table D-4 Test Pattern Problems and Adjustments

Test Pattern	Display Problems	Adjustments
M	Letters at the top of the display aren't the same height as those at the bottom of the display	Linearity
M	Fuzzy letters	Focus
M	Too bright; too dim; raster scan lines show	Brightness
O	Too short or too tall	Height
O	Too wide or too narrow	Width
O	Not centered	Centering
O	Not level	Yoke Lock
O	Pincushioning, barreling, crooked edges, corners sag or move out of tolerance	Display magnets

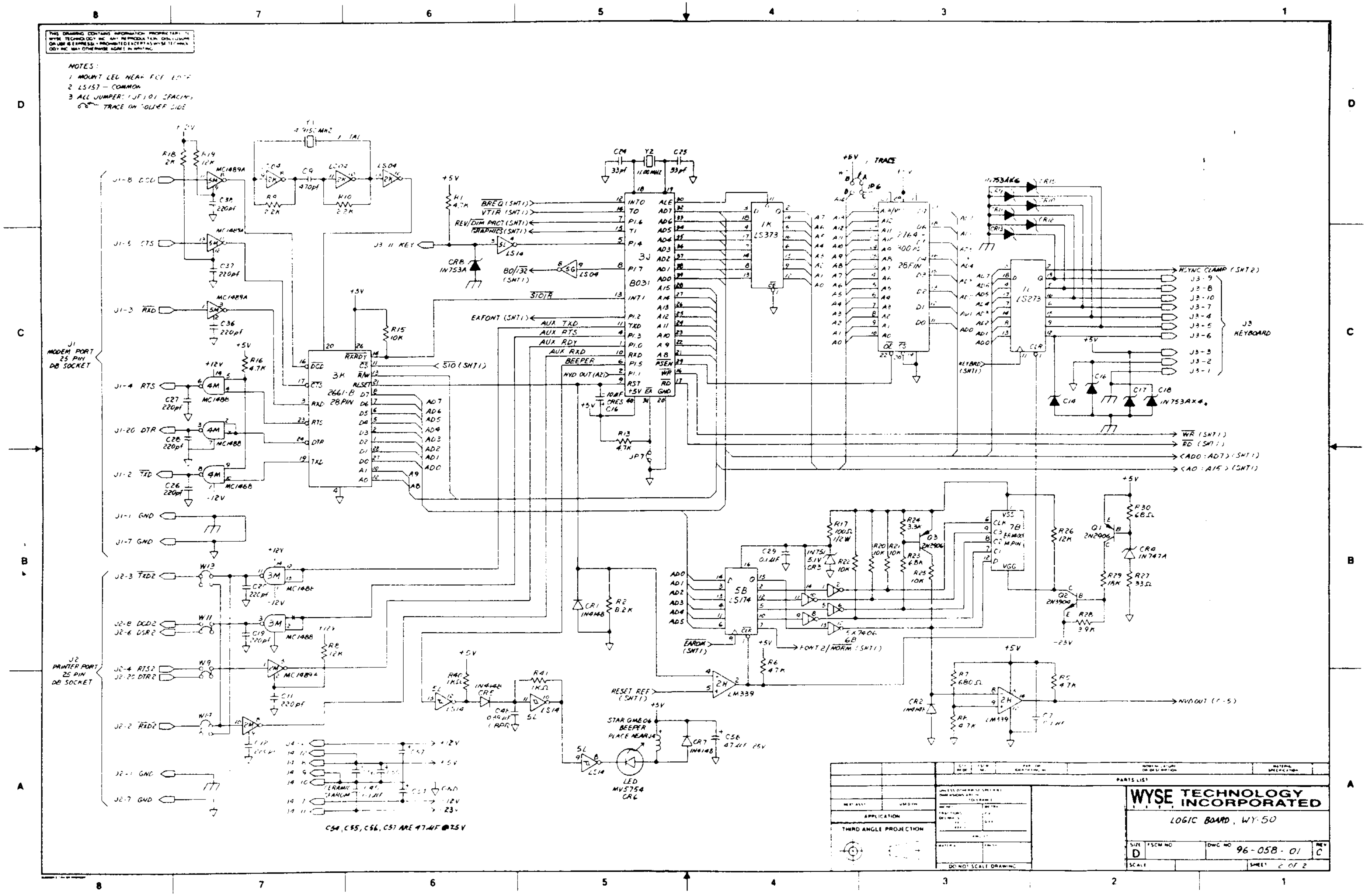
PARTS LIST

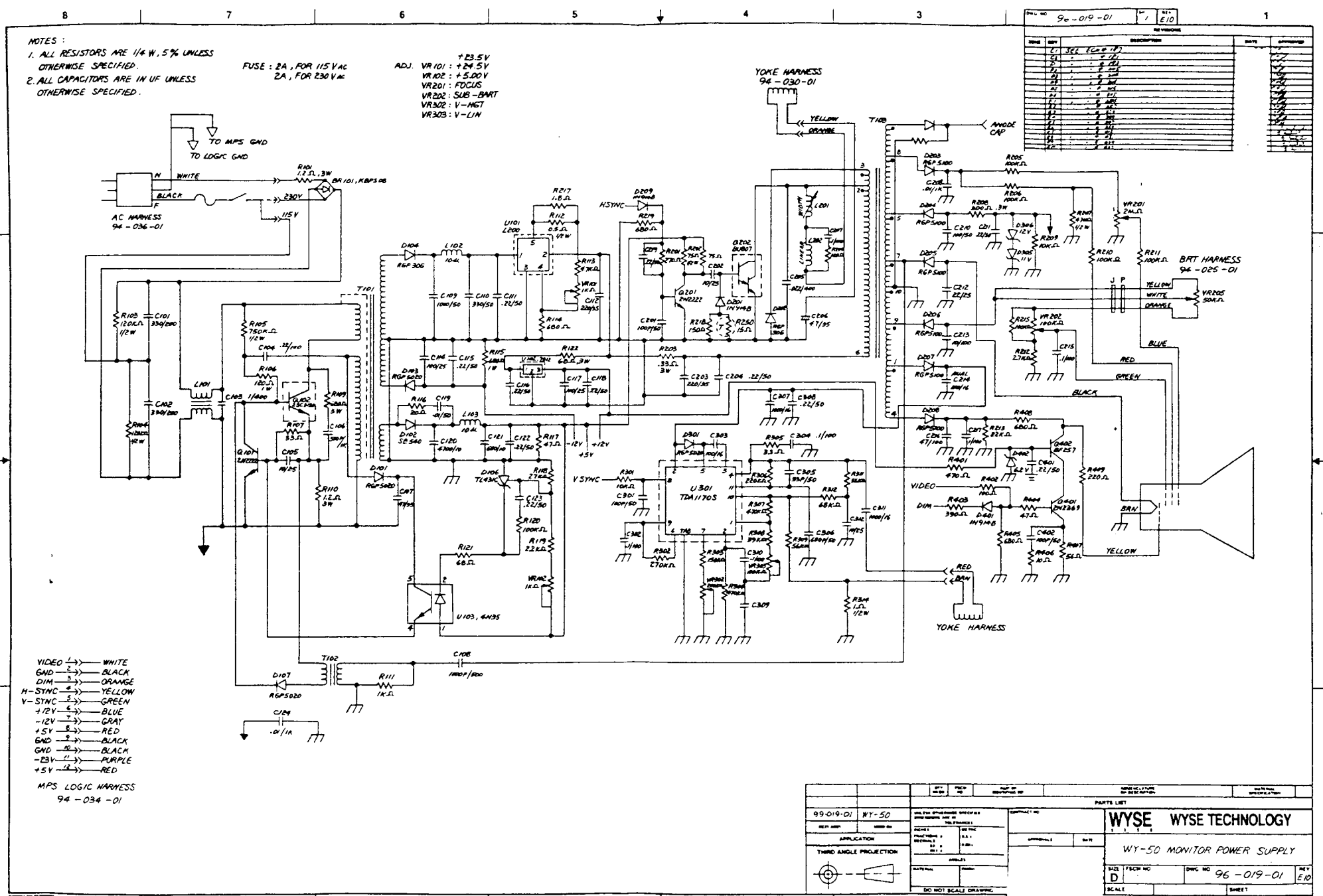
The WY-50+ contains three new assemblies that differ from the standard WY-50 terminal: the Logic PCB, the Monitor/Power Supply PCB, and the Amber CRT. The terminal also comes with test connectors and cables. You can order all other replaceable units with the spare part numbers assigned to the WY-50.

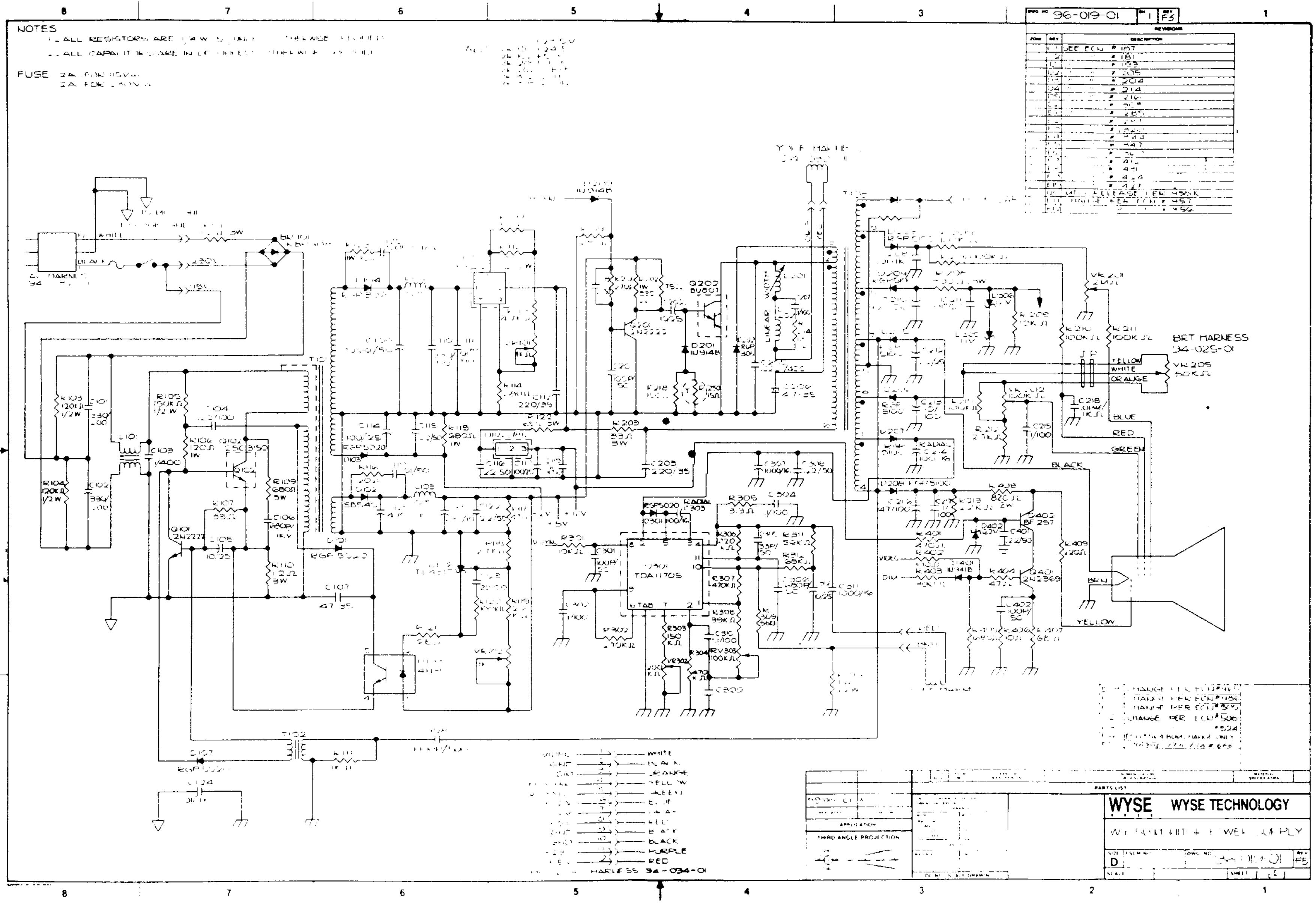
Part Number	Description
840293-01	WY-50+ Logic PCB
99-019-02	WY-50+ Monitor/Power PCB
780026-01	WY-50+ Amber CRT
94-0233-01	WY-50+ System Diagnostic Test Connector Set
94-0238-01	WY-50+ Transmit/Receive Comm Port Test Cable
09-001-03	WY-50+ Display Reticle

SCHEMATICS

See Appendix C, "Schematics," to find schematic diagrams of the WY-50+ Logic PCB and Monitor/Power Supply PCB.


NOTES:
1 MOUNT LED NEAR PCT EDGE
2 LS157 — COMMON
3 ALL JUMPERS .1 (.01 SPACING) TRACE ON SOLDER SIDE
J1 MODEM PORT 25 PIN DB SOCKET
J2 PRINTER PORT 25 PIN DB SOCKET
J3 KEYBOARD
3J 8031
3K 2661-B 28 PIN
C54, C55, C56, C57 ARE 47 µF @ 25 V
WYSE TECHNOLOGY INCORPORATED
LOGIC BOARD, WY-50
96-058-01
SIZE D
REV C
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
APPLICATION


NOTES :
1. ALL RESISTORS ARE 1/4 W, 5% UNLESS OTHERWISE SPECIFIED.
2. ALL CAPACITORS ARE IN UF UNLESS OTHERWISE SPECIFIED.
FUSE : 2A , FOR 115 V ac
2A , FOR 230 V ac
ADJ. VR101 : +23.5V
VR102 : +5.00V
VR201 : FOCUS
VR202 : SUB-BART
VR302 : V-HGT
VR303 : V-LIN
TO MPS GND
TO LOGIC GND
AC HARNESS 94-036-01
YOKE HARNESS 94-030-01
ANODE CAP
BAT HARNESS 94-025-01
YOKE HARNESS
U103, 4N35
U301 TDA1170S
VIDEO 1 WHITE
GND 2 BLACK
DIM 3 ORANGE
H-SYNC 4 YELLOW
V-SYNC 5 GREEN
+12V 6 BLUE
-12V 7 GRAY
+5V 8 RED
GND 9 BLACK
GND 10 BLACK
-23V 11 PURPLE
+5V 12 RED
MPS LOGIC HARNESS 94-034-01
96-019-01
WY-50
APPLICATION
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
WYSE TECHNOLOGY
WY-50 MONITOR POWER SUPPLY
DWG NO 96-019-01
SIZE D
SCALE
SHEET


