

Vitalmax 520

COMPACT, DIGITAL
VITAL SIGN MONITOR

SERVICE MANUAL

CAUTION: Federal law (U.S.) restricts this
device to sale by or on the order of a physician.

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INSTALLATION CODES FOR DIGITAL MONITORS

The installation code for the software configuration of the digital monitors indicates the functions of that particular model. This code is displayed in the NEXT CYCLE displays.

A. CONFIRMING THE CODE FOR NORMAL OPERATION

To confirm that the monitor has the correct installation codes for normal operation, or to change any of the codes, follow these procedures:

1. Turn the power on
2. Simultaneously press and hold the MEMORY RECALL and the TIME/DATE pushbutton for approximately three (3) seconds or until you hear a “beep” sound and the number in the NEXT CYCLE display changes. This number is the software configuration code of the monitor.

The software configuration codes for normal operation of the monitor is:

Vitalmax 520

2

3. To resume normal operations:

Press the MEMORY RECALL pushbutton twice and the monitor will immediately resume normal operation

OR

Wait ten (10) seconds and the monitor will automatically resume normal operation.

RS232 SERIAL COMMUNICATIONS PROTOCOL

- CONNECTOR DESCRIPTION:

PIN NUMBER	SIGNAL NAME
pin 2	transmit data (monitor output)
pin 3	receive data (monitor input)
pin 7	signal ground

PROTOCOL DESCRIPTION:

The protocol consists of printable ASCII alphanumeric characters. The characters are transmitted/received at 9600 bits/sec, 8 bits per char, no parity, 1 stop bit.

The monitor will send vital sign information to the host every 10 seconds. The message contains the current vital sign parameters and their corresponding flag indicating if an alarm is outside the programmed area.

STRING POSITION	POSSIBLE CHARACTERS	DESCRIPTION
0	ASCII 'P'	response type
1	ASCII 'T'	response type
2	ASCII '0' - '9' or BLANK	systolic (hundreds)
3	ASCII '0' - '9' or BLANK	systolic (tens)
4	ASCII '0' - '9' or BLANK	systolic (units)
5	ASCII '0' - '1'	systolic alarm flag (0->no, 1->yes)
6	ASCII '0' - '9' or BLANK	diastolic (hundreds)
7	ASCII '0' - '9' or BLANK	diastolic (tens)
8	ASCII '0' - '9' or BLANK	diastolic (units)
9	ASCII '0' - '1'	diastolic alarm flag (0->no, 1->yes)
10	ASCII '0' - '9' or BLANK	mean (hundreds)
11	ASCII '0' - '9' or BLANK	mean (tens)
12	ASCII '0' - '9' or BLANK	mean (units)
13	ASCII '0' - '1'	mean alarm flag (0->no, 1->yes)
14	ASCII '0' - '9' or BLANK	pulse (hundreds)
15	ASCII '0' - '9' or BLANK	pulse (tens)
16	ASCII '0' - '9' or BLANK	pulse (units)
17	ASCII '0' - '1'	pulse alarm flag (0->no, 1->yes)
18	ASCII '0' - '9' or BLANK	SpO2 (hundreds)
19	ASCII '0' - '9' or BLANK	SpO2 (tens)
20	ASCII '0' - '9' or BLANK	SpO2 (units)
21	ASCII '0' - '1'	SpO2 alarm flag (0->no, 1->yes)

22	ASCII '0' - '9' or BLANK	inCO2 (hundreds)
23	ASCII '0' - '9' or BLANK	inCO2 (tens)
24	ASCII '0' - '9' or BLANK	inCO2 (units)
25	ASCII '0' - '1'	inCO2 alarm flag (0->no, 1->yes)
26	ASCII '0' - '9' or BLANK	inAgent (hundreds)
27	ASCII '0' - '9' or BLANK	inAgent (tens)
28	ASCII '0' - '9' or BLANK	inAgent (units)
29	ASCII '0' - '1'	inAgent alarm flag (0->no, 1->yes)
30	ASCII '0' - '9' or BLANK	FIO2 (hundreds)
31	ASCII '0' - '9' or BLANK	FIO2 (tens)
32	ASCII '0' - '9' or BLANK	FIO2 (units)
33	ASCII '0' - '1'	FIO2 alarm flag (0->no, 1->yes)
34	ASCII '0' - '9' or BLANK	etCO2 (hundreds)
35	ASCII '0' - '9' or BLANK	etCO2 (tens)
36	ASCII '0' - '9' or BLANK	etCO2 (units)
37	ASCII '0' - '1'	etCO2 alarm flag (0->no, 1->yes)
38	ASCII '0' - '9' or BLANK	etAgent (hundreds)
39	ASCII '0' - '9' or BLANK	etAgent (tens)
40	ASCII '0' - '9' or BLANK	etAgent (units)
41	ASCII '0' - '1'	etAgent alarm flag (0->no, 1->yes)
42	ASCII '0' - '9' or BLANK	N2O (hundreds)
43	ASCII '0' - '9' or BLANK	N2O (tens)
44	ASCII '0' - '9' or BLANK	N2O (units)
45	ASCII '0' - '1'	N2O alarm flag (0->no, 1->yes)
46	ASCII '0' - '9' or BLANK	temperature (hundreds)
47	ASCII '0' - '9' or BLANK	temperature (tens)
48	ASCII '0' - '9' or BLANK	temperature (units)
49	ASCII '0' - '9' or BLANK	temperature (1/10 units)
50	ASCII '0' - '1'	temperature alarm flag (0->no, 1->yes)
51	ASCII '0' - '9' or BLANK	respiration (hundreds)
52	ASCII '0' - '9' or BLANK	respiration (tens)
53	ASCII '0' - '9' or BLANK	respiration (units)
54	ASCII '0' - '1'	respiration alarm flag (0->no, 1->yes)
55	ASCII 'X'	ending flag

Following is a list of commands and responses.

COMMAND	ACTION / RESPONSE
A - auto start command	unit enters AUTO MODE/starts measurement/no response
H - hold/resume command	measurement or time count down toggles between pause or resume
L - alarm poll command	unit responds with alarm true or false condition
M - manual start command	unit resets to HANDS OFF MODE/begins measurement/no response
Q - alarm silence command	silence alarm for pre-programmed amount of time/no response
S - stat start command	unit enters STAT MODE/starts measurement/no response
T - time set command	set unit time and date/no response

COMMAND DETAILS:

A - AUTO START

The auto start command puts the unit into AUTO MODE with a interval time established by the included time. Measurement starts immediately. There is no response from the unit.

STRING POSITION	POSSIBLE CHARACTERS	DESCRIPTION
0	ASCII 'A'	command type
1	'ASCII '0' - '9'	auto interval minutes (tens)
2	'ASCII '0' - '9'	auto interval minutes (units)
3	ASCII 'X'	ending flag

H - HOLD/RESUME

The hold/resume command toggles between hold or resume. There is no response from the unit.
HOLD - > stop measurement if currently measuring or stop the count down if in AUTO / STAT MODE

RESUME -> resume measurement if stopped during measurement or resume time count down if in AUTO / STAT MODE

STRING POSITION	POSSIBLE CHARACTERS	DESCRIPTION
0	ASCII 'H'	command type

L - ALARM POLL

The unit responds to the alarm poll command with a true or false condition to active alarm

STRING POSITION	POSSIBLE CHARACTERS	DESCRIPTION
0	ASCII 'L'	command type

Response

STRING POSITION	POSSIBLE CHARACTERS	DESCRIPTION
0	ASCII 'L'	response type
1	ASCII '0', '1'	unit in alarm 0 -> FALSE 1 -> TRUE
2	ASCII 'X'	ending flag

M - MANUAL START

The manual start command resets the unit to HANDS OFF MODE, clears the cycle memory and begins measurement. There is no response from the unit.

STRING POSITION	POSSIBLE CHARACTERS	DESCRIPTION
0	ASCII 'M'	command type

Q - ALARM SILENCE

The alarm silence command silences the alarm for the pre-programmed amount of time. There is no response from the unit.

STRING POSITION	POSSIBLE CHARACTERS	DESCRIPTION
0	ASCII 'Q'	command type

S - STAT START

The stat start command puts the unit into STAT MODE with a interval time established by the

included time. Measurement starts immediately. There is no response from the unit.