NOTES
FUSE
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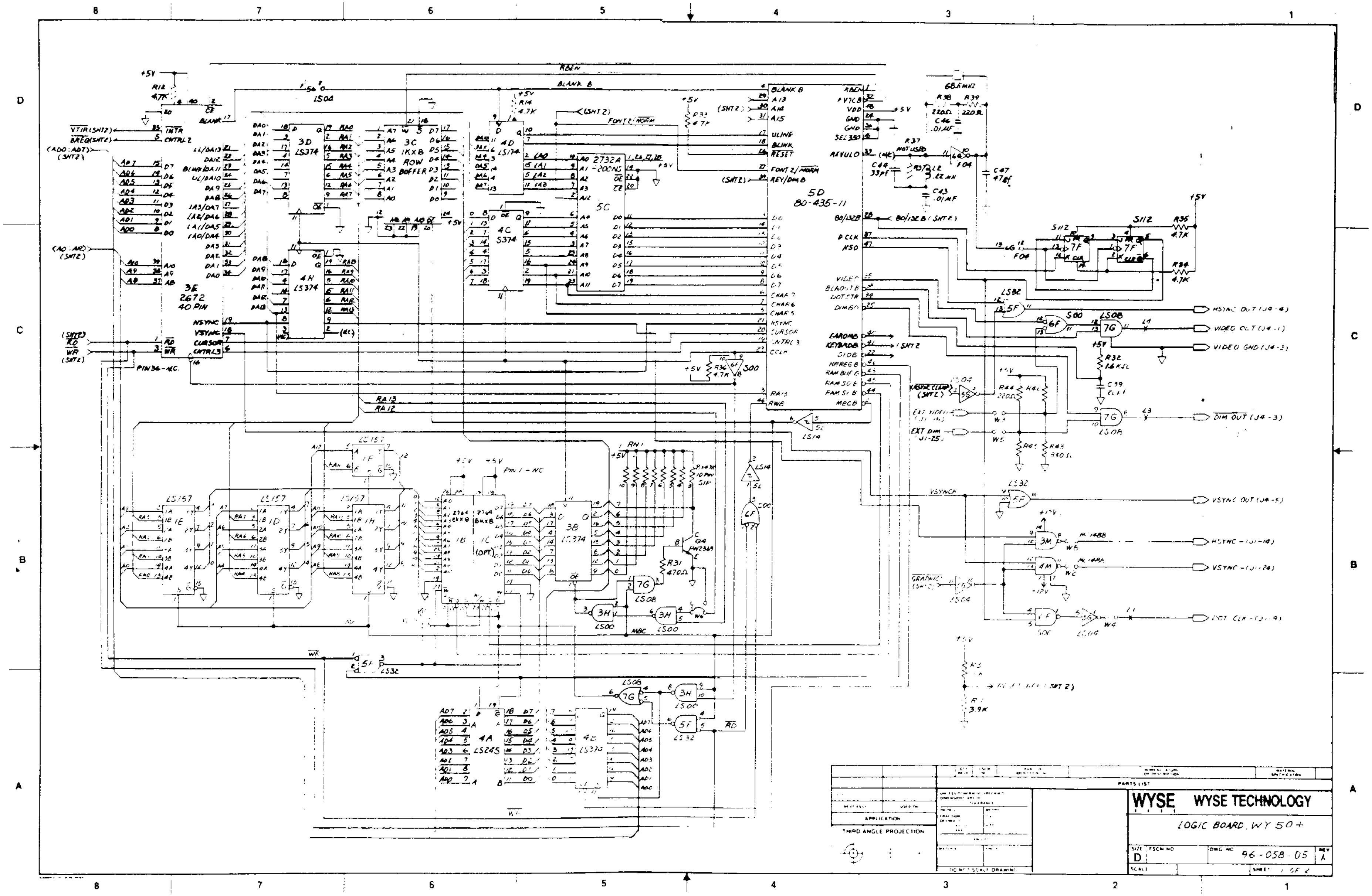
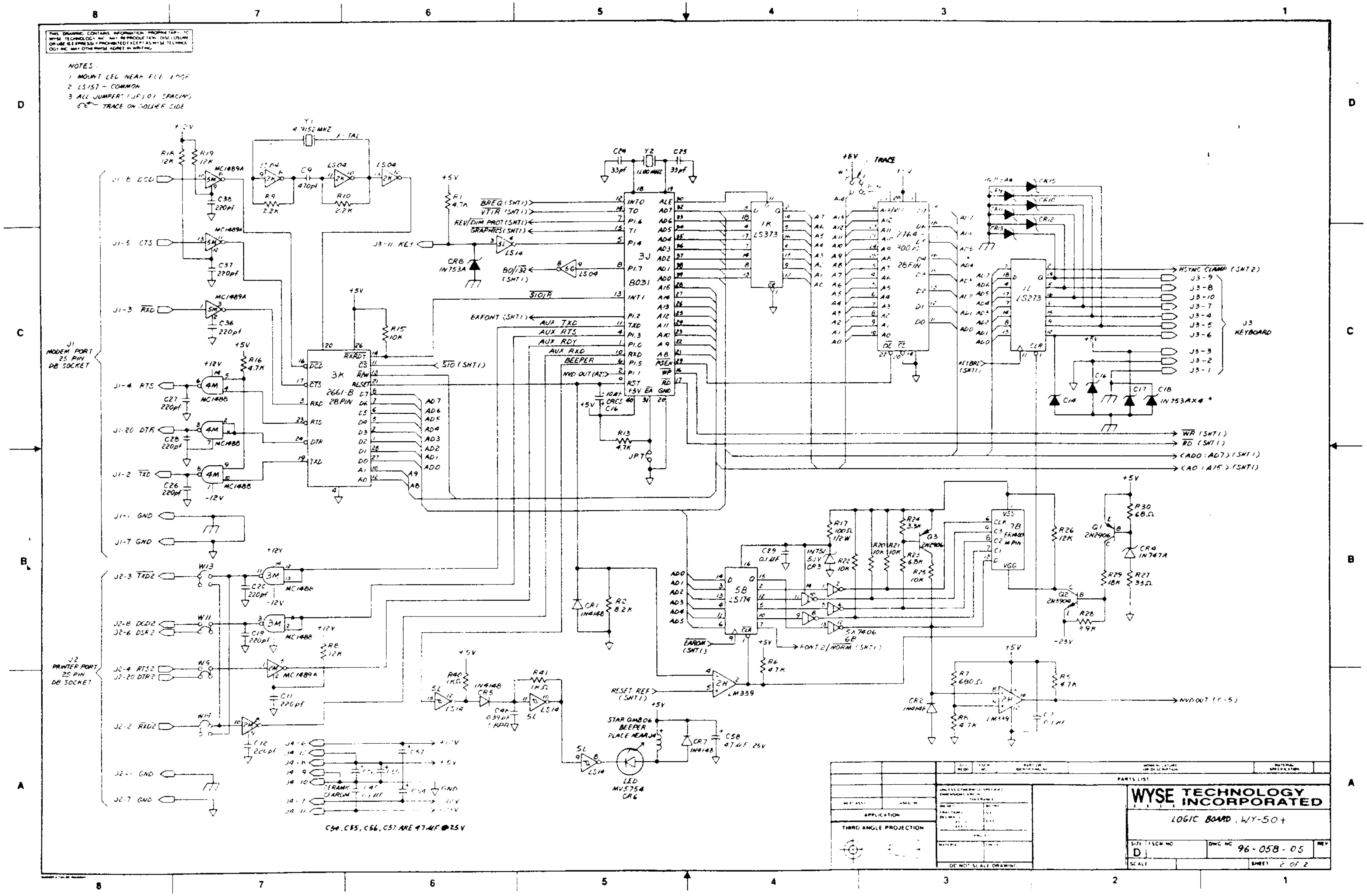
F5
BRT HARNESS
34-025-01
VR205
50KΩ
YELLOW
WHITE
ORANGE
BLUE
RED
GREEN
BLACK
TDA1170S
HARNESS 34-034-01
WHITE
BLACK
ORANGE
YELLOW
GREEN
BLUE
RED
BLACK
PURPLE
RED
THIRD ANGLE PROJECTION
WYSE
WYSE TECHNOLOGY
D

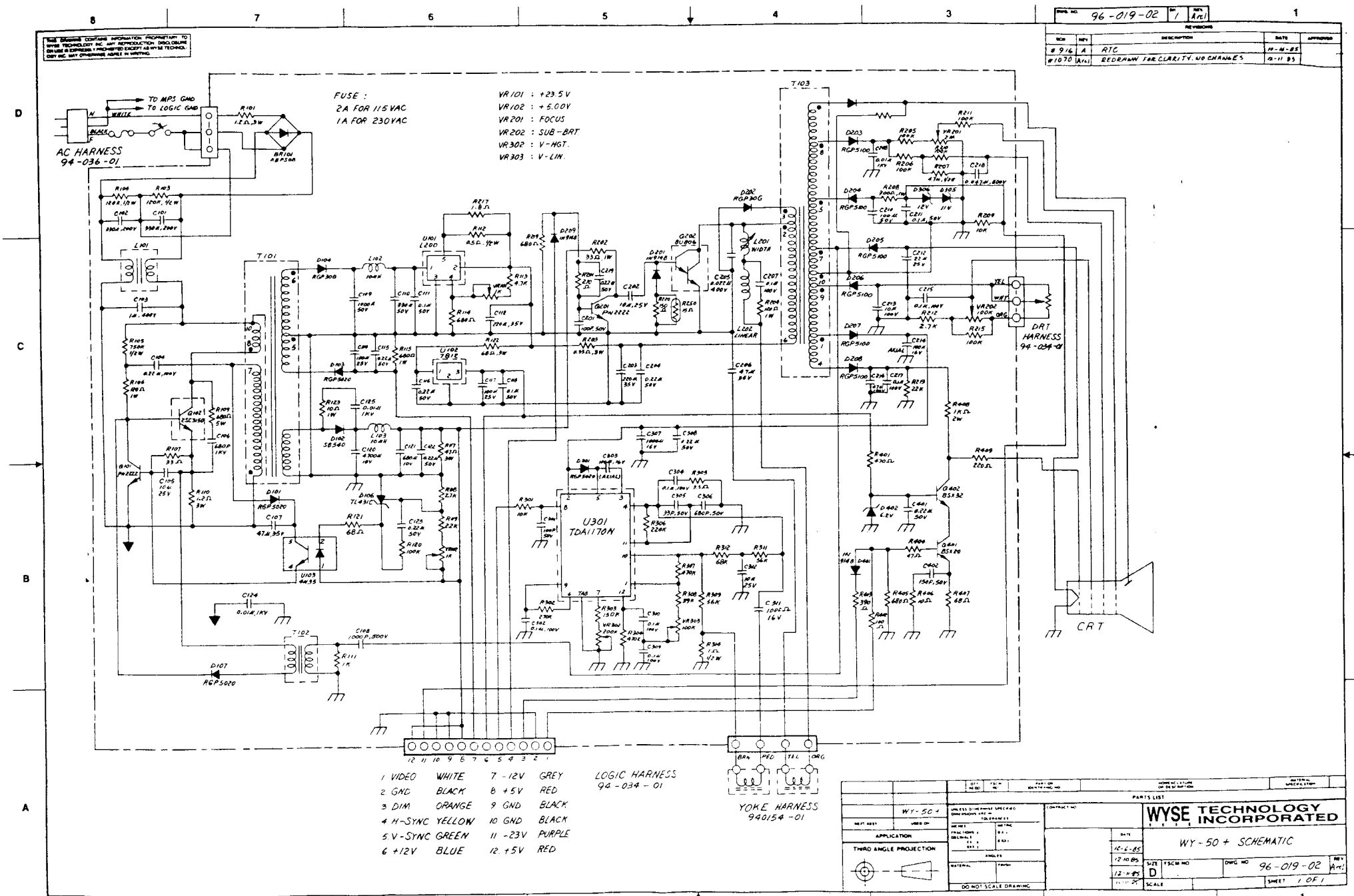


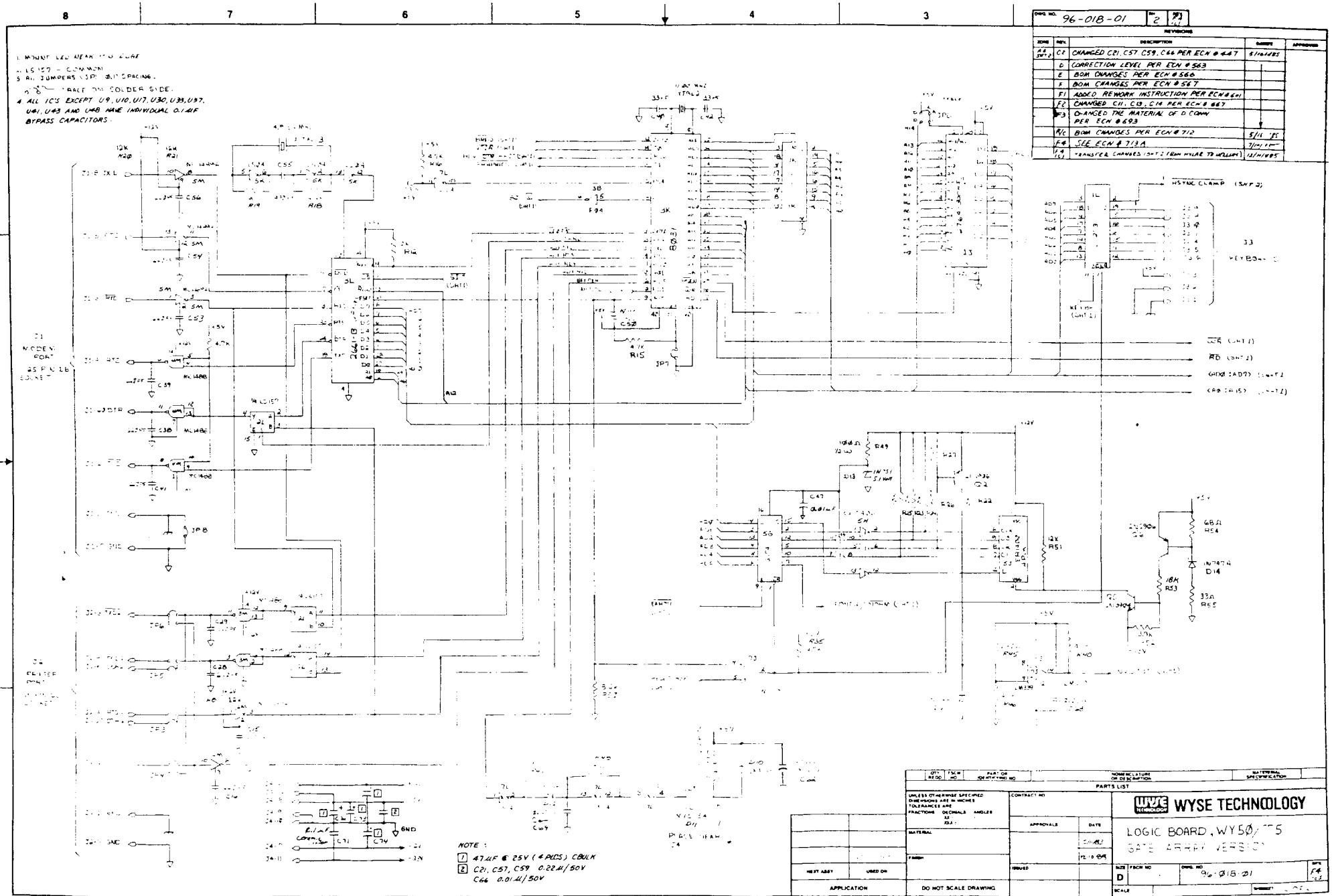
WYSE TECHNOLOGY
LOGIC BOARD, WY 50+
96-058-05
THIRD ANGLE PROJECTION
APPLICATION
PARTS LIST

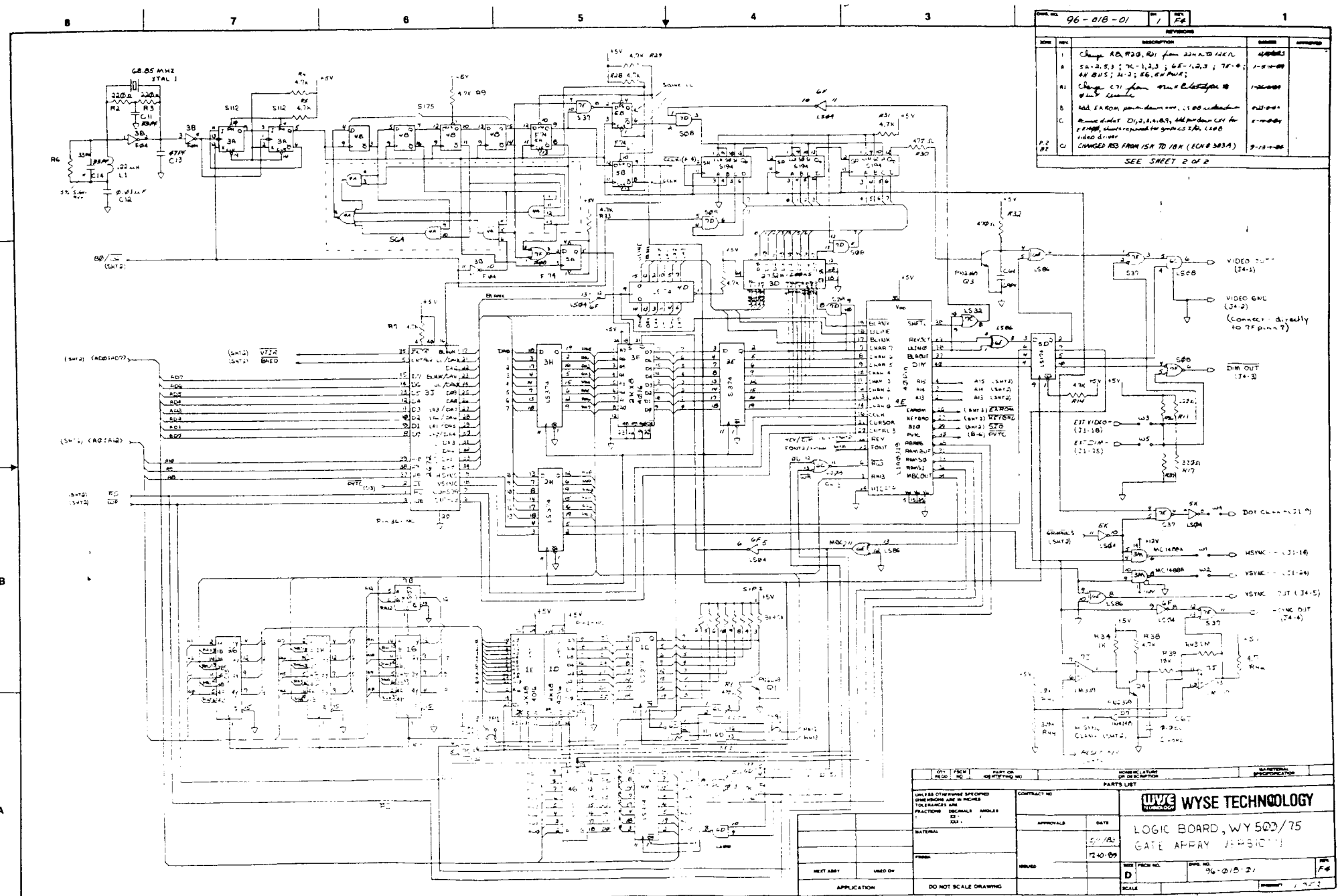
C-

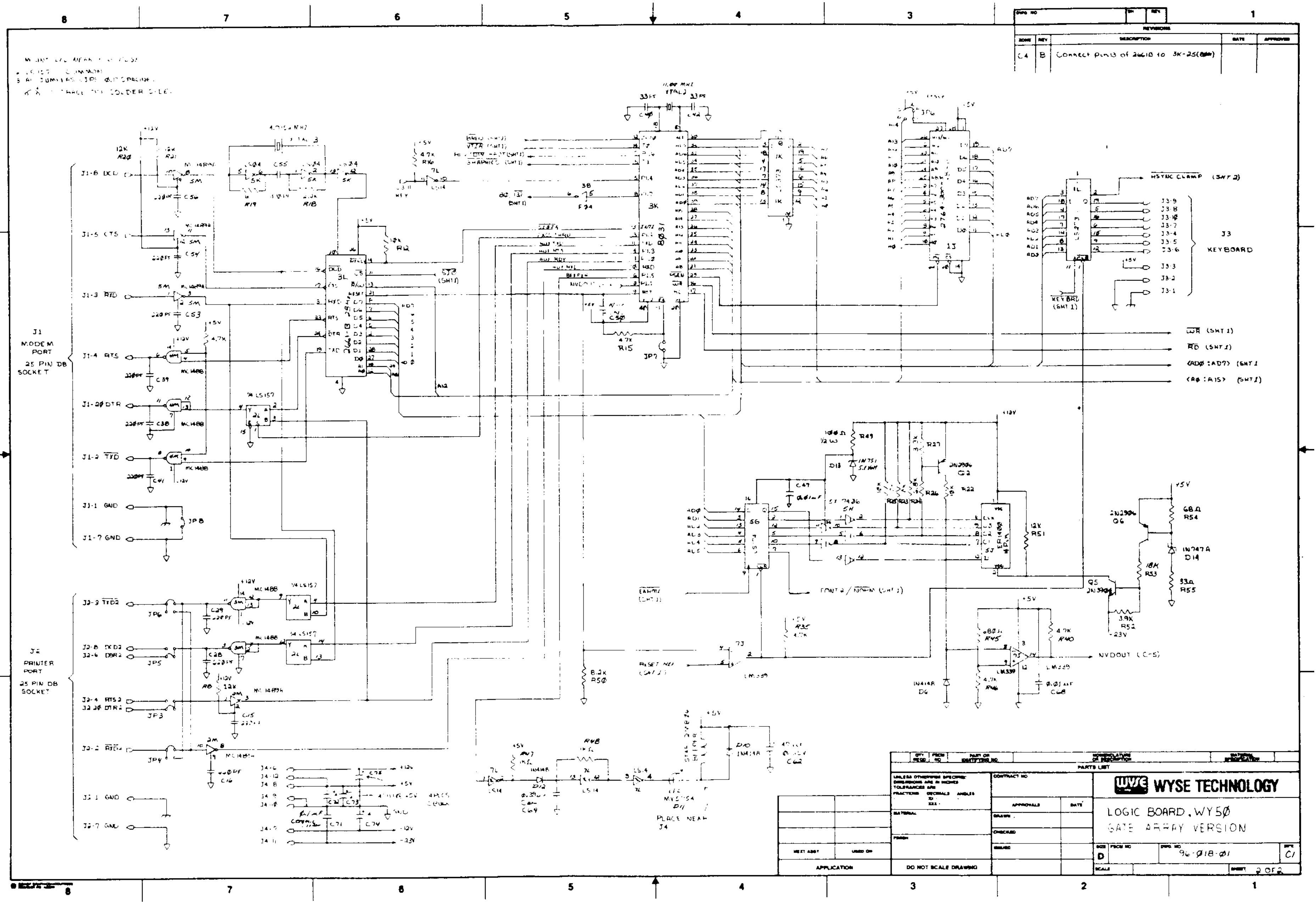


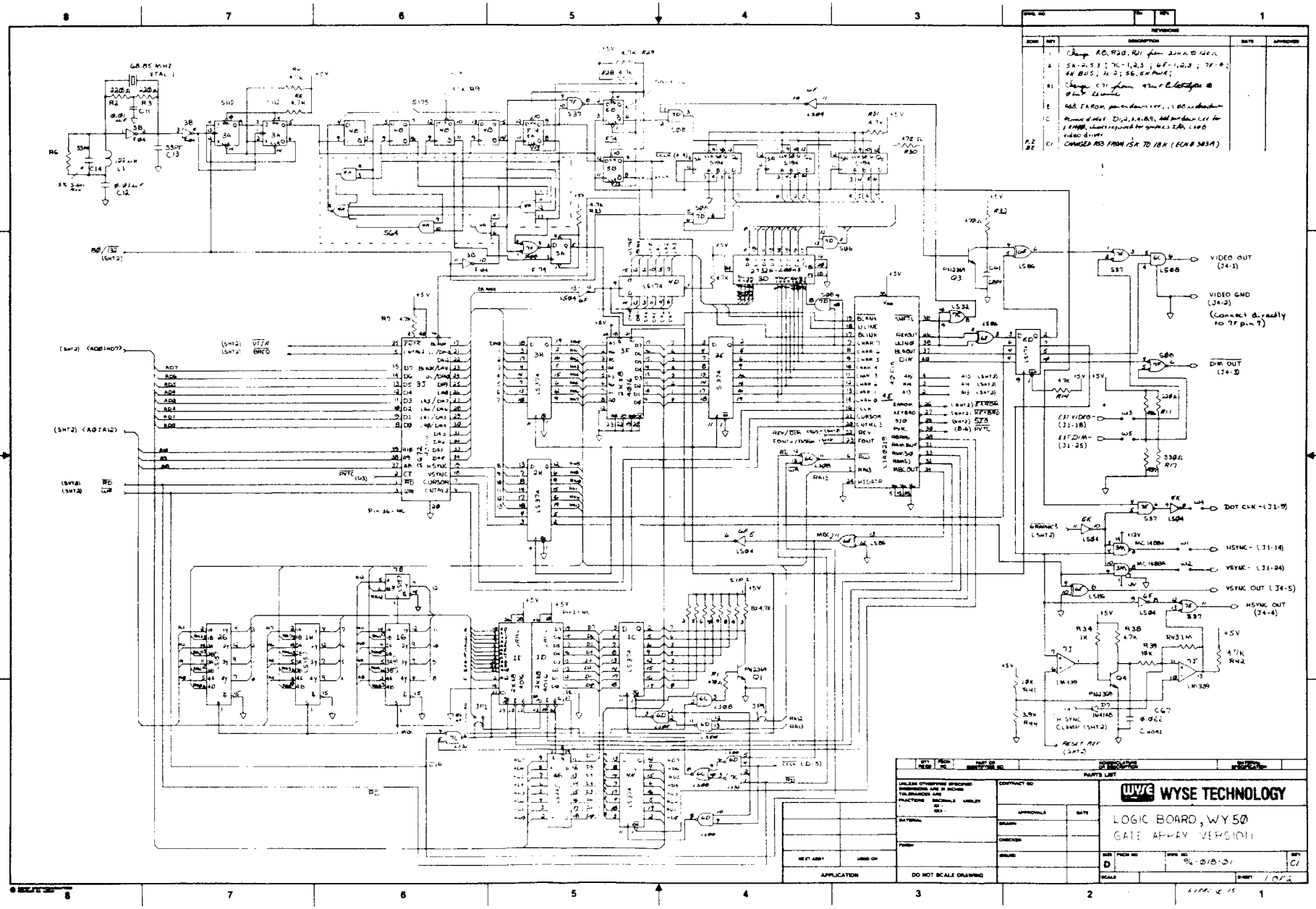
NOTES
1 MOUNT LED NEAR PCB EDGE
2 LS157 – COMMON
3 ALL JUMPERS (JP) 0.1 SPACING
TRACE ON SOLDER SIDE
J1 MODEM PORT 25 PIN DB SOCKET
J2 PRINTER PORT 25 PIN DB SOCKET
J3 KEYBOARD
8031
3J
2661-B 28 PIN
3K
LS373
1K
2764 28 PIN
LS273
LS174
5B
LM339
MC1489A
MC1488
BREQ (SHT1)
VTIR (SHT1)
REV/DIM PROT (SHT1)
GRAPHICS (SHT1)
80/132 (SHT1)
EXFONT (SHT1)
AUX TXD
AUX RTS
AUX RDY
AUX RXD
BEEPER
NVD OUT (A2)
SIO (SHT1)
HSYNC CLAMP (SHT2)
WR (SHT1)
RD (SHT1)
<AD0:AD7> (SHT1)
<A0:A15> (SHT1)
RESET REF (SHT1)
FONT 2/NORM (SHT1)
NVD OUT (C-5)
STAR QMB06 BEEPER PLACE NEAR J4
LED MV5754 CR6
C54, C55, C56, C57 ARE 47µF @ 25V
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
WYSE TECHNOLOGY INCORPORATED
LOGIC BOARD, WY-50+
D
96-058-05
SHEET 2 OF 2


FUSE :
2A FOR 115 VAC
1A FOR 230 VAC
VR101 : +23.5V
VR102 : +5.00V
VR201 : FOCUS
VR202 : SUB-BRT.
VR302 : V-HGT.
VR303 : V-LIN.
AC HARNESS
94-036-01
TO MPS GND
TO LOGIC GND
WHITE
BLACK
U301
TDA1170N
DRT
HARNESS
94-034-01
CRT
LOGIC HARNESS
94-034-01
YOKE HARNESS
940154-01
1 VIDEO WHITE
2 GND BLACK
3 DIM ORANGE
4 H-SYNC YELLOW
5 V-SYNC GREEN
6 +12V BLUE
7 -12V GREY
8 +5V RED
9 GND BLACK
10 GND BLACK
11 -23V PURPLE
12 +5V RED
WY-50+
APPLICATION
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
WYSE TECHNOLOGY INCORPORATED
WY-50+ SCHEMATIC
96-019-02
SHEET 1 OF 1


1. MOUNT LED NEAR I/O EDGE
2. LS157 = COMMON
3. ALL JUMPERS (JP) .1" SPACING.
4. ALL IC'S EXCEPT U9, U10, U17, U30, U33, U37, U41, U43 AND U48 HAVE INDIVIDUAL 0.1 µF BYPASS CAPACITORS.
96-018-01
REVISIONS
DESCRIPTION
CHANGED C21, C57 C59, C66 PER ECN # 447
CORRECTION LEVEL PER ECN # 563
BOM CHANGES PER ECN # 566
BOM CHANGES PER ECN # 567
ADDED REWORK INSTRUCTION PER ECN # 611
CHANGED C11, C13, C14 PER ECN # 667
CHANGED THE MATERIAL OF D COMM PER ECN # 693
BOM CHANGES PER ECN # 712
SEE ECN # 713A
TRANSFER CHANGES (SHT 2 FROM MYLAR TO VELLUM)
HSYNC CLAMP (SHT 2)
KEYBOARD
WR (SHT 1)
RD (SHT 1)
NOTE :
47 µF @ 25V (4 PLCS) CBULK
C21, C57, C59 0.22 µ/50V
C66 0.01 µ/50V
PARTS LIST
WYSE TECHNOLOGY
LOGIC BOARD, WY50/75
GATE ARRAY VERSION
DO NOT SCALE DRAWING

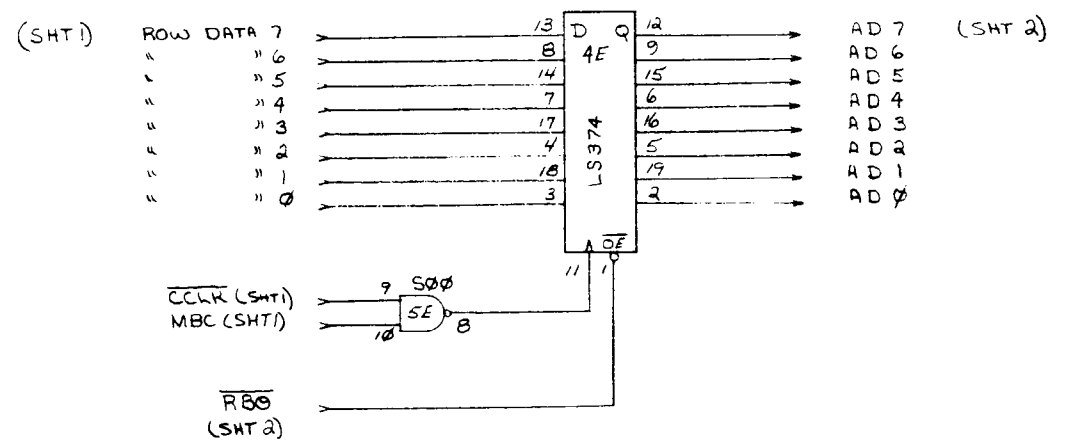

96-018-01
REVISIONS
SEE SHEET 2 OF 2
WYSE TECHNOLOGY
LOGIC BOARD, WY500/75
GATE ARRAY (BASIC)
PARTS LIST
DO NOT SCALE DRAWING
VIDEO OUT (J4-1)
VIDEO GND (J4-2)
DIM OUT (J4-3)
HSYNC OUT (J4-4)
VSYNC OUT (J4-5)


WYSE TECHNOLOGY
LOGIC BOARD, WY5Ø
GATE ARRAY VERSION
96-Ø18-Ø1
SHEET 2 OF 2
DO NOT SCALE DRAWING
APPLICATION
Connect Pin13 of 2661B to 3K-25(B##)
J1 MODEM PORT 25 PIN DB SOCKET
J2 PRINTER PORT 25 PIN DB SOCKET
J3 KEYBOARD
HSYNC CLAMP (SHT 2)
NVDOUT (C-5)
FONT 2 / NORM (SHT 1)
PLACE NEAR J4


WYSE TECHNOLOGY
LOGIC BOARD, WY50
GATE ARRAY VERSION
VIDEO OUT (J4-1)
VIDEO GND (J4-2)
DIM OUT (J4-3)
DOT CLK (J1-9)
HSYNC (J1-14)
VSYNC (J1-24)
VSYNC OUT (J4-5)
HSYNC OUT (J4-4)
EXT VIDEO (J1-18)
EXT DIM (J1-25)
DO NOT SCALE DRAWING

DWG. NO.	SH	REV.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



ROW BUFFER DIAGNOSTIC REGISTER.