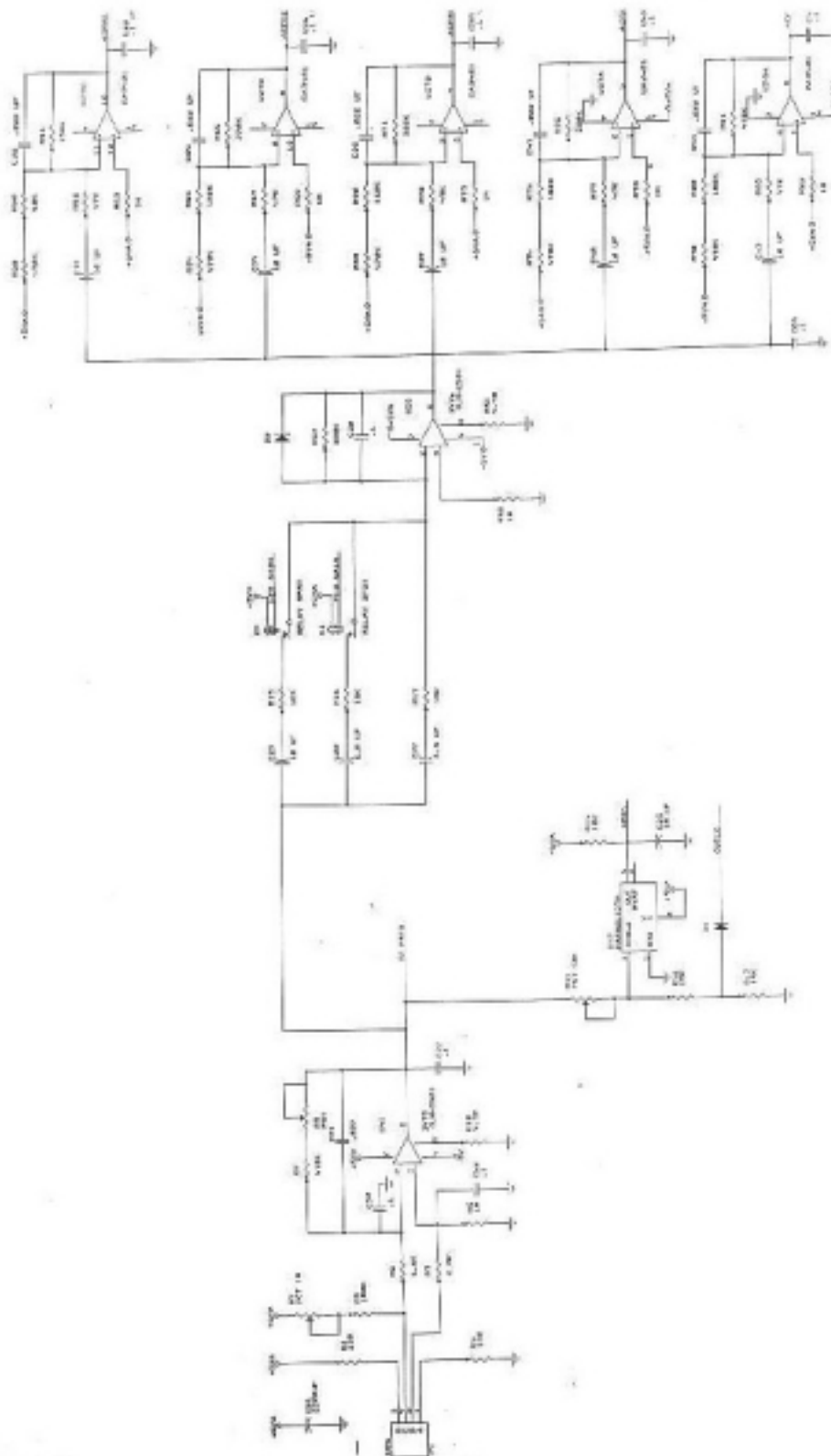
STRING POSITION	POSSIBLE CHARACTERS	DESCRIPTION
0	ASCII 'S'	command type
1	'ASCII '0' - '9'	stat duration minutes (units)
2	ASCII 'X'	ending flag

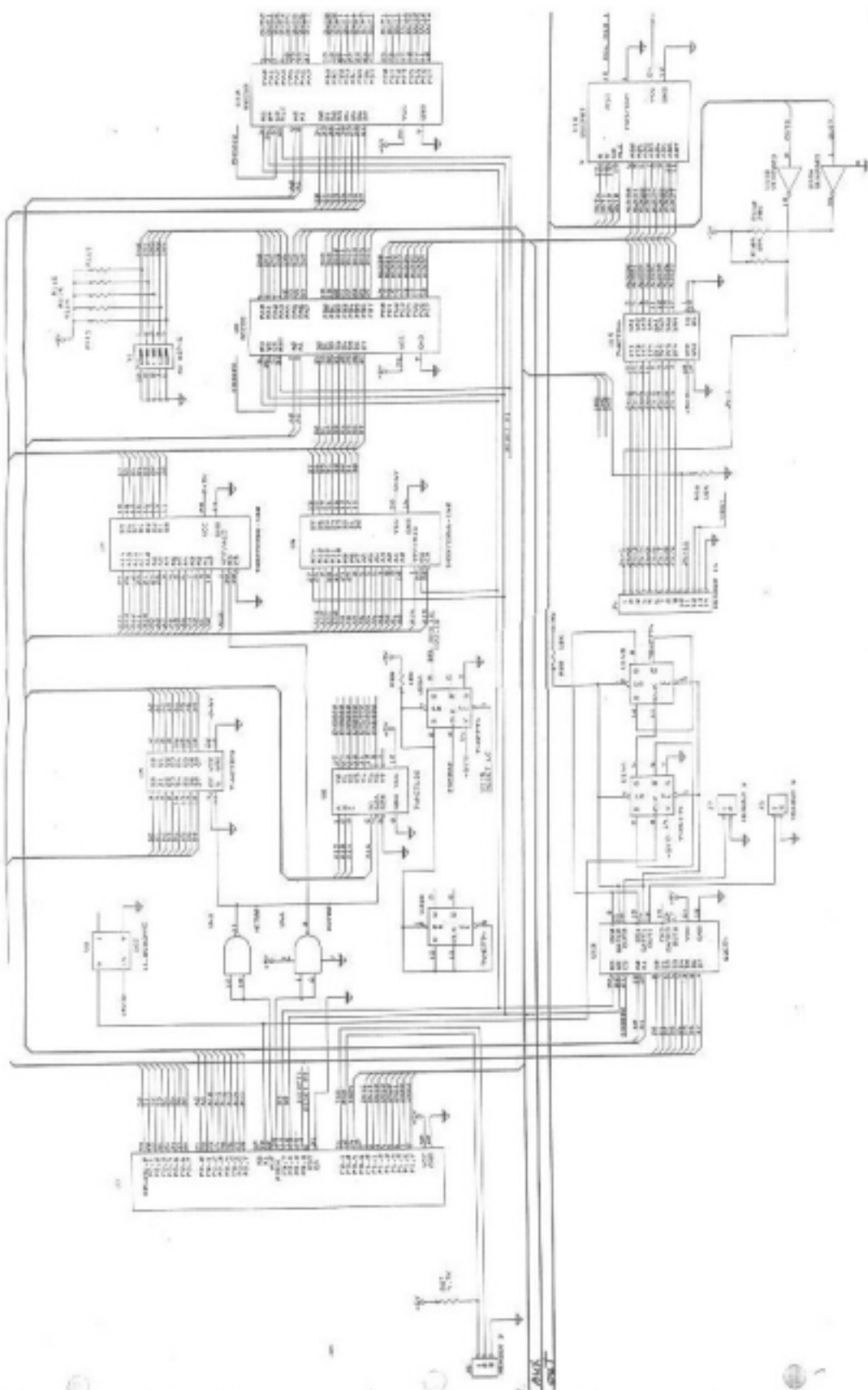
T - TIME SET

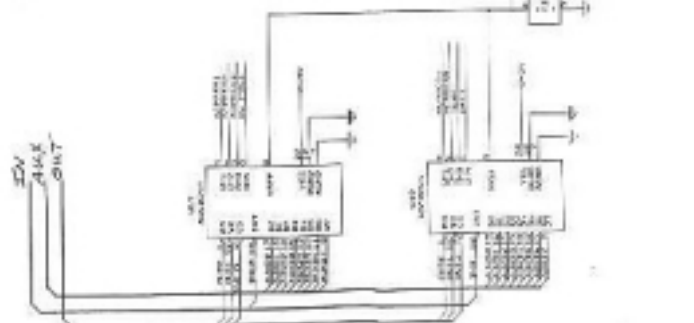
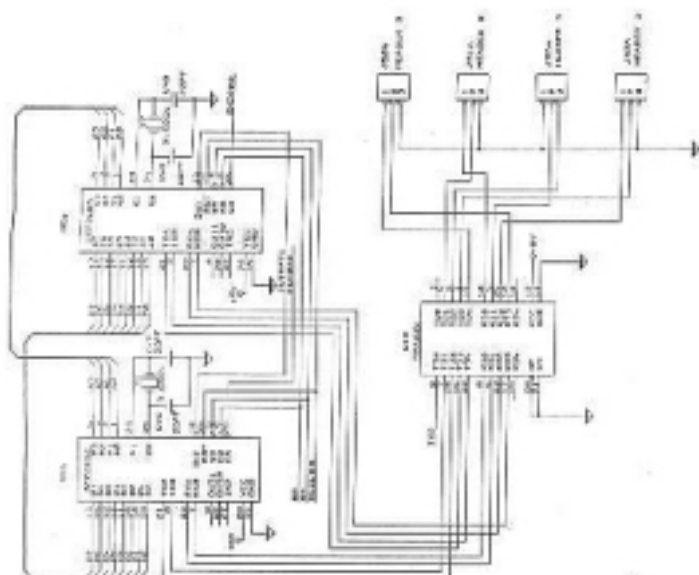
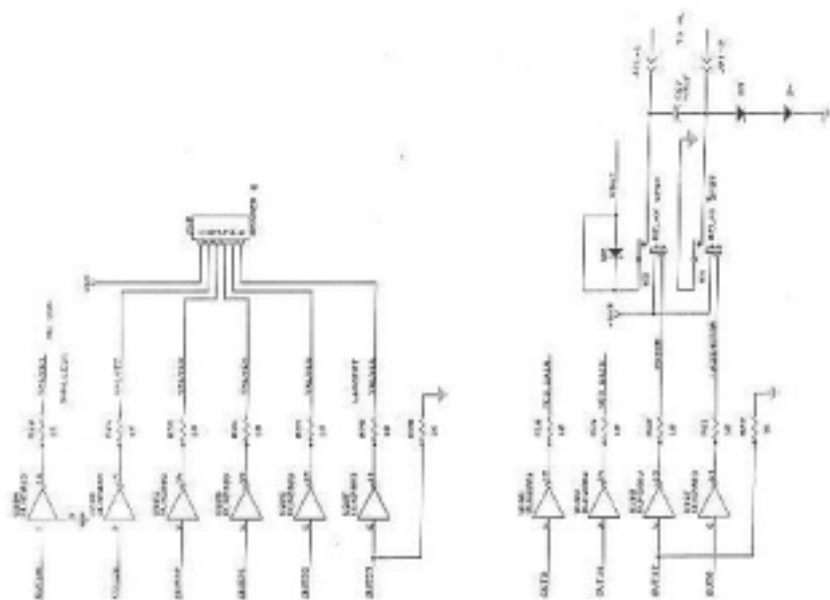
The time set command sets the unit time and date to the new time and date. There is no response from the unit.