QTY REQD	FSCM NO	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION

PARTS LIST

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± DECIMALS XX ± XXX ± ANGLES ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS	DATE
DRAWN	
CHECKED	
ISSUED	

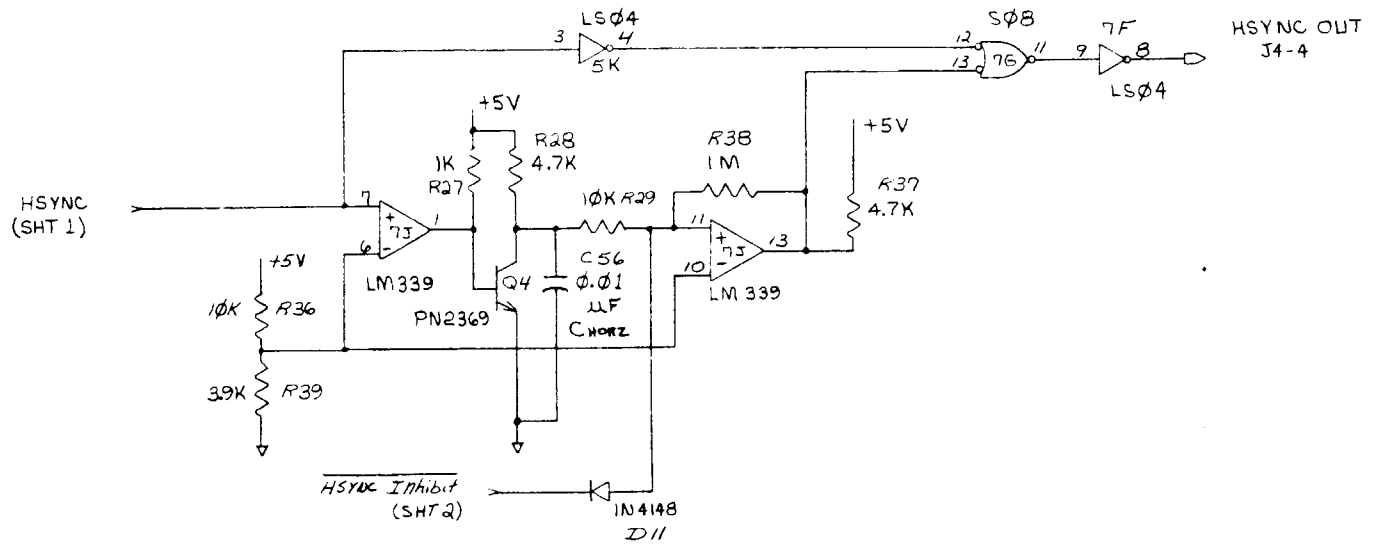
WYSE TECHNOLOGY

LOGIC BOARD, WY50

SIZE	FSCM NO.	DWG. NO.	REV.
B		96-012-01	D3
SCALE		SHEET 7 of 7	

DWG. NO.	SH	REV.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



HSYNC STRETCHER

	QTY REQD	FSCM NO	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION
PARTS LIST					

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

CONTRACT NO

APPROVALS	DATE
DRAWN	
CHECKED	
ISSUED	

WYSE TECHNOLOGY

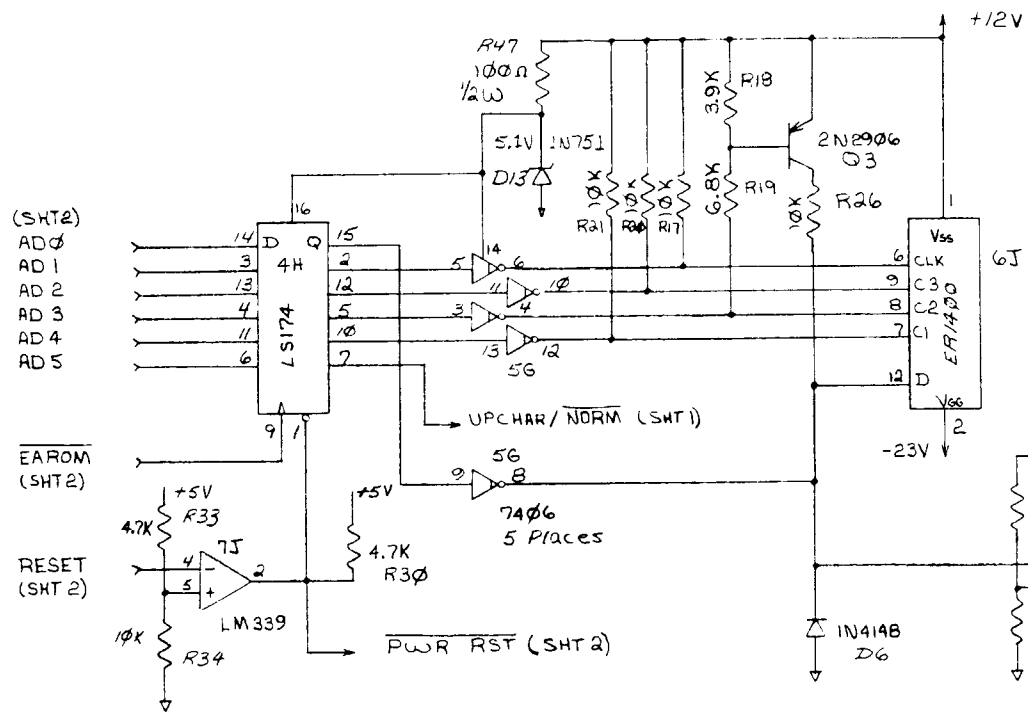
LOGIC BOARD, WY 50

SIZE	FSCM NO.	DWG. NO.	REV.
B		96-Ø12-Ø1	D3

SCALE | SHEET 6 of 7

DWG. NO.	SH	REV.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED



ELECTRICALLY ALTERABLE ROM
100 x 14 bit.

QTY REQD	FSCM NO.	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION
			PARTS LIST	

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±
MATERIAL
FINISH
DO NOT SCALE DRAWING

CONTRACT NO

APPROVALS	DATE
DRAWN	
CHECKED	
ISSUED	

WYSE TECHNOLOGY

LOGIC BOARD, WY50

SIZE	FSCM NO.	DWG. NO.	REV.
B		96-012-01	D3

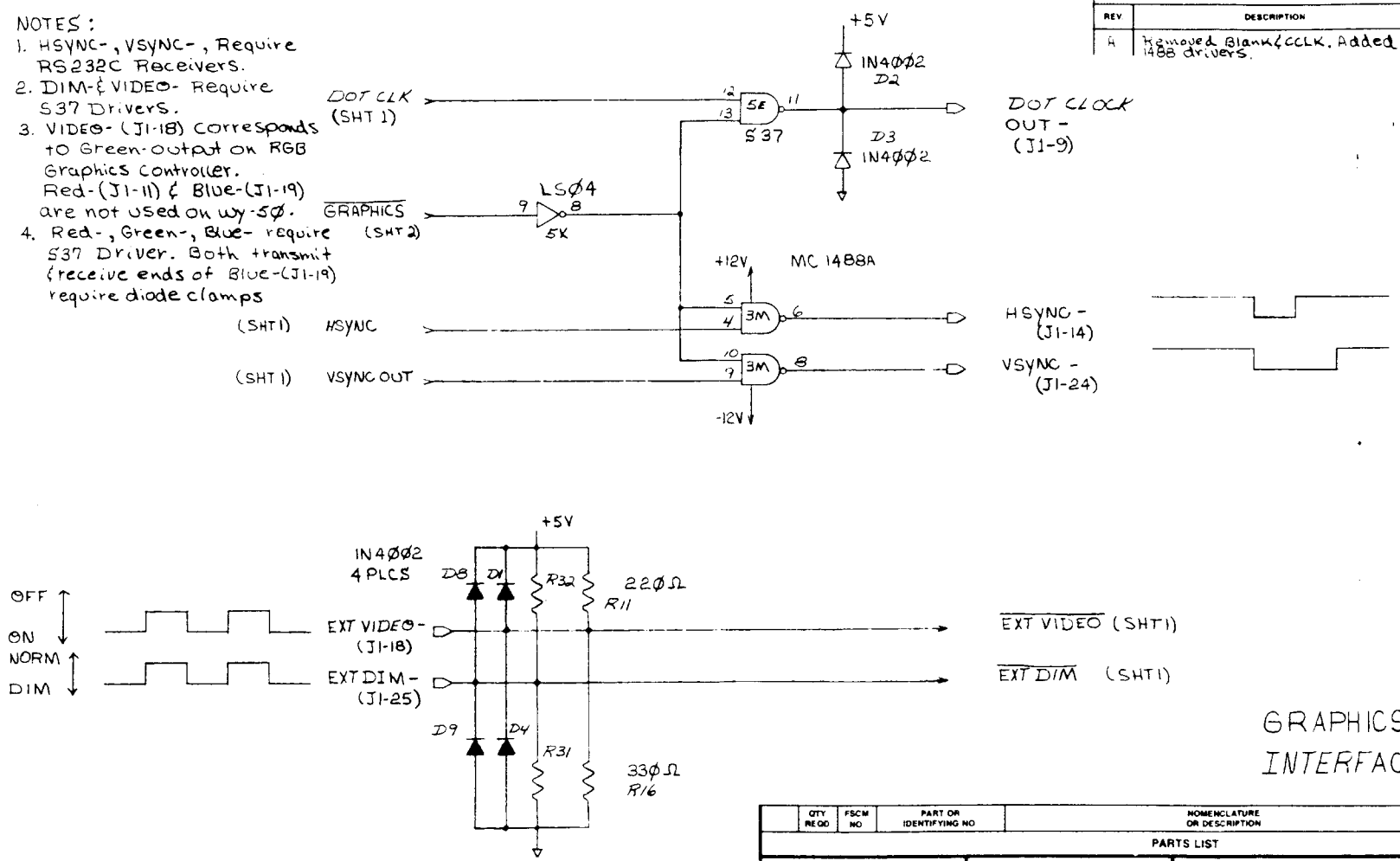
SCALE | SHEET 5 OF 7

DWG. NO.	SH	REV.

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED
A	Removed Blank & CCLK. Added 1488 drivers.	1-26-89	M. Bell

NOTES:
1. HSYNC-, VSYNC-, Require RS232C Receivers.
2. DIM- & VIDEO- Require S37 Drivers.
3. VIDEO- (J1-18) Corresponds to Green-output on RGB Graphics Controller. Red-(J1-11) & Blue-(J1-19) are not used on wy-50.
4. Red-, Green-, Blue- require S37 Driver. Both transmit & receive ends of Blue-(J1-19) require diode clamps



GRAPHICS INTERFACE

QTY REQD	FSCM NO	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± DECIMALS XX ± XXX ± ANGLES ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

CONTRACT NO

APPROVALS	DATE
DRAWN	
CHECKED	
ISSUED	

WYSE TECHNOLOGY

LOGIC BOARD, W50

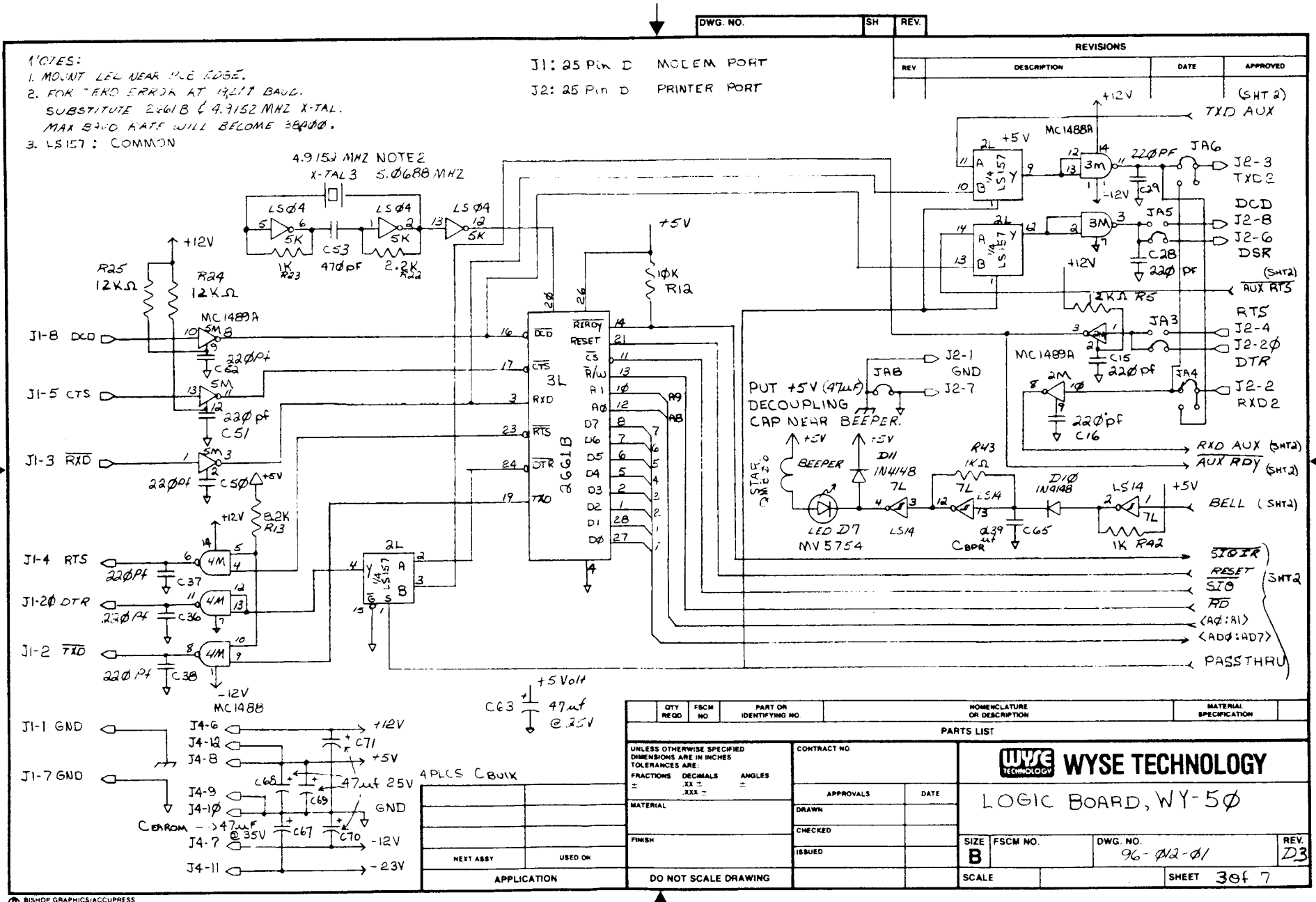
SIZE	FSCM NO.	DWG. NO.	REV.
B		96-012-01	D3

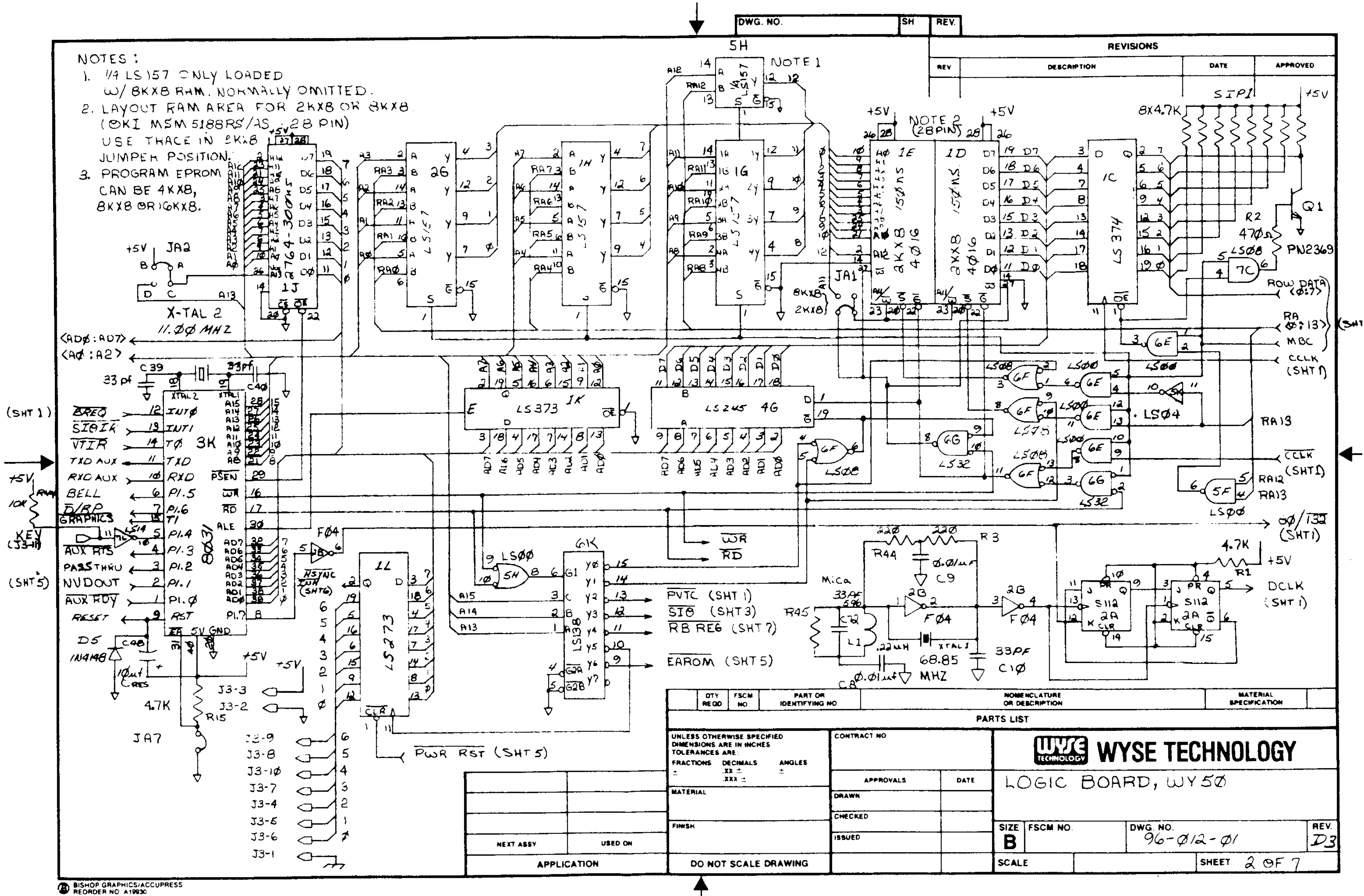
SCALE | SHEET 4 OF 7

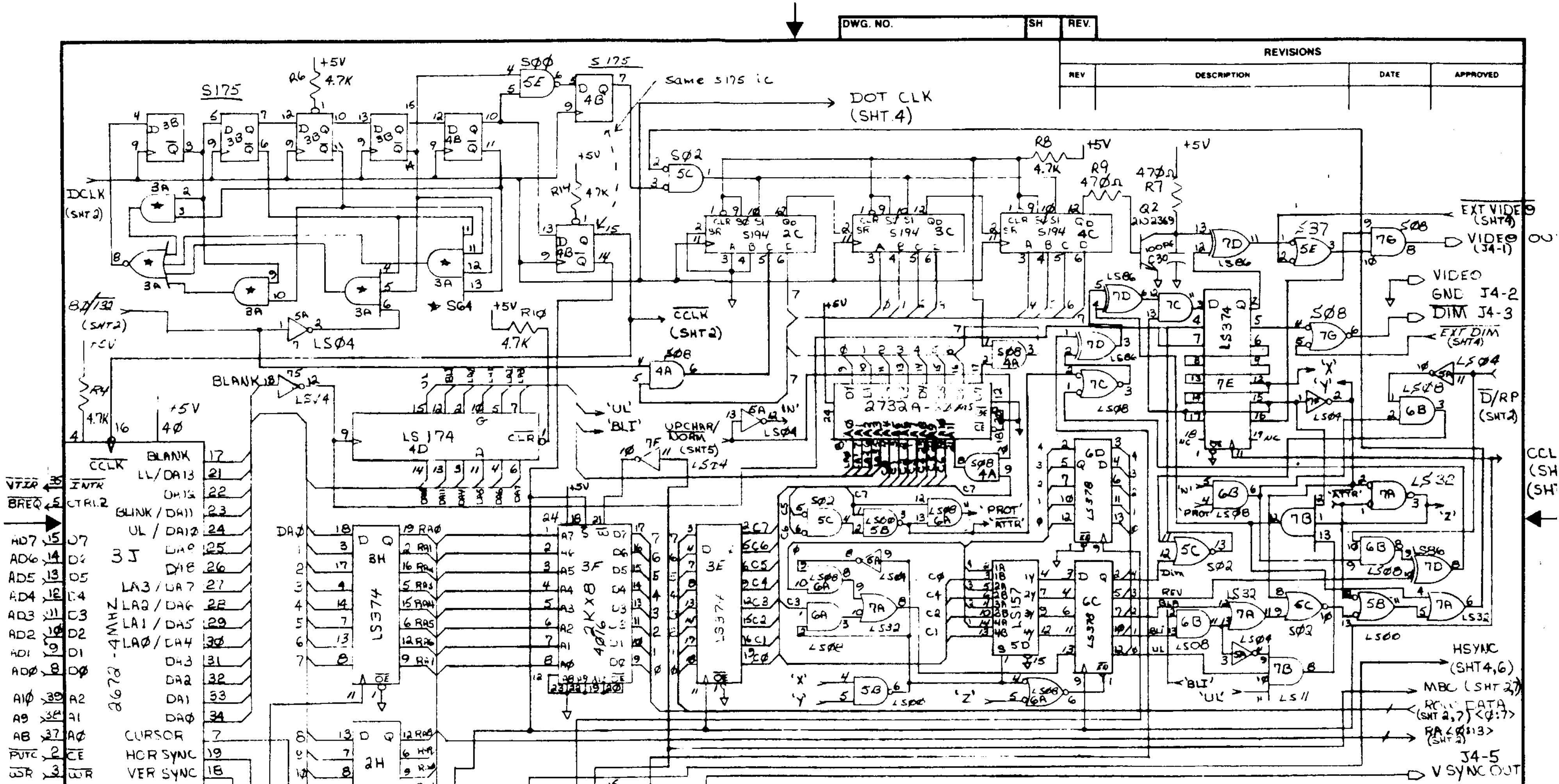
NEXT ASSY	USED ON

APPLICATION

BISHOP GRAPHICS/ACCUPRESS REORDER NO. A19930


NOTES:
1. MOUNT LED NEAR PCB EDGE.
2. FOR TEKO ERROR AT 19,2 K BAUD.
SUBSTITUTE 2661B & 4.7152 MHZ X-TAL.
MAX BAUD RATE WILL BECOME 38400.
3. LS157 : COMMON
J1: 25 Pin D MODEM PORT
J2: 25 Pin D PRINTER PORT
4.9152 MHZ NOTE2
X-TAL 3 5.0688 MHZ
+12V
+5V
-12V
MC1488A
MC1489A
2661B
J1-8 DCD
J1-5 CTS
J1-3 RXD
J1-4 RTS
J1-20 DTR
J1-2 TXD
J1-1 GND
J1-7 GND
TXD AUX
DCD
DSR
AUX RTS
RTS
DTR
RXD2
RXD AUX
AUX RDY
BELL
PUT +5V (47uF) DECOUPLING CAP NEAR BEEPER.
BEEPER
LED D7 MV5754
D11 1N4148
D10 1N4148
SIOIR
RESET
SIO
RD
(AØ:A1)
(AD0:AD7)
PASSTHRU
4PLCS CBULK
CERROM -> 47uF @35V
+5 Volt
C63 47uf @25V
DWG. NO.
SH
REV.
REVISIONS
REV
DESCRIPTION
DATE
APPROVED
PARTS LIST
QTY REQD
FSCM NO
PART OR IDENTIFYING NO.
NOMENCLATURE OR DESCRIPTION
MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
.XX
.XXX
MATERIAL
FINISH
DO NOT SCALE DRAWING
CONTRACT NO.
APPROVALS
DATE
DRAWN
CHECKED
ISSUED
NEXT ASSY
USED ON
APPLICATION
WYSE TECHNOLOGY
LOGIC BOARD, WY-50
SIZE B
FSCM NO.
DWG. NO. 96-0002-01
REV. D3
SCALE
SHEET 3 of 7
BISHOP GRAPHICS/ACCUPRESS
REORDER NO. A19930


NOTES:
1. 1/4 LS157 ONLY LOADED W/ 8KX8 RAM. NORMALLY OMITTED.
2. LAYOUT RAM AREA FOR 2KX8 OR 8KX8 (OKI MSM 5188RS/AS 28 PIN) USE TRACE IN 2KX8 JUMPER POSITION.
3. PROGRAM EPROM CAN BE 4KX8, 8KX8 OR 16KX8.
X-TAL 2
11.00 MHZ
8031
LS373
LS245
LS273
LS138
LS374
PN2369
68.85 MHZ
PWR RST (SHT 5)
PVTC (SHT 1)
SIO (SHT 3)
RB REG (SHT 7)
EAROM (SHT 5)
DCLK (SHT 1)
ROW DATA <0:7>
REVISIONS
PARTS LIST
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
DO NOT SCALE DRAWING
APPLICATION
WYSE TECHNOLOGY
LOGIC BOARD, WY50
SIZE B
DWG. NO. 96-012-01
REV. D3
SHEET 2 OF 7
BISHOP GRAPHICS/ACCUPRESS REORDER NO. A19930



QTY REQD	FSCM NO.	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

CONTRACT NO.

APPROVALS | DATE
DRAWN
CHECKED
ISSUED

NEXT ASSY | USED ON

APPLICATION

DO NOT SCALE DRAWING

WYSE TECHNOLOGY

LOGIC BOARD, WY50

SIZE B | FSCM NO. | DWG. NO. 96-012-01 | REV. D3

SCALE | SHEET 1 OF 7

DWG. NO.	SH	REV.

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED
B	Rev Dot CLK Oscillator, Inhibit H-Sync on Pwr-up Replace CCLK w/ Dot CLK on graphics Interface		1
C	Add 5.1V Zener & 100Ω Res to EAROM CKT.		
D	Add 1 ply to H-Sync Separate GND for Video to monitor.		
D1	change R5, R24, R25 to 12K ohm 1/4W 5%		
D2	Remove Sockets, 3L, 3J, 6J		
D3	Location 3F changed to 1K x 8 static Ram Sy2158A		