STRING POSITION	POSSIBLE CHARACTERS	DESCRIPTION
0	ASCII '0' - '2'	time hour (tens)
1	ASCII '0' - '9'	time hour (units)
2	ASCII '0' - '6'	time minutes (tens)
3	ASCII '0' - '9'	time minutes (units)
4	ASCII '0', '1', '2', '3'	date (tens)
5	ASCII '0' - '9'	date (units)
6	ASCII '0', '1'	month (tens)
7	ASCII '0' - '9'	month (units)
8	ASCII '0' - '9'	year (tens)
9	ASCII '0' - '9'	year (units)
10	ASCII 'X'	ending flag
11	ASCII 'X'	ending flag

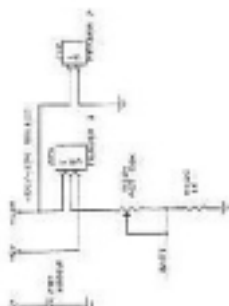
Universal Main Board

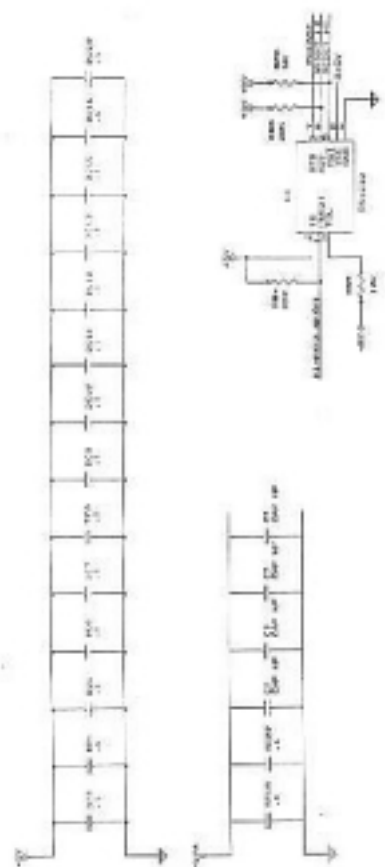
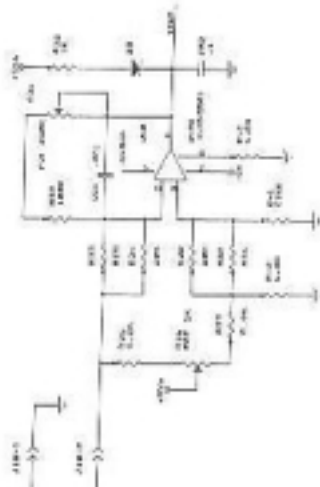
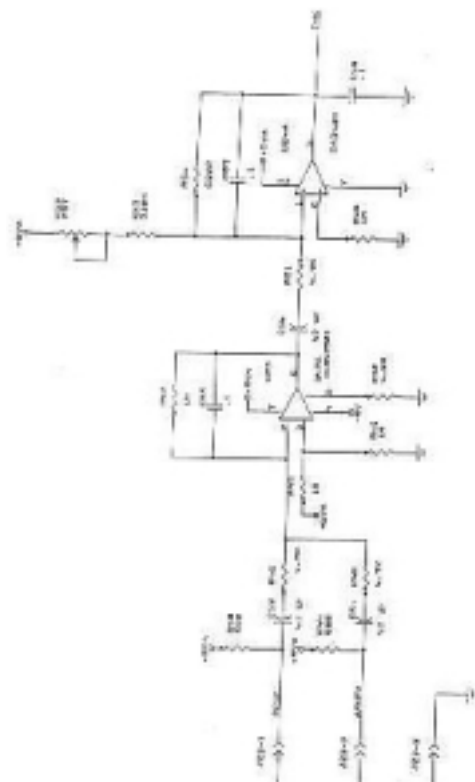




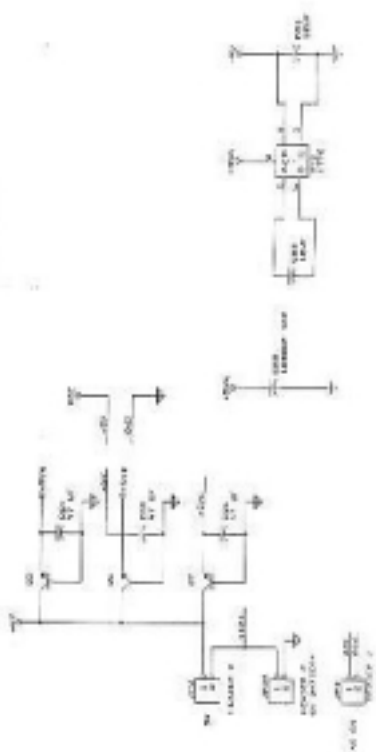


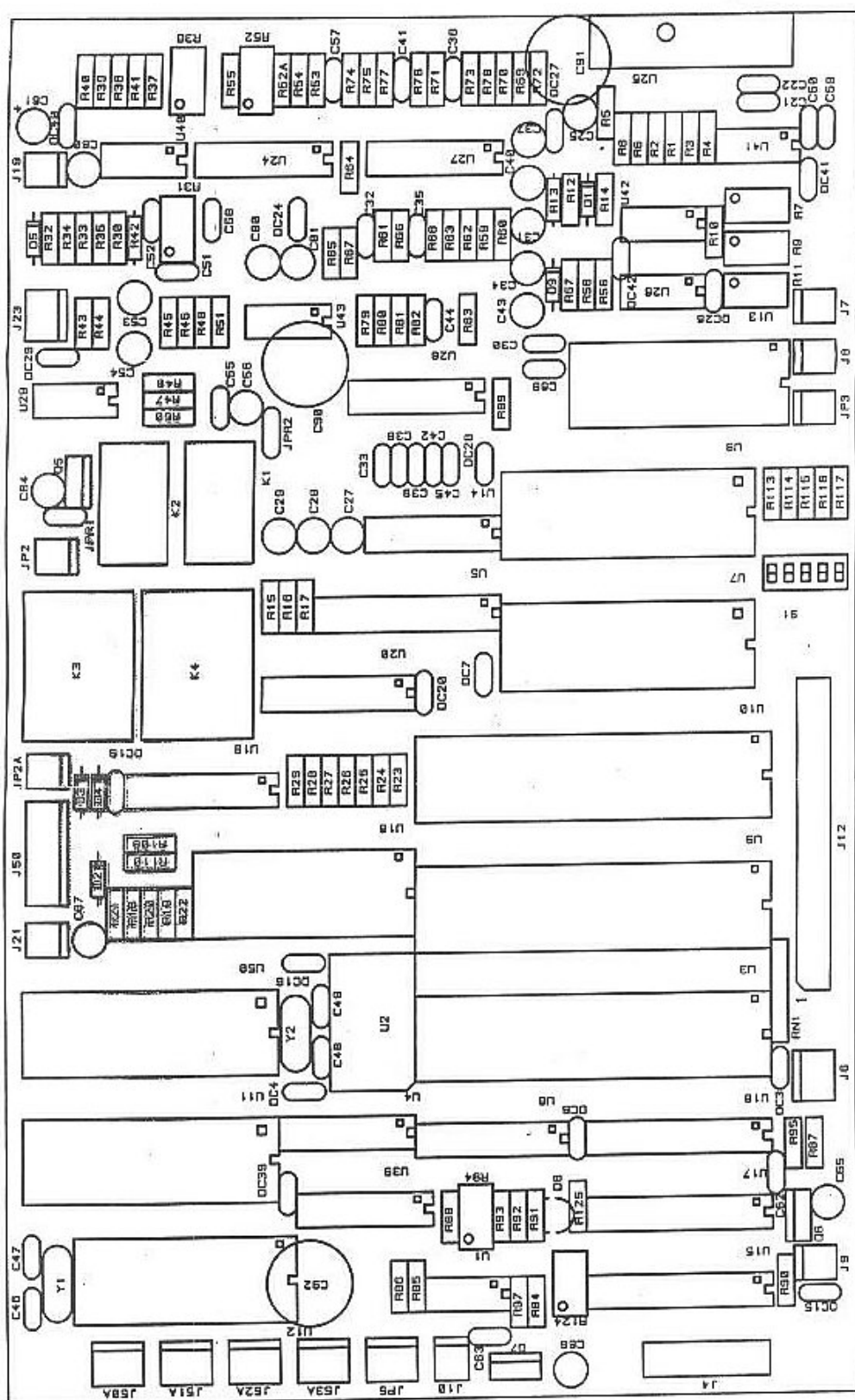
100k 100k 100k 100k 100k 100k





Pin	Signal	Value
1	V1	1.000
2	V2	1.000
3	V3	1.000
4	V4	1.000
5	V5	1.000
6	V6	1.000
7	V7	1.000
8	V8	1.000
9	V9	1.000
10	V10	1.000
11	V11	1.000
12	V12	1.000
13	V13	1.000
14	V14	1.000
15	V15	1.000
16	V16	1.000
17	V17	1.000
18	V18	1.000
19	V19	1.000
20	V20	1.000
21	V21	1.000
22	V22	1.000
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25	V25	1.000
26	V26	1.000
27	V27	1.000
28	V28	1.000
29	V29	1.000
30	V30	1.000
31	V31	1.000
32	V32	1.000
33	V33	1.000
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36	V36	1.000
37	V37	1.000
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41	V41	1.000
42	V42	1.000
43	V43	1.000
44	V44	1.000
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46	V46	1.000
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85	V85	1.000
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88	V88	1.000
89	V89	1.000
90	V90	1.000
91	V91	1.000
92	V92	1.000
93	V93	1.000
94	V94	1.000
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98	V98	1.000
99	V99	1.000
100	V100	1.000