PARTS LIST

QTY REQD	FSCM NO	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

CONTRACT NO

APPROVALS	DATE
DRAWN Mike Bell	6-8-83
CHECKED	
ISSUED	

WYSE TECHNOLOGY

LOGIC BOARD, WY-50

SIZE	FSCM NO.	DWG. NO.	REV.
B		96-012-01	D3

SCALE | SHEET 1 of 7

NEXT ASSY	USED ON

APPLICATION

BISHOP GRAPHICS/ACCUPRESS REORDER NO A1828

C-

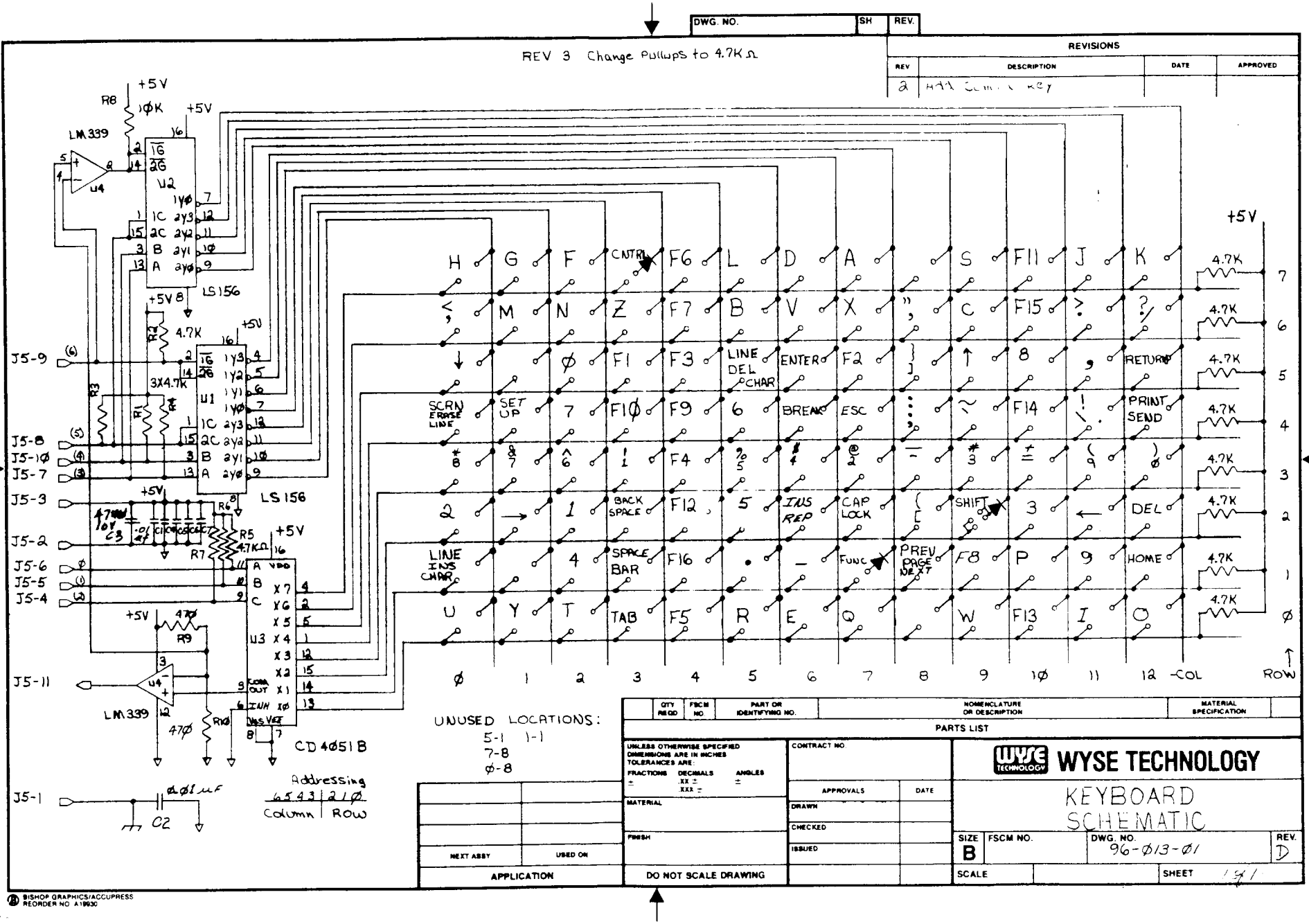
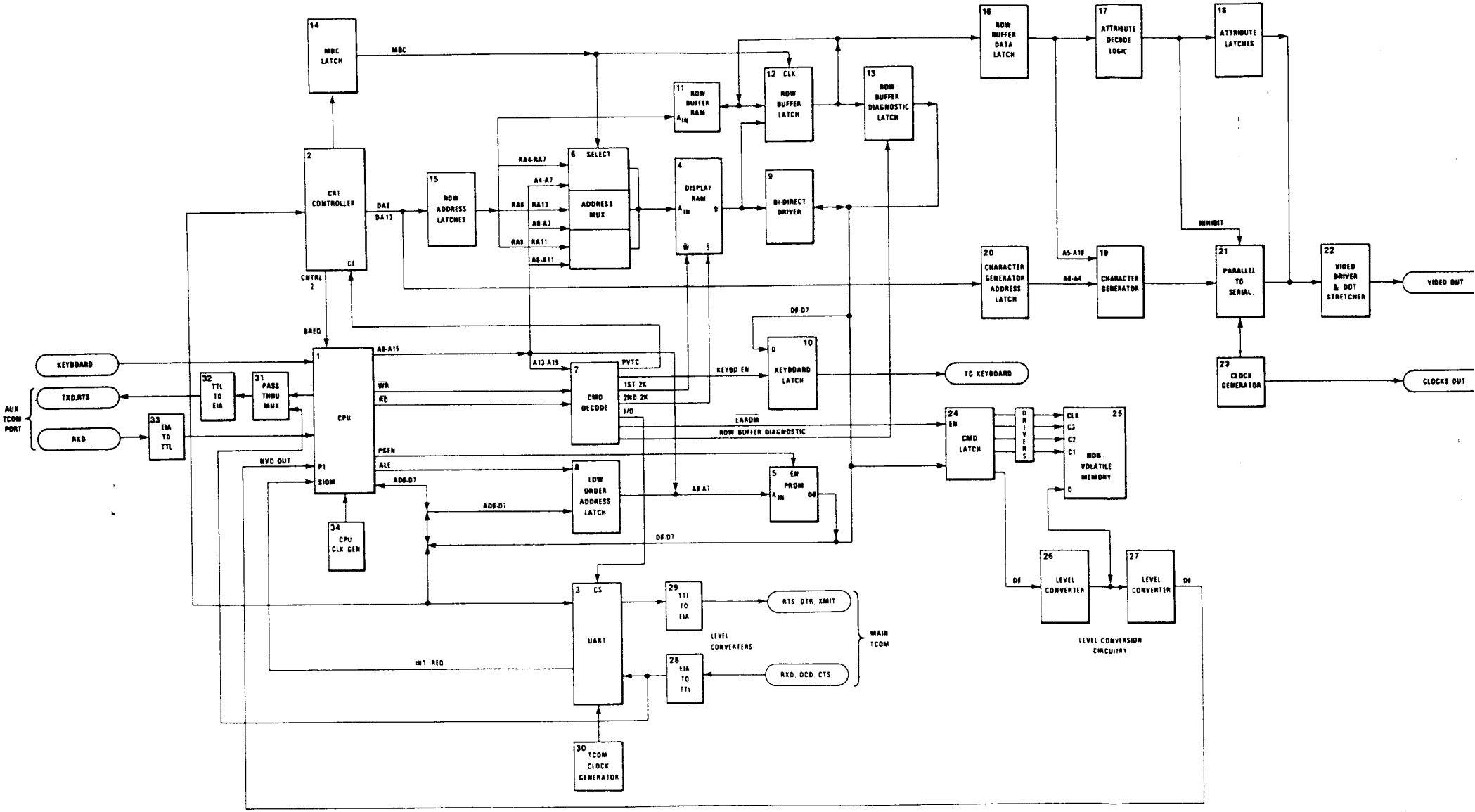
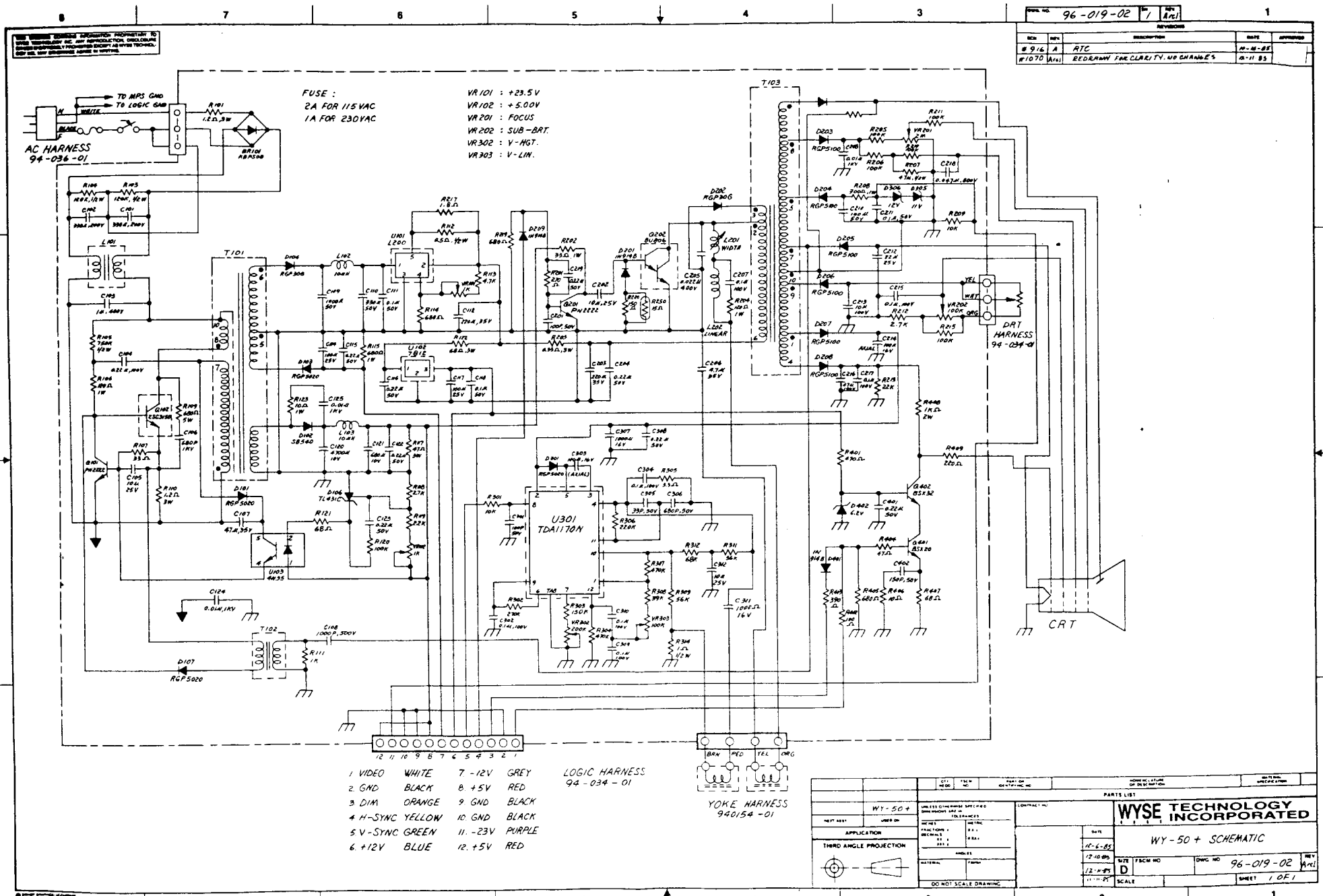
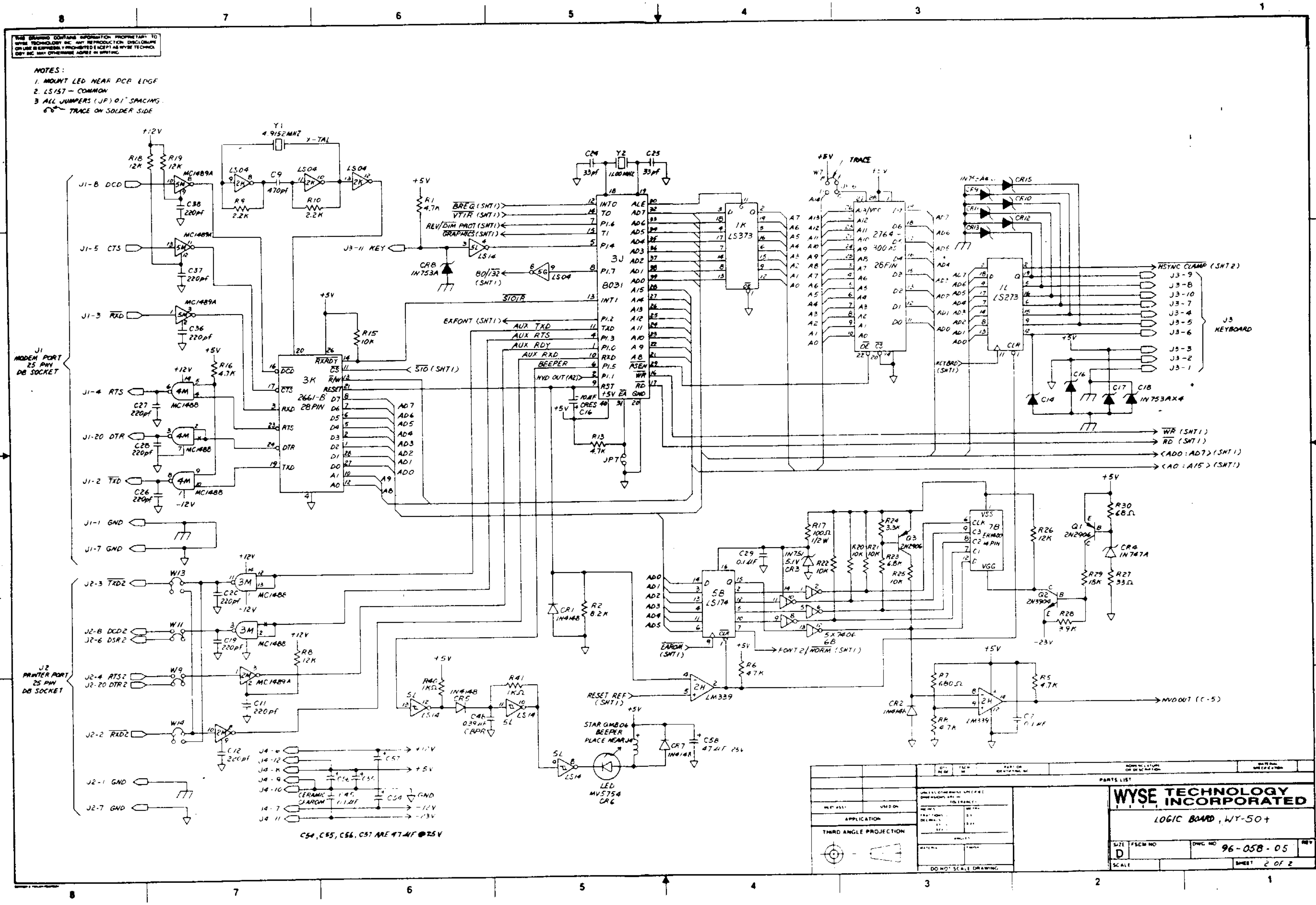

DWG. NO.
SH
REV.
REVISIONS
REV
DESCRIPTION
DATE
APPROVED
REV 3 Change Pullups to 4.7K Ω
+5V
R8
10K
LM339
U4
U2
LS156
4.7K
3X4.7K
U1
R1
R2
R3
J5-9
J5-8
J5-10
J5-7
J5-3
J5-2
J5-6
J5-5
J5-4
J5-11
J5-1
LS 156
R6
R5
4.7KΩ
R7
C1
C2
C3
.01 mf
4.7mf 10V
U3
CD4051B
R9
R10
470
LM339
.01mf
C2
Addressing
6543 210
Column ROW
UNUSED LOCATIONS:
5-1 1-1
7-8
ϕ-8
H G F CNTRL F6 L D A S F11 J K
< , M N Z F7 B V X " ' C F15 > . ? /
↓ ϕ F1 F3 LINE DEL CHAR ENTER F2 }] ↑ 8 RETURN
SCRN ERASE LINE SET UP 7 F10 F9 6 BREAK ESC : ; ~ F14 ! \ PRINT SEND
* 8 & 7 ^ 6 ! 1 F4 % 5 # 4 @ 2 _ - 3 + = (9) ϕ
2 → 1 BACK SPACE F12 5 INS REP CAP LOCK { [SHIFT 3 ← DEL
LINE INS CHAR 4 SPACE BAR F16 . _ FUNC PREV PAGE NEXT F8 P 9 HOME
U Y T TAB F5 R E Q W F13 I O
ϕ 1 2 3 4 5 6 7 8 9 10 11 12 COL
ROW
4.7K
QTY REQD
FSCM NO.
PART OR IDENTIFYING NO.
NOMENCLATURE OR DESCRIPTION
MATERIAL SPECIFICATION
PARTS LIST
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
± .XX ± ± .XXX ±
MATERIAL
FINISH
DO NOT SCALE DRAWING
CONTRACT NO.
APPROVALS
DRAWN
CHECKED
ISSUED
DATE
NEXT ASSY
USED ON
APPLICATION
WYSE TECHNOLOGY
KEYBOARD SCHEMATIC
SIZE B
FSCM NO.
DWG. NO. 96-ϕ13-ϕ1
REV. D
SCALE
SHEET 1 of 1
BISHOP GRAPHICS/ACCUPRESS
REORDER NO A19030

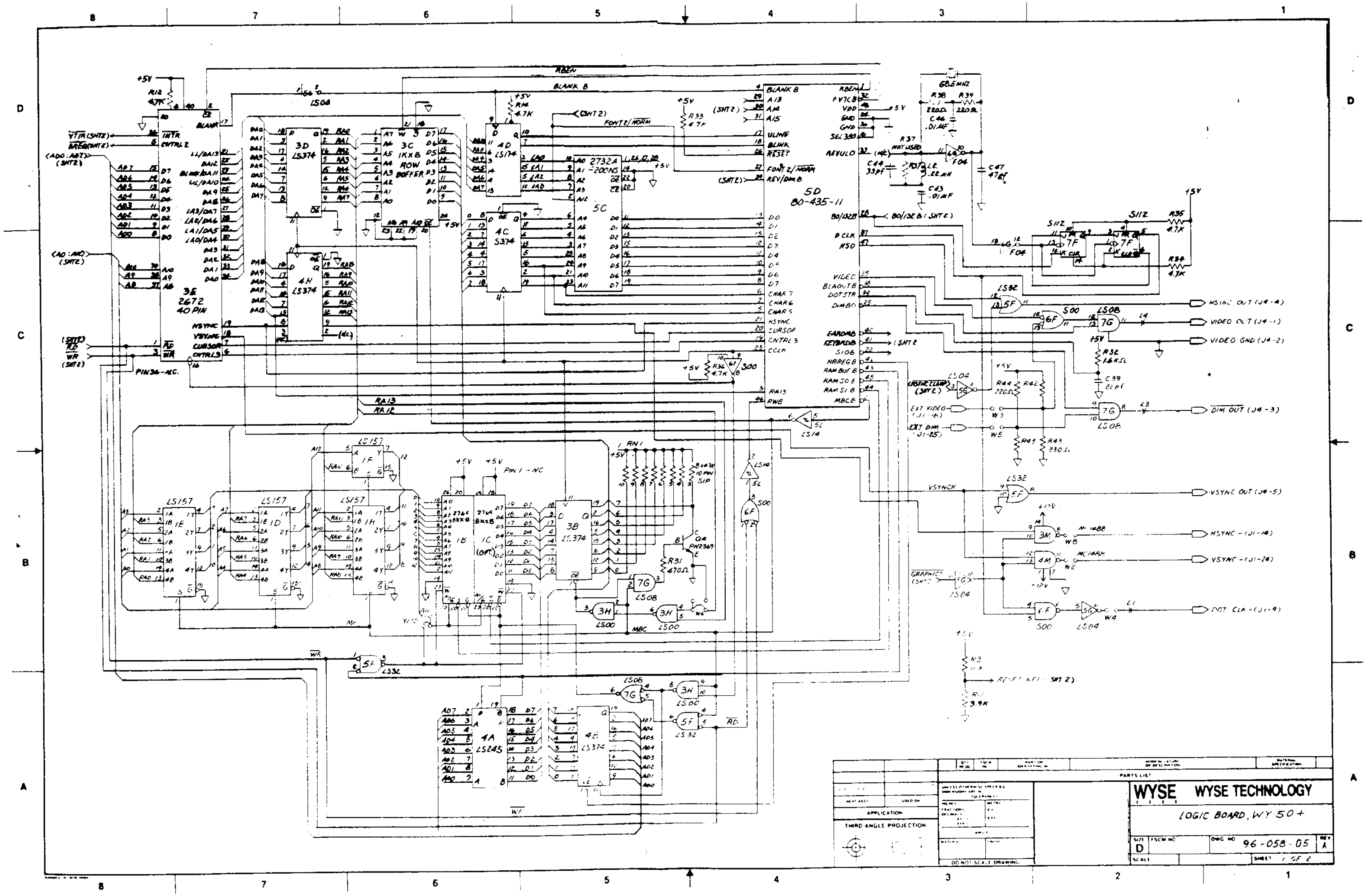
Figure 6-2 Microprocessor PCB Block Diagram

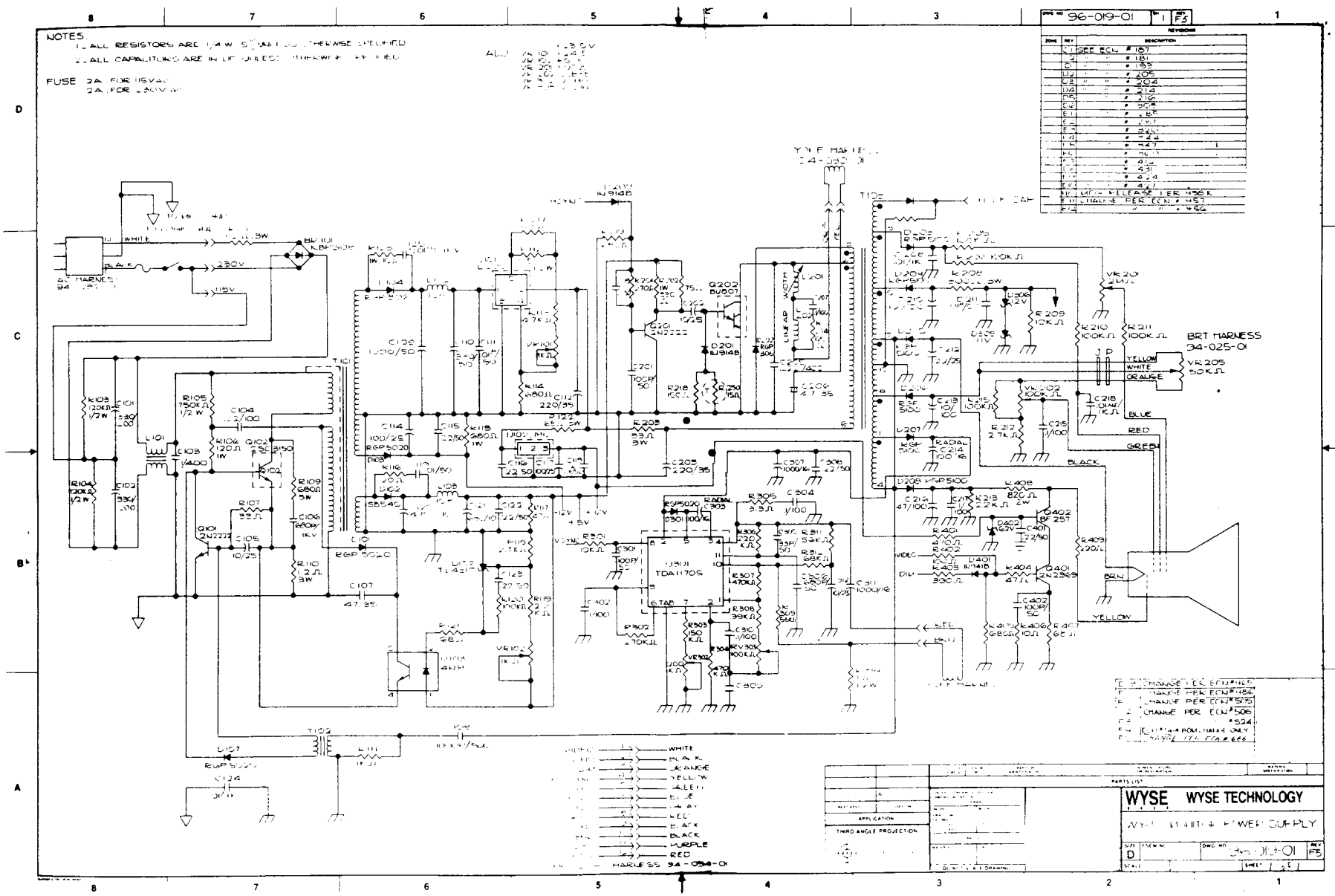


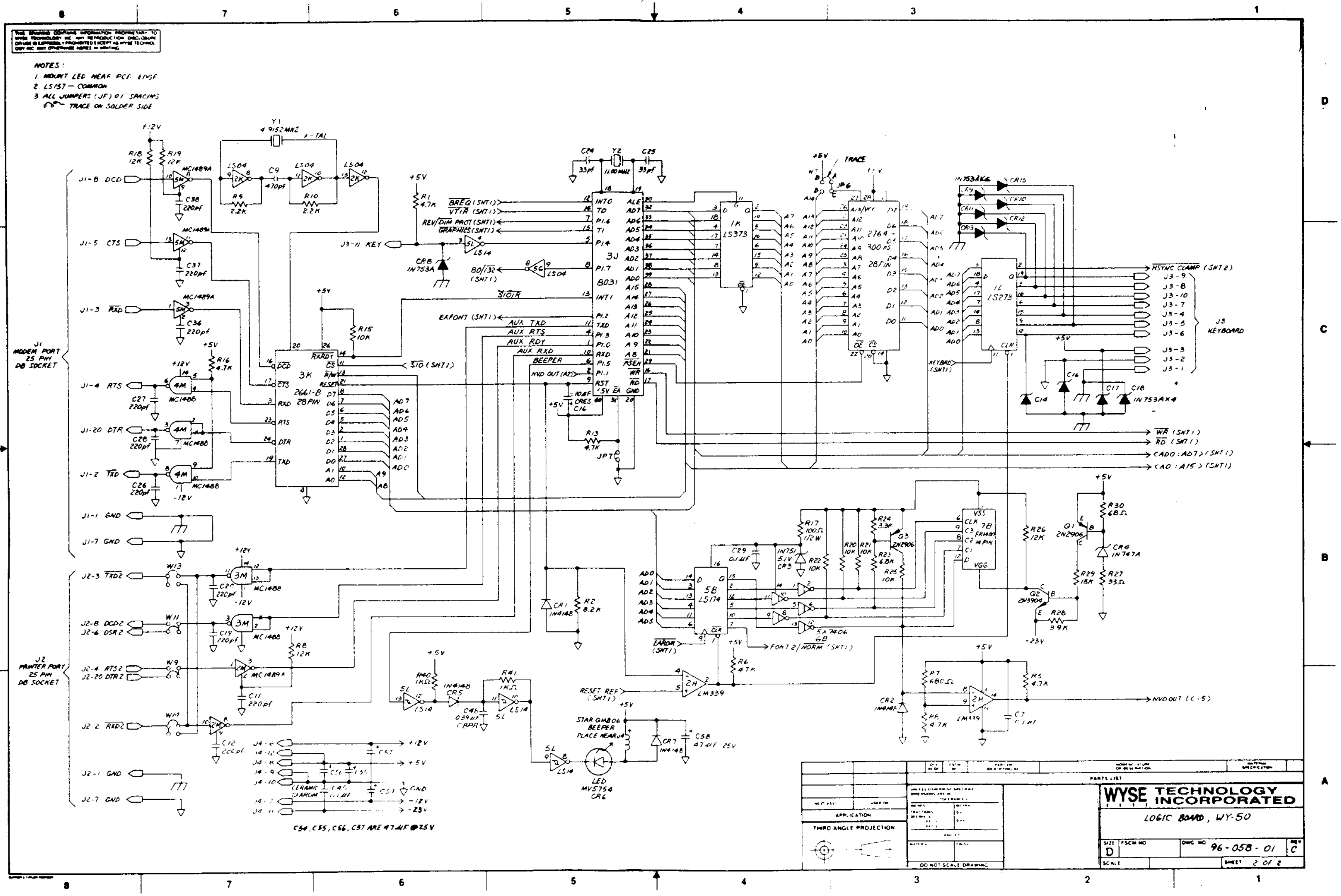

FUSE :
2A FOR 115VAC
1A FOR 230VAC
VR101 : +23.5V
VR102 : +5.00V
VR201 : FOCUS
VR202 : SUB-BRT.
VR302 : V-HGT.
VR303 : V-LIN.
AC HARNESS
94-036-01
TO MP5 GND
TO LOGIC GND
WHITE
BLACK
GREEN
T101
T102
T103
U301
TDA1170N
CRT
DRT HARNESS
94-034-01
LOGIC HARNESS
94-034-01
YOKE HARNESS
940154-01
BRN
RED
YEL
ORG
1. VIDEO WHITE
2. GND BLACK
3. DIM. ORANGE
4. H-SYNC YELLOW
5. V-SYNC GREEN
6. +12V BLUE
7. -12V GREY
8. +5V RED
9. GND BLACK
10. GND BLACK
11. -23V PURPLE
12. +5V RED
96-019-02
WY-50+ SCHEMATIC
WYSE TECHNOLOGY INCORPORATED
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
SHEET 1 OF 1