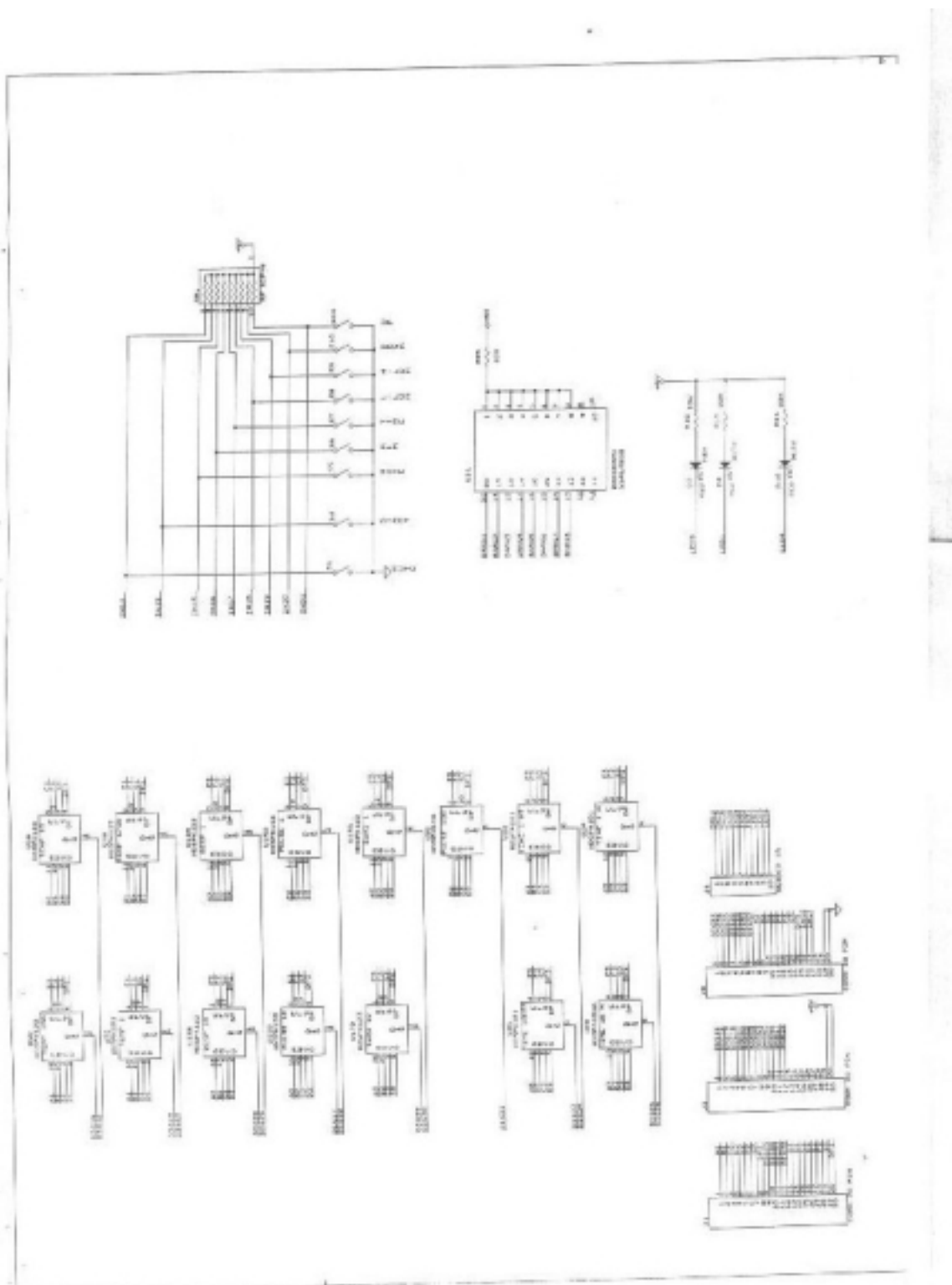




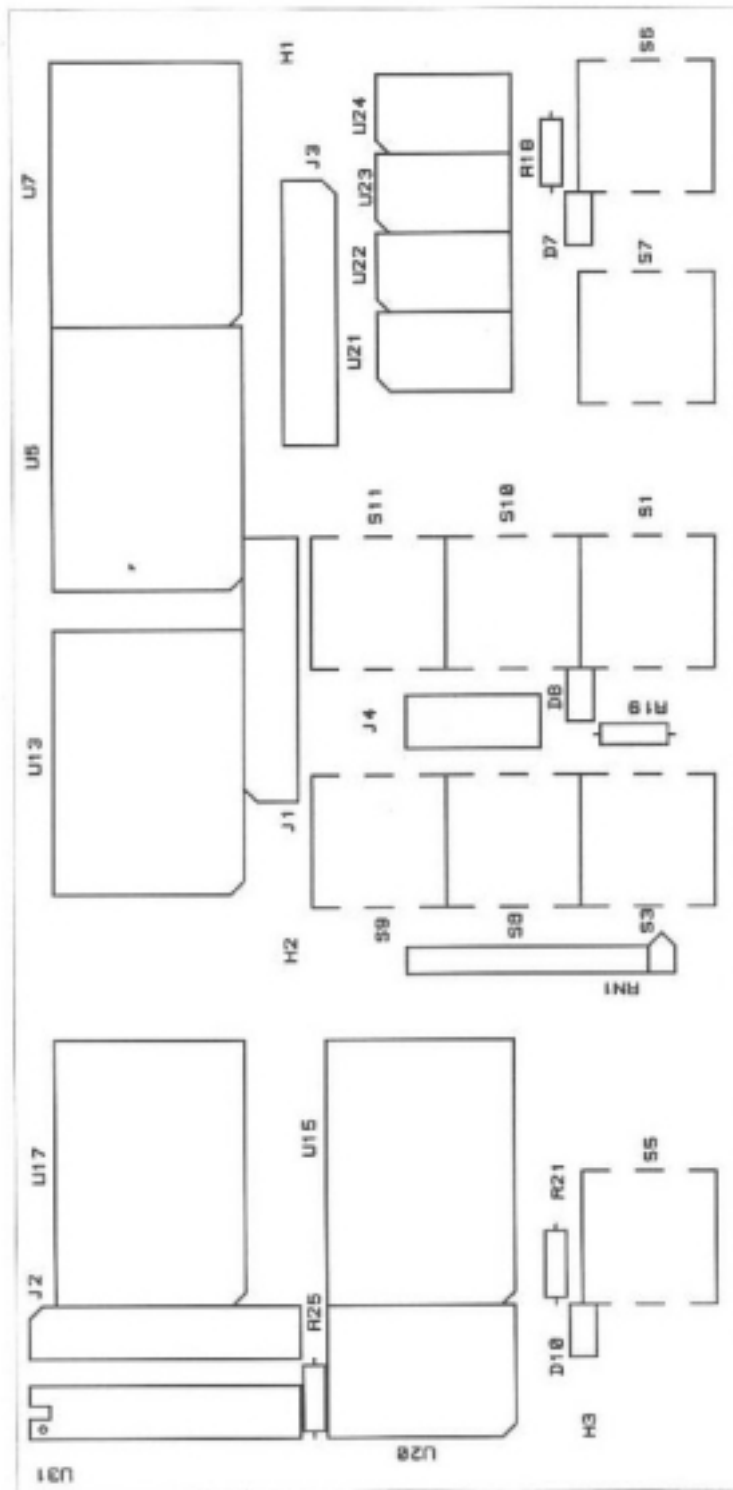
ITEM NUMBER QUANTITY	ITEM LOCATION REPORT	
	DESCRIPTION	LOCATION
302-003-001 1.00	IC EPROM 27C512—15	U-7
302-012-001 1.00	IC RAM STATIC	U-8
303-002-001 1.00	IC MICROPROCESSOR	U-3
303-006-001 2.00	IC PROGRAMMABLE INTERFACE 82C55- 2 (TOSHIBA) (8 MHZ)	U-9-10
305-005-001 2.00	IC A/D CONVERTER	U-17-18
305-012-001 1.00	IC PROGRAMMABLE TIMER 8MHZ 82C54-2 OR UPD71054C (NEC)	U-13
305-058-001 1.00	IC 128 BYTE TIMER	U-16
305-014-001 1.00	IC POWER ON RESET	U-1
305-015-001 1.00	IC TIMER ADM235LJN OR MAX235CPG (BELL)	U-12
305-017-001 1.00	IC 7 CHANNEL INPUT DRIVER ULN2003A	U-19
305-019-001 2.00	IC DUAL UART 28 PIN SCC2692AC1N28 (SIGNETICS)	U-11,50
308-019-001 1.00	IC HEX SCHMIDT TRIGGER 74HC7001N	U-4
308-017-001 2.00	IC FLIP FLOP	U-14,39
308-021-002 1.00	IC LATCH	U-5
308-025-002 1.00	IC BUFFER	U-15

308-028-002 1.00	IC DECODER	U-6
701-096-501 1.00	SUB LO BAT/AC ON ADAPTOR	
701-077-502 1.00	SUB UNIVERSAL MAIN	

Video Display Board



2.788



8.258

8

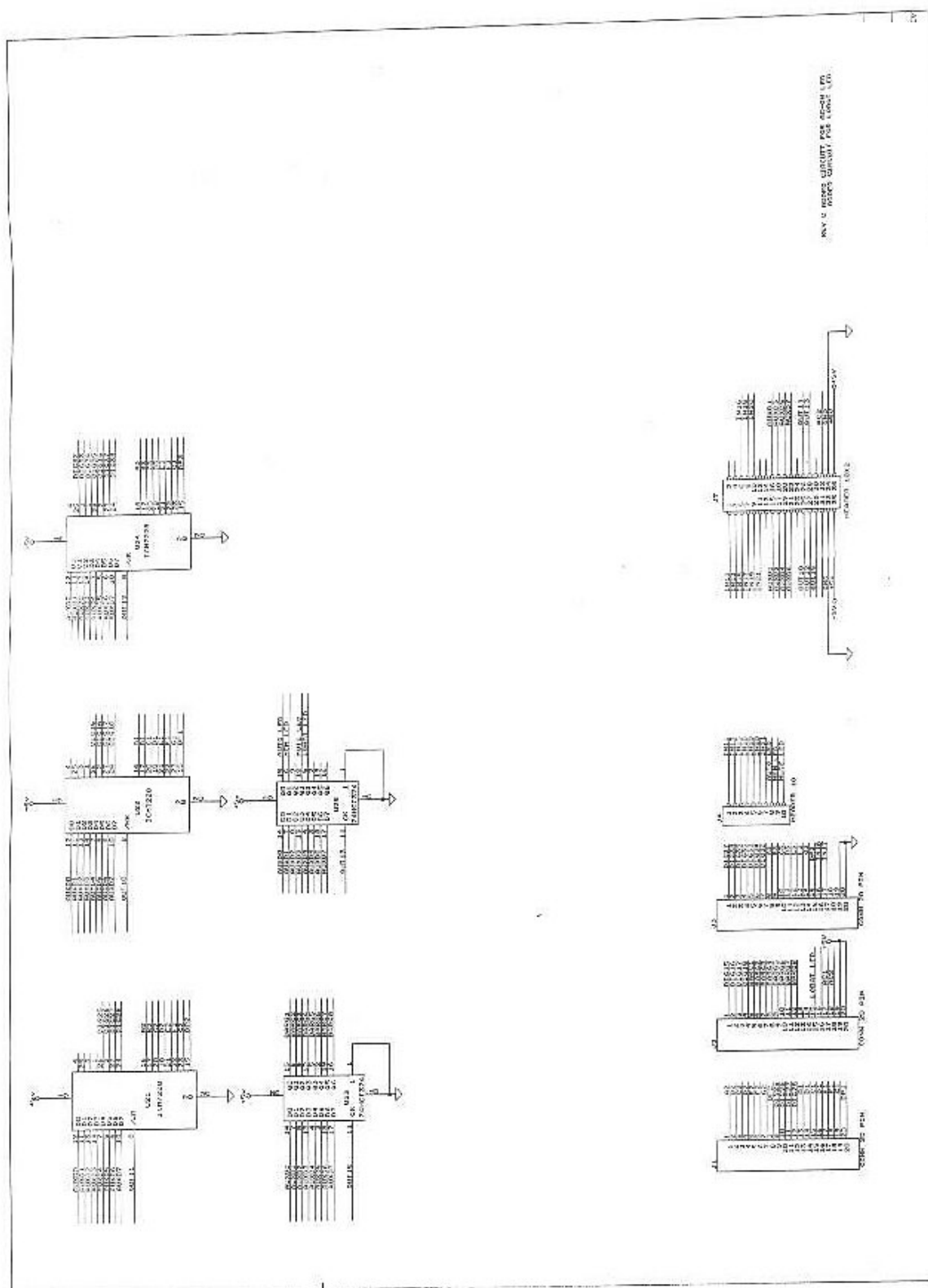
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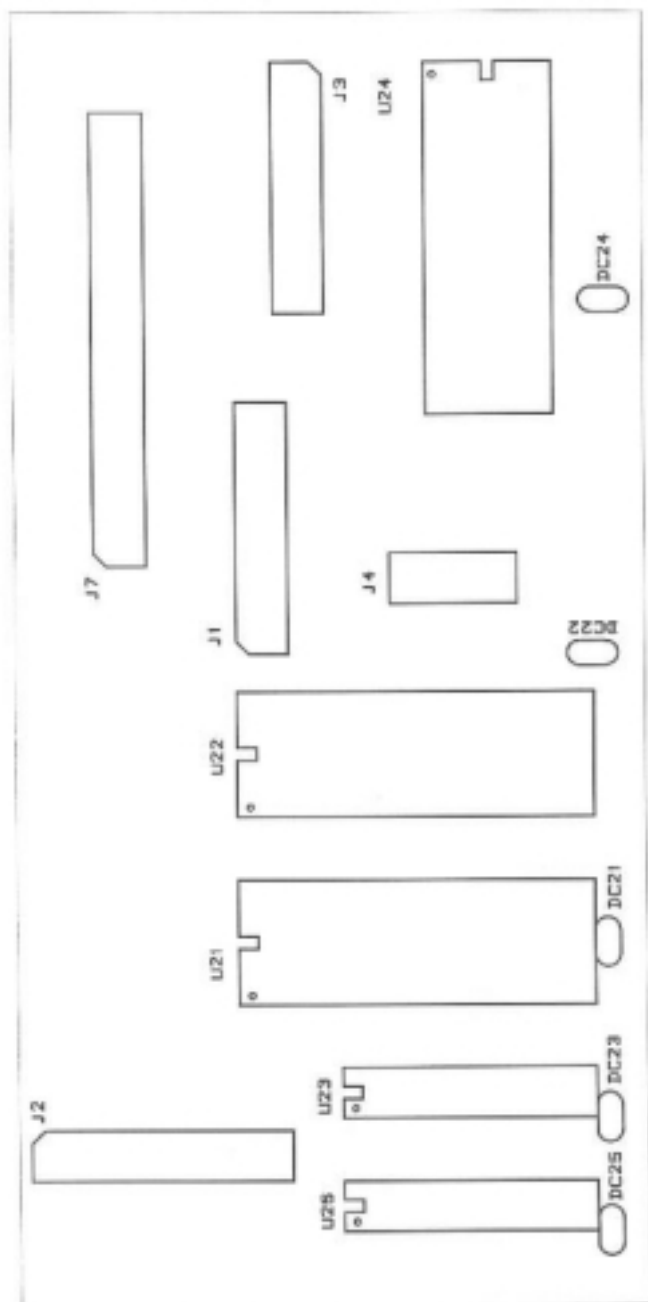
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Video Display Driver Board



2.458



8.258

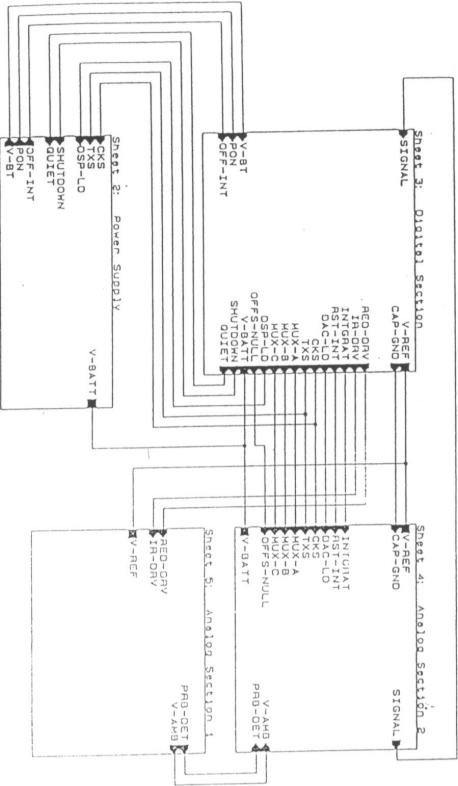
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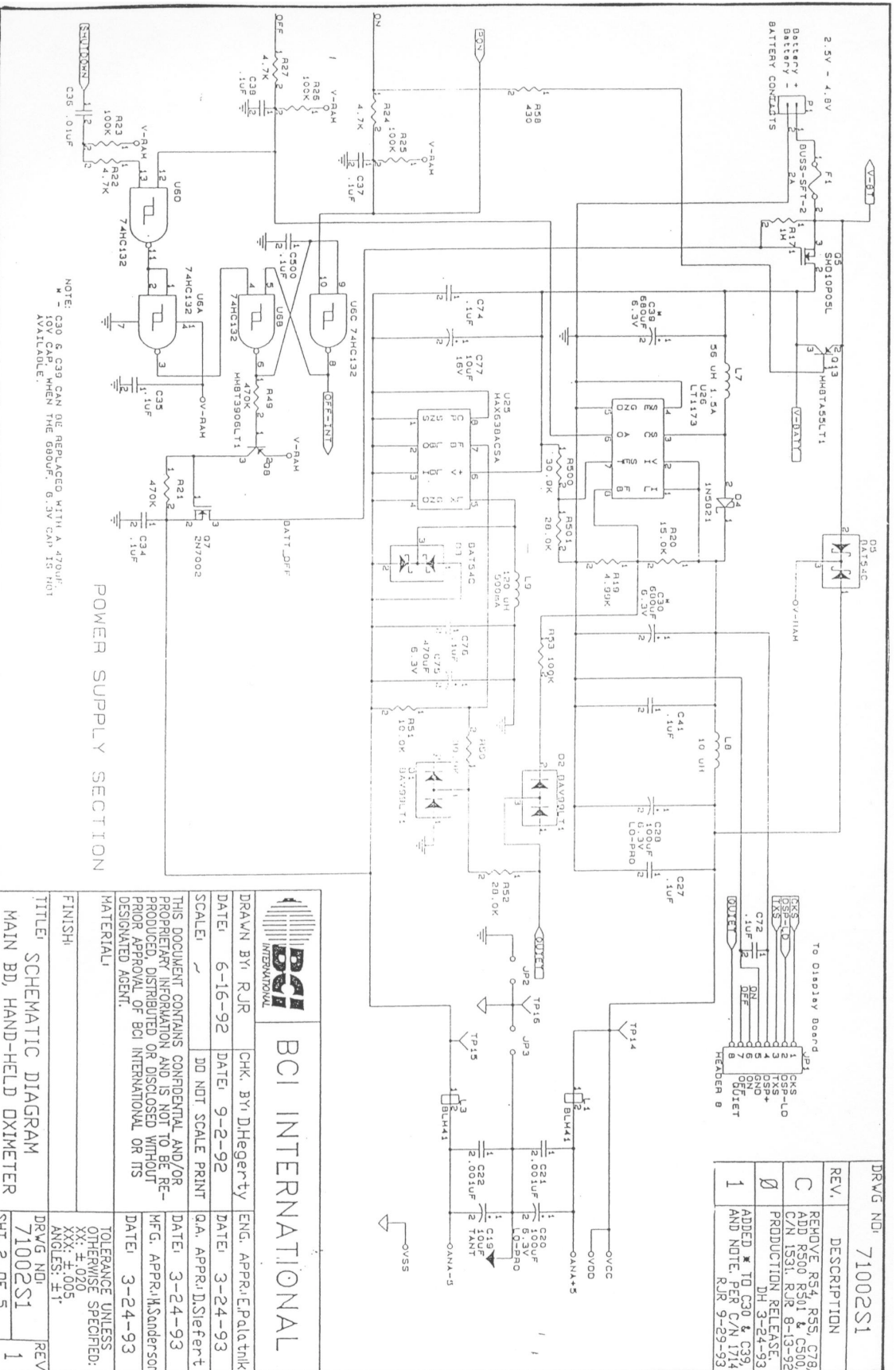
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BCI SPO2 Board