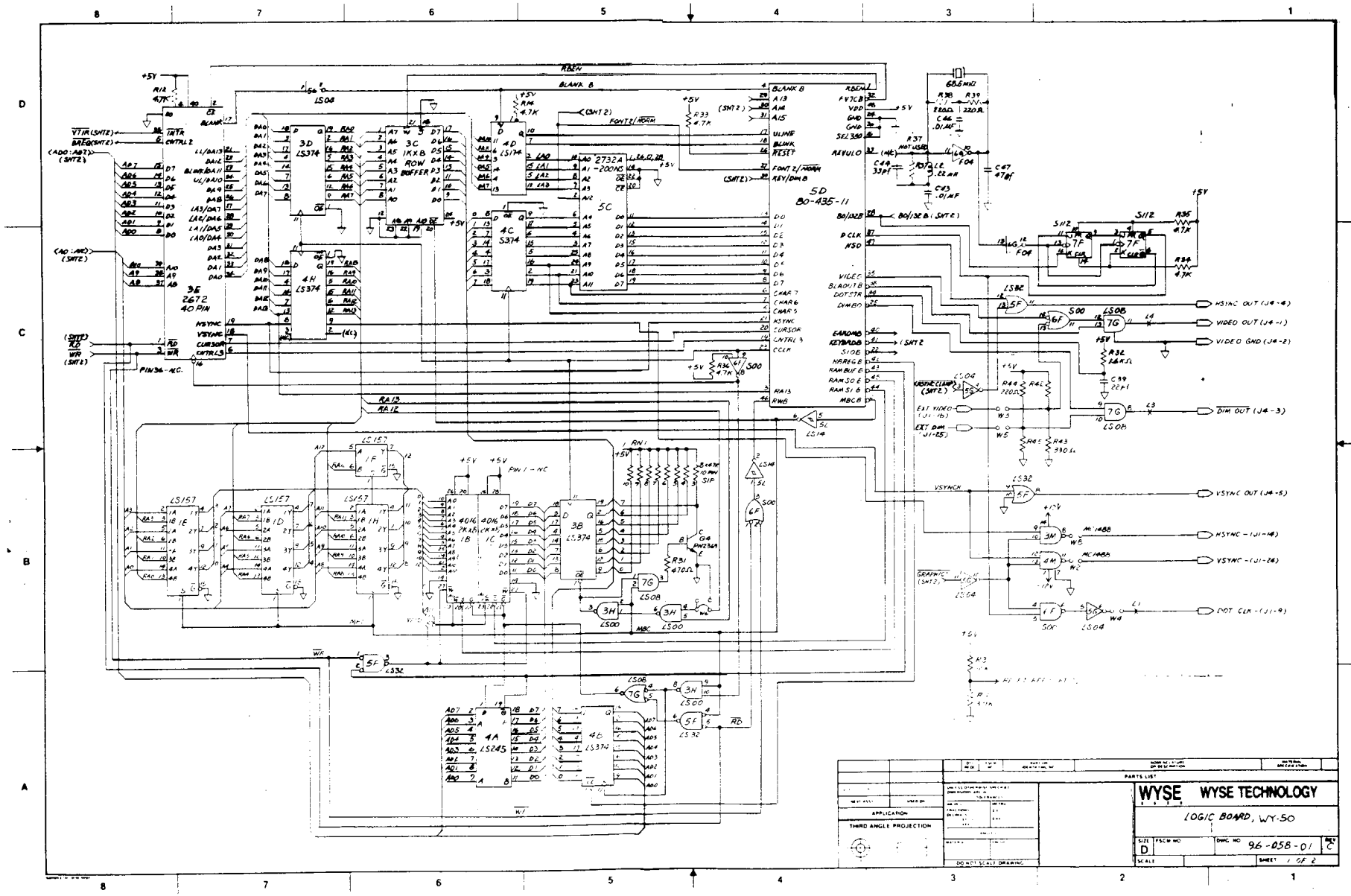


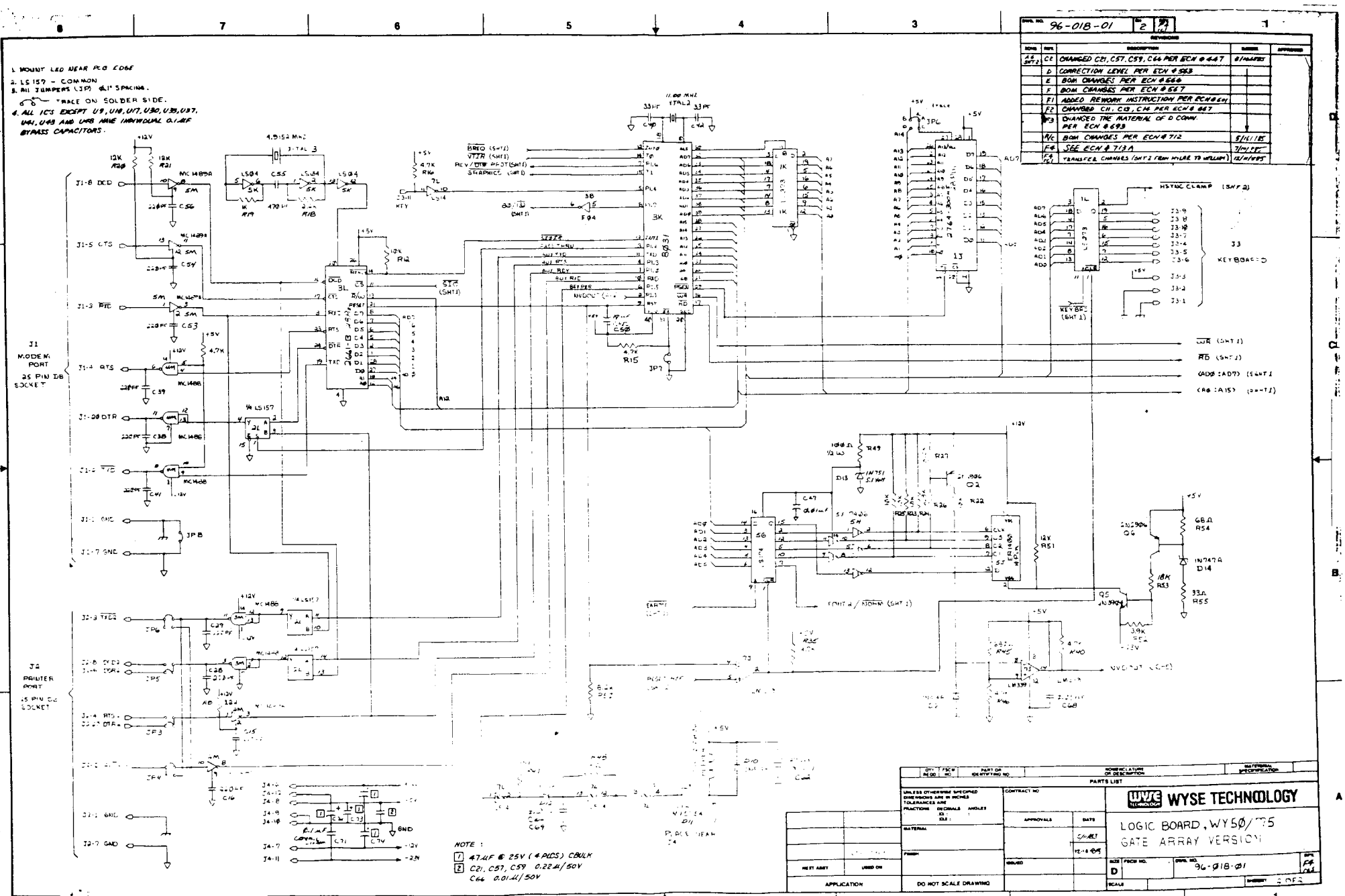
NOTES:
1. MOUNT LED NEAR PCB EDGE
2. LS157 — COMMON
3. ALL JUMPERS (JP) .01" SPACING
TRACE ON SOLDER SIDE
J1 MODEM PORT 25 PIN DB SOCKET
J2 PRINTER PORT 25 PIN DB SOCKET
J3 KEYBOARD
2661-B 28 PIN
8031
LS373
2764 - 300 nS 28 PIN
LS273
LS174
LM339
STAR GMB06 BEEPER PLACE NEAR J4
LED MV5754 CR6
C54, C55, C56, C57 ARE 47 µF @ 25V
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
WYSE TECHNOLOGY INCORPORATED
LOGIC BOARD, WY-50+
SIZE D
DWG NO 96-058-05
SHEET 2 OF 2


WYSE
WYSE TECHNOLOGY
LOGIC BOARD, WY 50+
D
96-058-05
A
APPLICATION
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
2672 40 PIN
LS374
2732A
80-435-11
LS245
HSYNC OUT (J4-4)
VIDEO OUT (J4-1)
VIDEO GND (J4-2)
DIM OUT (J4-3)
VSYNC OUT (J4-5)


NOTES
1. ALL RESISTORS ARE 1/4 W 5% UNLESS OTHERWISE SPECIFIED
2. ALL CAPACITORS ARE IN UF UNLESS OTHERWISE SPECIFIED
FUSE 2A FOR 115VAC
2A FOR 230VAC
96-019-01
WYSE TECHNOLOGY
WY- LOGIC & POWER SUPPLY
BRT HARNESS
34-025-01
VR205
50K Ω
WHITE
ORANGE
YELLOW
GREEN
BLUE
RED
BLACK
PURPLE
BRN
HARNESS 94-054-01
THIRD ANGLE PROJECTION


NOTES:
1. MOUNT LED NEAR PCB EDGE
2. LS157 — COMMON
3. ALL JUMPERS (JP) .01" SPACING
TRACE ON SOLDER SIDE
J1 MODEM PORT 25 PIN DB SOCKET
J2 PRINTER PORT 25 PIN DB SOCKET
J3 KEYBOARD
3K 2661-B 28PIN
3J 8031
1K LS373
2764 300 nS 28PIN
1L LS273
5B LS174
7B ER1400 14 PIN
LM339
HSYNC CLAMP (SHT 2)
WR (SHT 1)
RD (SHT 1)
<AD0:AD7> (SHT 1)
<A0:A15> (SHT 1)
NVD OUT (C-5)
FONT 2/NORM (SHT 1)
RESET REF (SHT 1)
STAR QMB06 BEEPER PLACE NEAR J4
LED MV5754 CR6
C54, C55, C56, C57 ARE 47 µF @ 25 V
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
WYSE TECHNOLOGY INCORPORATED
LOGIC BOARD, WY-50
SIZE D
DWG NO 96-058-01
REV C
SHEET 2 OF 2


WYSE TECHNOLOGY
LOGIC BOARD, WY-50
96-058-01
PARTS LIST
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
HSYNC OUT (J4-4)
VIDEO OUT (J4-1)
VIDEO GND (J4-2)
DIM OUT (J4-3)
VSYNC OUT (J4-5)
HSYNC - (J1-14)
VSYNC - (J1-24)
DOT CLK - (J1-9)



ZONE	REV.	DESCRIPTION	DATE	APPROVED
A4 (SHT 2)	CC	CHANGED C21, C57, C59, C66 PER ECN # 447	8/14/85	
	D	CORRECTION LEVEL PER ECN # 583		
	E	BOM CHANGES PER ECN # 666		
	F	BOM CHANGES PER ECN # 667		
	F1	ADDED REWORK INSTRUCTION PER ECN # 691		
	F2	CHANGED C11, C13, C14 PER ECN # 687		
	F3	CHANGED THE MATERIAL OF D CONN. PER ECN # 693		
	F4	BOM CHANGES PER ECN # 712	5/11/88	
	F5	SEE ECN # 713A	7/14/88	
	F6	TRANSFER & CHANGES (SHT 2 FROM MYLAR TO VELLUM)	12/14/88	

DWG. NO. 96-018-01 REV. F6 SHT 2 OF 3

PARTS LIST

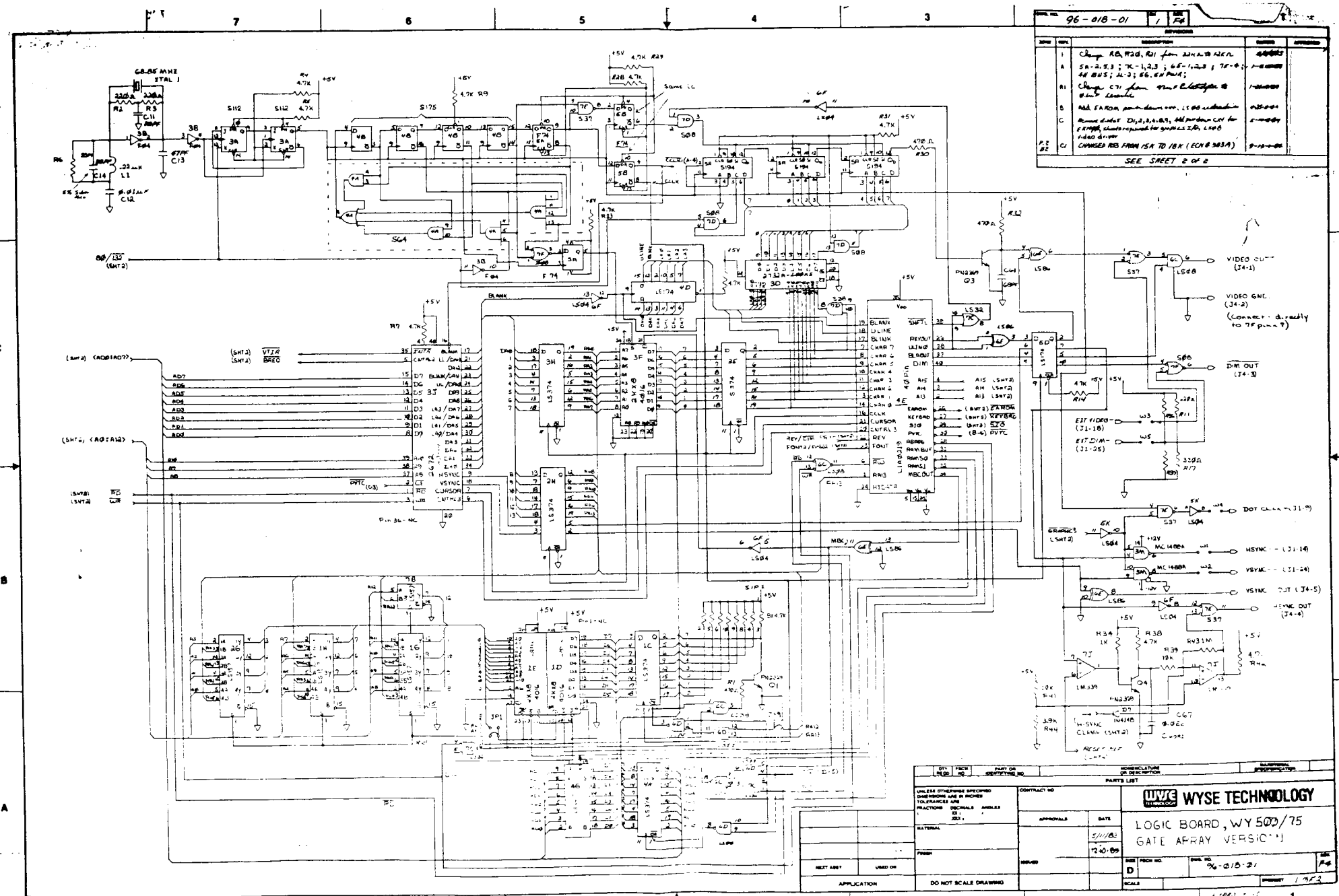
WYSE TECHNOLOGY

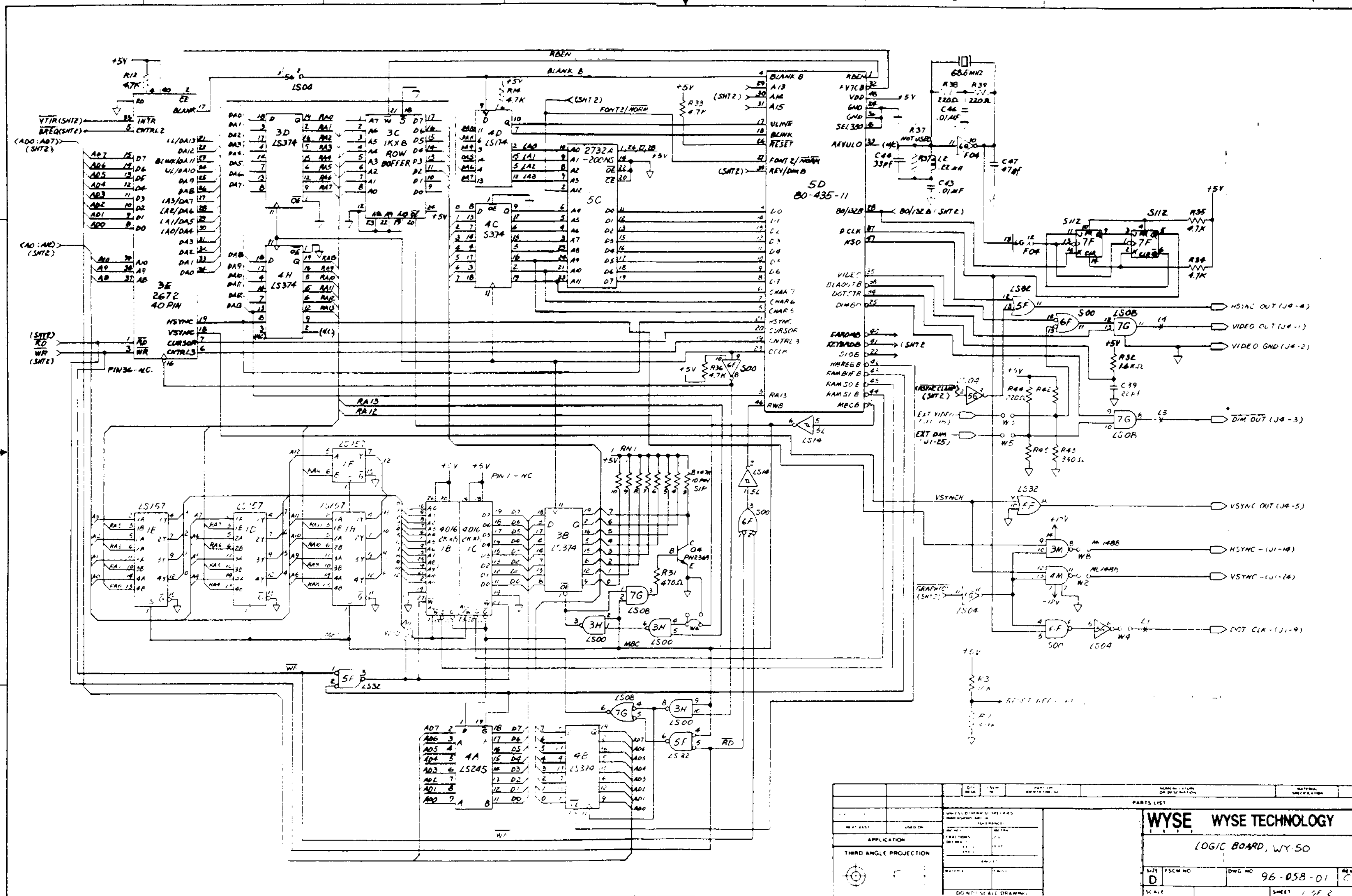
LOGIC BOARD, WY50/75
GATE ARRAY VERSION

DWG. NO. 96-018-01 REV. F6

SIZE D SCALE

DO NOT SCALE DRAWING


96-018-01
SEE SHEET 2 OF 2
WYSE TECHNOLOGY
LOGIC BOARD, WY500/75
GATE ARRAY VERSION
96-018-01
DO NOT SCALE DRAWING
VIDEO OUT (J4-1)
VIDEO GND (J4-2)
DIM OUT (J4-3)
DOT CLOCK (J4-9)
HSYNC OUT (J4-4)
VSYNC OUT (J4-5)



3E
2672
40 PIN
3D
LS374
3C
1KX8
ROW
BUFFER
4H
LS374
4D
LS174
4C
S374
2732A
-200NS
5C
5D
80-435-11
68.6MHZ
LS157
1F
1E
1D
1H
4016
1B
1C
3B
LS374
4A
LS245
4B
LS374
7G
3H
5F
6F
7F
3M
4M
HSYNC OUT (J4-4)
VIDEO OUT (J4-1)
VIDEO GND (J4-2)
DIM OUT (J4-3)
VSYNC OUT (J4-5)
HSYNC - (J1-18)
VSYNC - (J1-24)
DOT CLK - (J1-9)
EXT VIDEO
EXT DIM
PIN 1 - NC
PIN36 - NC
APPLICATION
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
PARTS LIST
WYSE
WYSE TECHNOLOGY
LOGIC BOARD, WY-50
SIZE
D
DWG NO
96-058-01