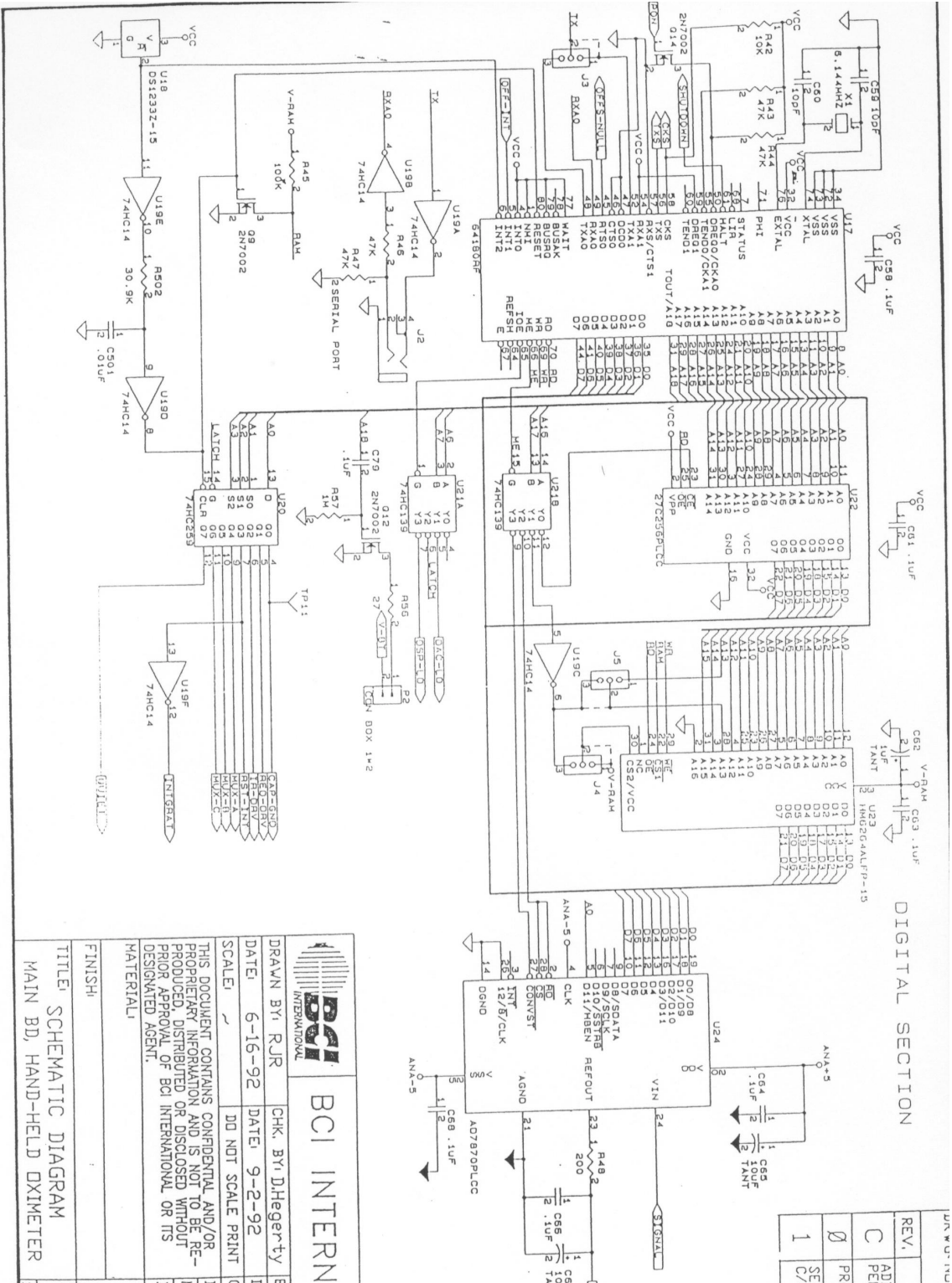
REV.		DESCRIPTION
C	DEF-INT VAS /RESET	PER C/N 174, RJR 8-13-92
0	PRODUCTION RELEASE	DATE 3-24-93
1	SEE SHEET 2, PER C/N 174, RJR 9-29-93	

BCI INTERNATIONAL		BCI INTERNATIONAL
DRAWN BY: RJR	CHK. BY: DHegearty	ENG. APPR: Pdaltink
DATE: 6-16-92	DATE: 9-2-92	DATE: 3-24-93
SCALE: 1"	DO NOT SCALE PRINT	QA. APPR: DStiebert
THIS DOCUMENT CONTAINS CONFIDENTIAL AND/OR PROPRIETARY INFORMATION AND IS NOT TO BE REPRODUCED, DISTRIBUTED OR DISCLOSED WITHOUT PRIOR APPROVAL OF BCI INTERNATIONAL OR ITS DESIGNATED AGENT.		
MATERIAL		
TOLERANCE UNLESS OTHERWISE SPECIFIED: XX: ±.020 XXX: ±.005 ANGLES: ±1°		
FINISH		DRWG NO: 71002S1
TITLE: SCHEMATIC DIAGRAM		REV: 1
MAIN BD, HAND-HELD OXIMETER		SHT. 1 OF 5



BCI INTERNATIONAL	
DRAWN BY: RJR	CHK. BY: DHegearty
DATE: 6-16-92	DATE: 9-2-92
SCALE: 1/2"	DO NOT SCALE PRINT
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MATERIAL:	
FINISH:	
TOLERANCE UNLESS OTHERWISE SPECIFIED:	
XXX ± .005	
ANGLES ± 1°	
TITLE: SCHEMATIC DIAGRAM	
MAIN BD, HAND-HELD OXIMETER	
DRWG NO: 71002S1	REV: 1
SHT. 2 OF 5	

REV.	DESCRIPTION
C	REMOVE R54, R55, C78, ADD R500, R501 & C500, C/N 1531, RJR 8-13-92
0	PRODUCTION RELEASE, DH 3-24-93
1	ADDED * TO C30 & C39, AND NOTE, PER C/N 1714, RJR 9-29-93



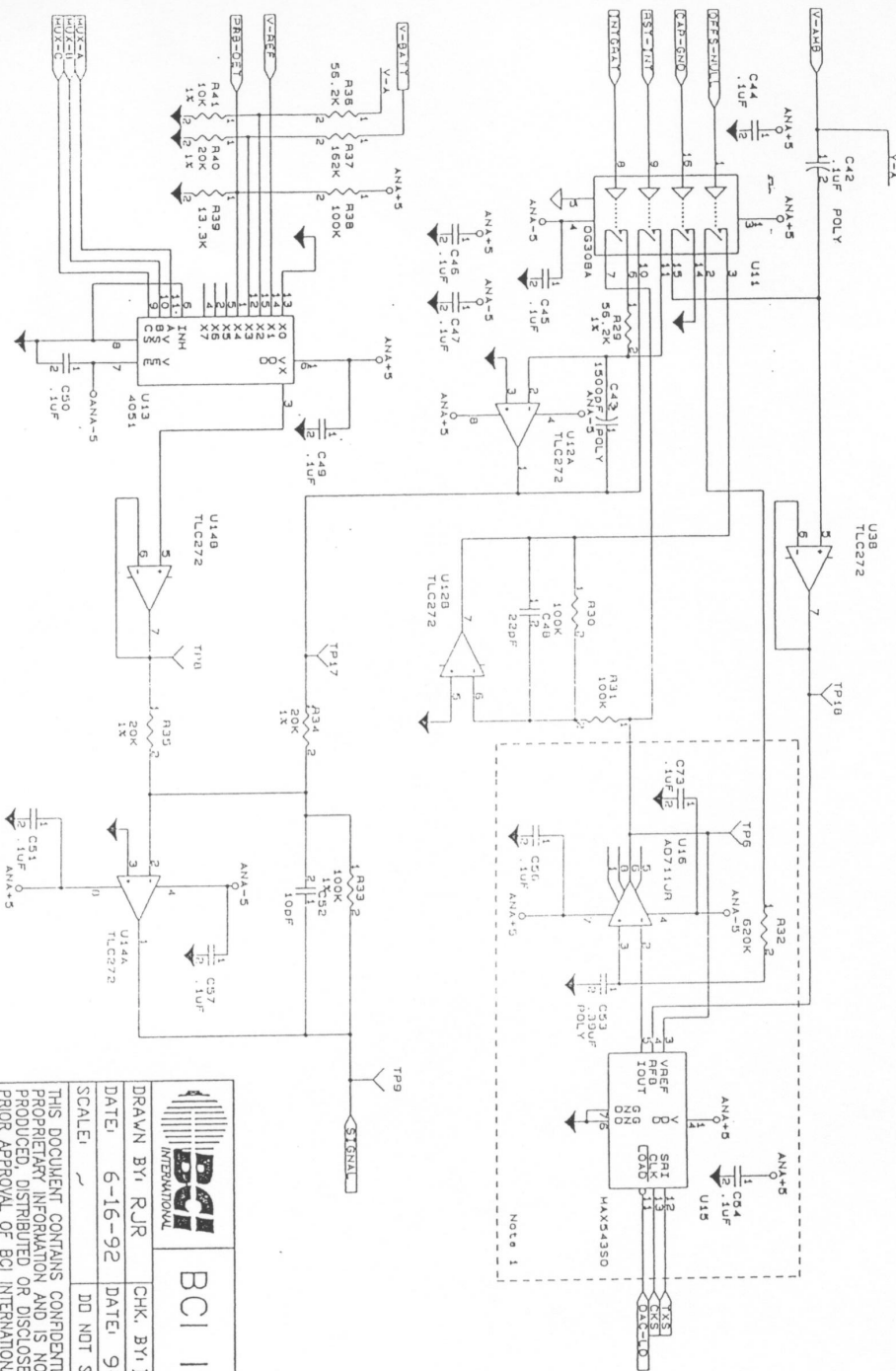
DIGITAL SECTION

REV.	DESCRIPTION
1	ADDED R502 & C501 PER C/N 1531 RJR 8-13-92
0	PRODUCTION RELEASE DH 3-24-93
1	SEE SHEET 2, PER C/N 1714, RJR 9-29-93

BCI INTERNATIONAL

DRAWN BY: RJR	CHK. BY: D.Hegarty	ENG. APPR.: E.Palathink
DATE: 6-16-92	DATE: 9-2-92	DATE: 3-24-93
SCALE: ~	DO NOT SCALE PRINT	Q.A. APPR.: D.Siefert
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MATERIAL:		
TOLERANCE UNLESS OTHERWISE SPECIFIED:		
XX: ±.020		
XXX: ±.005		
ANGLES: ±1°		
TITLE: SCHEMATIC DIAGRAM		DRWG. NO: 71002S1
MAIN BD, HAND-HELD OXIMETER		REV: 1
		SHT. 3 OF 5

ANALOG SECTION 2



Note 1: Layout close to each other

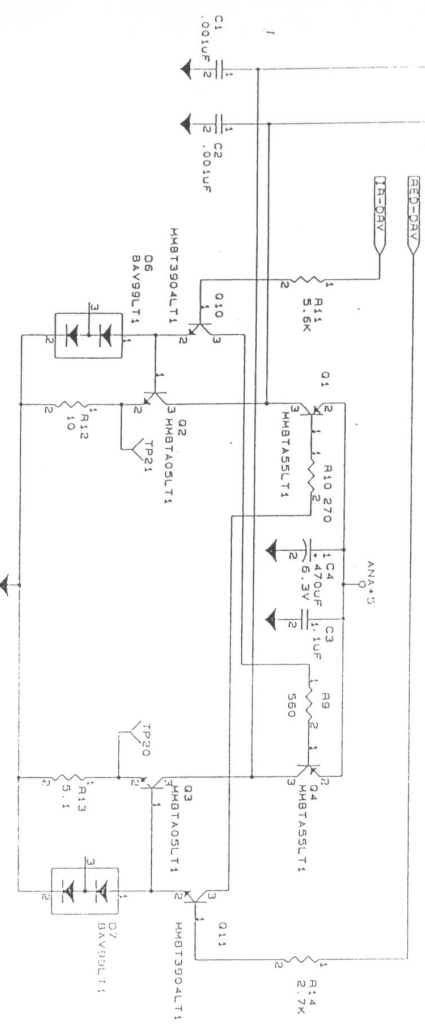
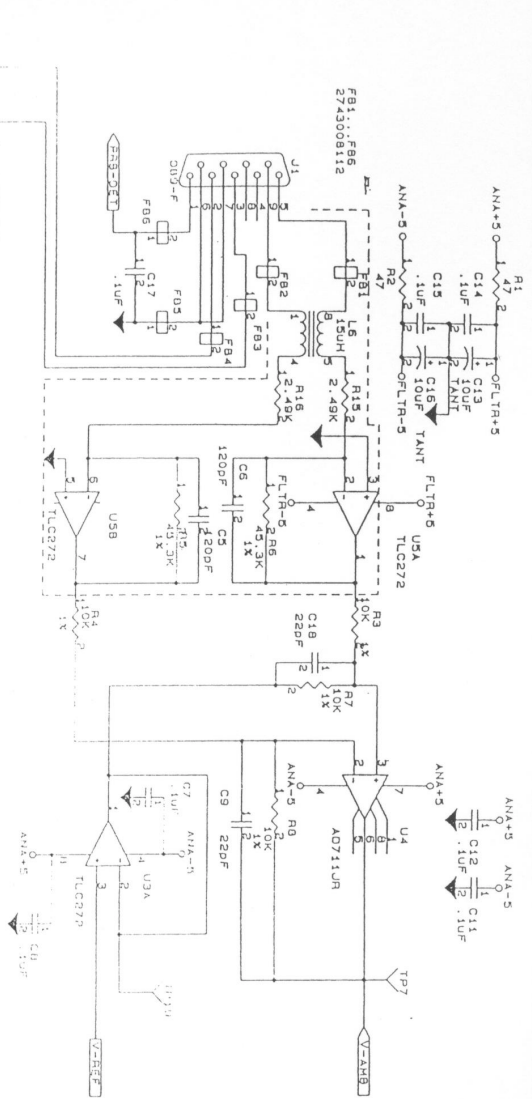
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0	PRODUCTION RELEASE, DH 3-24-93
1	SEE SHEET 2, PER C/N 1714, RJR 9-29-93



BCI INTERNATIONAL

DRAWN BY: RJR	CHK. BY: D.Hegarty	ENG. APPR.: D.Hegarty
DATE: 6-16-92	DATE: 9-2-92	DATE: 3-24-93
SCALE: 1	DO NOT SCALE PRINT	DATE: 3-24-93
THIS DOCUMENT CONTAINS CONFIDENTIAL AND/OR PROPRIETARY INFORMATION AND IS NOT TO BE REPRODUCED, DISTRIBUTED OR DISCLOSED WITHOUT PRIOR APPROVAL OF BCI INTERNATIONAL OR ITS DESIGNATED AGENT.		
MATERIAL: TOLERANCE UNLESS OTHERWISE SPECIFIED: XXX ±.020 XXX ±.005 ANGLES: ±1°		
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TITLE: SCHEMATIC DIAGRAM MAIN BD, HAND-HELD OXIMETER SHT. 4 OF 5		

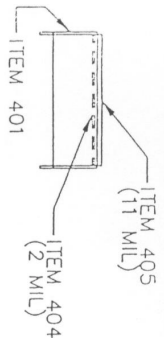
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2	PRODUCTION RELEASE
3	SEE SHEET 2 PER
4	C/N 1714, R/R 9-29-93



ANALOG SECTION 1

BCI INTERNATIONAL		CHK. BY: D.Hegerty		ENG. APPR: E.Pala thnk	
DRAWN BY: RJR		DATE: 6-16-92		DATE: 3-24-93	
SCALE: 1		DO NOT SCALE PRINT		Q.A. APPR: J.Diefert	
THIS DOCUMENT CONTAINS CONFIDENTIAL AND/OR PROPRIETARY INFORMATION AND IS NOT TO BE RE-PRODUCED, DISTRIBUTED OR DISCLOSED WITHOUT PRIOR APPROVAL OF BCI INTERNATIONAL OR ITS DESIGNATED AGENT.		DATE: 3-24-93		MFG. APPR: J.Sanderson	
MATERIAL		TOLERANCE UNLESS OTHERWISE SPECIFIED:		DATE: 3-24-93	
FINISH		XX: ±.020		XXX: ±.005	
TITLE: SCHEMATIC DIAGRAM		DRWG NO: 71002S1		REV: 1	
MAIN BD, HAND-HELD OXIMETER		SHT. 5 OF 5			

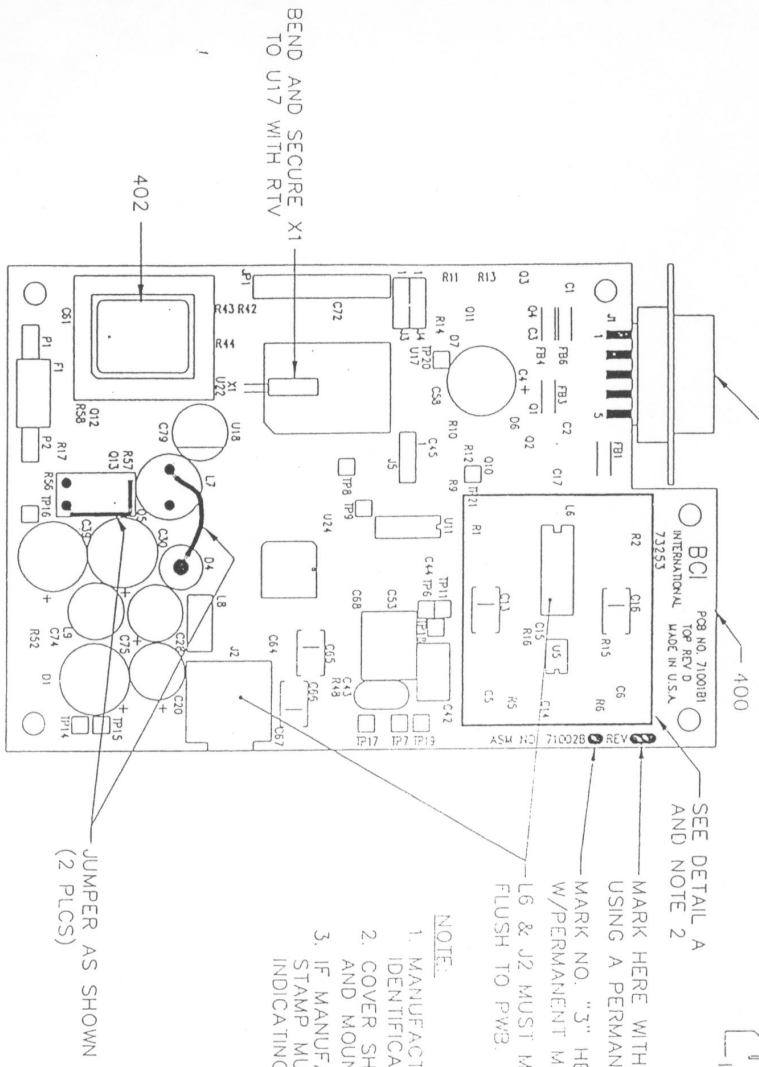
PLACE "J" OVER EDGE OF BOARD AND
SOLDER PINS TO TOP & BOTTOM PADS.
NOTE: PINS MUST BE SOLDERED THE
FULL LENGTH OF THE PADS.



DETAIL A

SEE DETAIL A
AND NOTE 2
MARK HERE WITH CURRENT REVISION
USING A PERMANENT MARKER.
MARK NO. "3" HERE
W/PERMANENT MARKER.
L6 & J2 MUST MOUNT
FLUSH TO PWB

- NOTE:
1. MANUFACTURER TO PLACE A "MFD BY" IDENTIFICATION MARK ON BOARD.
 2. COVER SHIELD ITEM 401 TO BE ASSEMBLED AND MOUNTED BY VENDOR.
 3. IF MANUFACTURER TESTS BOARDS A TEST STAMP MUST BE PLACED ON THE BOARD INDICATING IT PASSED ALL TESTS.



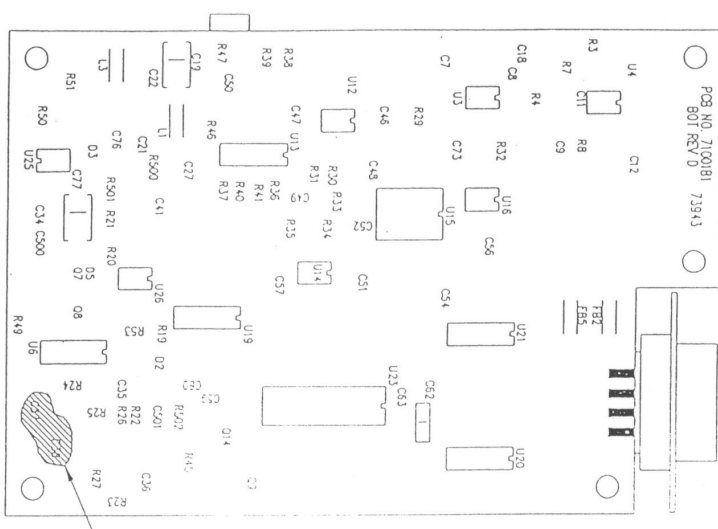
TOP VIEW OF BOARD

UNPOPULATED SPACES ON BOARD ARE
C34,C36,R17,R19,R20,R21,R27,R49,R53,
R58,R500,R501,D2,D4,L7,U26,Q5,Q7,Q8,
Q13,Q14.

SHEETS 3-4 "A" SIZE (BOM)

 BCI INTERNATIONAL				BCI INTERNATIONAL			
DRAWN BY:	RJR	CHK. BY:	D.Hegerty	ENG. APPR.:	E.Palotnik	DATE:	3-24-93
DATE:	9-28-92	DATE:	3-24-93	DATE:	3-24-93	DATE:	3-24-93
SCALE:	NTS	DO NOT SCALE PRINT		Q.A. APPR.:	D.Siefert	DATE:	3-24-93
THIS DOCUMENT CONTAINS CONFIDENTIAL AND/OR PROPRIETARY INFORMATION AND IS NOT TO BE REPRODUCED, DISTRIBUTED OR DISCLOSED WITHOUT PRIOR APPROVAL OF BCI INTERNATIONAL OR ITS DESIGNATED AGENT.				DATE:	3-24-93	DATE:	3-24-93
MATERIAL:				TOLERANCE UNLESS OTHERWISE SPECIFIED:			
FINISH:				XX: ±.020			
TITLE:				XXX: ±.005			
PVB ASH DYMISTRY (DEM)				ANGLES: ±2			
DRAWN NO:				71002B3			
SHT. 1 OF 4				REV: 9			

REV.	DESCRIPTION
6	NO CHANGE THIS PAGE BAC 1-10-95
7	SEE SHEET 1. DRH 2-8-95
8	ADD HOT GLUE TO C37/38. C/M 2013 BAC 3-6-95
9	SEE SHEET 1. KHF 7-20-95



BOTTOM VIEW OF BOARD

 BCI INTERNATIONAL	
DRAWN BY: RJR	CHK. BY: D.Hegarty
DATE: 9-28-92	DATE: 3-24-93
SCALE: RJR	DO NOT SCALE PRINT
THIS DOCUMENT CONTAINS CONFIDENTIAL AND/OR PROPRIETARY INFORMATION AND IS NOT TO BE RE-PRODUCED, DISTRIBUTED OR DISCLOSED WITHOUT PRIOR APPROVAL OF BCI INTERNATIONAL OR ITS DESIGNATED AGENT.	
MATERIAL	
FINISH	
TOLERANCE UNLESS OTHERWISE SPECIFIED: XX: ±.020 XXX: ±.005 ANGLES: ±2°	
TITLE: PWB ASM DIMETRY (DEM)	REV: 9
DRWG NO: 71002B3	SHT. 2 OF 4

71002B3-PWB ASM OEM
REV. 9 7-20-95

SP0₂ - SURFACE MOUNT COMPONENTS

DESCRIPTION	QTY	DESIGNATION(S)	MANUFACTURER'S PART NO.
CAP X7R .001uF 50V 10%	4	C1,C2,C21,C22	1206 PACKAGE (ANY MFR.)
CAP X7R .1uF 50V 10%	35	C3,C7,C8,C11,C12,C14,C15,C17,C27,C35,C37,C38,C41,C44,C45,C46,C47,C49,C50,C51,C54,C56,C57,C58,C61,C63,C64,C66,C68,C72,C73,C74,C76,C79,C500	
CAP COG 120pF 50v 5%	2	C5, C6	1206 PACKAGE (ANY MFR.)
CAP COG 22pF 50v 5%	3	C9, C18, C48	1206 PACKAGE (ANY MFR.)
CAP TANT 10uF 16V 10%	6	C13,C16,C19,C65,C67,C77	6032 PACKAGE (ANY MFR.)
CAP X7R .01uF 100V 10%	1	C501	1206 PACKAGE (ANY MFR.)
CAP COG 10pF 50V 10%	3	C52, C59, C60	1206 PACKAGE (ANY MFR.)
CAP TANT 1uF 16V 10%	1	C62	3216 PACKAGE (ANY MFR.)
DIODE DUAL 200mA 30V	2	D3, D5	BAT54C PHILIPS/AMPEREX
DIODE DUAL HIGH SPEED SW	3	D1, D6, D7	BAV99LT1 MOTOROLA
FUSE FAST-ACT 2A 125V	1	F1	7243 PACKAGE (ANY MFR.)
FITER FERRITE SUPPRESS. 80 ohm (IMP) @ 100MHz 500mA	8	FB1, FB2, FB3, FB4, FB5, FB6, L1, L3	BLM41A01PT (ANY MFR.)
FILTER COMMON MODE 15mH 1:1 TURN RATIO	1	L6	500-1579 B.H. ELEC.

DIP PACK

INDUCTOR 10 uH 250mA 10%	1	L8	1812 PACKAGE (ANY MFR.)
TRAN PNP 500mA 60V	2	Q1, Q4	MMBTA55LT1 MOTOROLA
TRAN NPN 500mA 60V	2	Q2, Q3	TMPTA05LT ALLEGRO
TRAN NPN 200mA 350mW 40v	2	Q10, Q11	MMBT3904LT1 MOTOROLA
FET 60V 0.5A	2	Q9, Q12	2N7002LT1 MOTOROLA 2N7002LT1 NATIONAL
RESISTOR 5% 1/8W 47 ohm	2	R1,R2	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 10K	7	R3,R4,R7,R8,R41,R42,R 51	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 45.3K	2	R5, R6	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 560 ohm	1	R9	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 270 ohm	1	R10	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 5.6K	1	R11	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 10 ohm	1	R12	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 5.1 ohm	1	R13	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 2.7K	1	R14	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 2.49K	2	R15, R16	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 1M	1	R57	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 4.7K	2	R22, R24	1206 PACKAGE (ANY MFR.)
DESCRIPTION	QT Y	DESIGNATION(S)	MANUFACTURER'S PART NO.
RESISTOR 1% 1/8W 100K	8	R23, R25, R26, R30, R31, R33, R38, R45	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 56.2K	2	R29, R36	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 620K	1	R32	1206 PACKAGE (ANY

RESISTOR 1% 1/8W 20K	3	R34, R35, R40	MFR.) 1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 162K	1	R37	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 13.3K	1	R39	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 47K	4	R43, R44, R46, R47	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 200 ohm	1	R48	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 30.9K	2	R50, R502	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 28K	1	R52	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 27 ohm	1	R56	1206 PACKAGE (ANY MFR.)
SOCKET 32 POS. PLCC	1	U22	821977-1 AMP
IC EPROM 27C256 SMD	1	U22	BCI P/N 71021B1
IC DUAL OP AMP	4	U3, U5, U12, U14	TLC272CD TEXAS INST.
IC AD711JR	2	U4, U16	AD711JR ANALOG DEVICES
IC QUAD 2 INPUT NAND GATE	1	U6	MC74HC132AD MOTOROLA
IC SPST CMOS	1	U11	DGG308ACY HARRIS,SILICON.
IC MULTI/DEMULTIPLEXER	1	U13	MC14051BD MOTOROLA
IC 12BIT SERIAL INPUT, DAC	1	U15	MAX543BCWE MAXIM or 72032B1 BCI INTERNATIONAL
IC 8BIT CMOS MPU 8MHz	1	U17	HD64180RF-8 HITACHI
IC TRIGGER INVERTER	1	U19	MC74HC14AD MOTOROLA
IC 8BIT ADDRESSABLE	1	U20	MC74HC259D MOTOROLA or CD74HC259M HARRIS
IC DECODER/DEMULTIPLEX	1	U21	MC74HC139AD MOTOROLA
IC 8Kx8 CMOS SRAM 100nS	1	U23	HM6264ALFP-15T HITACHI
IC 12BIT A/D	1	U24	AD787OJP ANALOG

CONVERTER			DEVICE
IC +5V ADJUSTABLE	1	U25	MAX638ACSA MAXIM
CMOS			

THRU HOLE COMPONENTS & MISCELLANEOUS

DESCRIPTION	QTY	DESIGNATION(S)	MANUFACTURER'S PART NO.
CAP LOW/IMP 470uF 10V 20%	2	C4, C75	ECA-1AFQ471 PANASONIC
CAP LOW/PRO 100uF 6V 20%	2	C20, C28	107R22025M ILLINOIS CAP.
CAP LOW/IMP 680uF 6.3V 20%	2	C30, C39	ECAOJFQ681 PANASONIC
Or 470uF 10V NOT TO EXCEED 13mm IN HEIGHT			
CAP STA/METAL .1uF 50V 5%	2	C42	ECQ-V1H104JZ3 PANASONIC
CAP P/FLM .0015uF 100V 10%	1	C43	QYA2A152KTP NICHICON
CAP STA/METAL .39uF 50V 5%	1	C53	ECQ-V1H3393JZ PANASONIC
IC 5V ECONORESET	1	U18	DS1233Z-15 DALLAS SEMI.
INDUCTOR RAD 120uH 0.5A	1	L9	BCI P/N 71049B2
CRYSTAL 6.11MHz	1	X1	FX3-6.144MHz FOX ELEC.
TEST POINT PC MOUNT	13	TP6, TP7, TP8, TP9, TP11, TP14, TP15, TP16, TP17, TP18, TP19, TP20, TP21	TP-103-03 COMPONENTS CO.
HEADER .100 2 POSITION	2	P1, P2	103321-2 AMP
RECEPTACLE 9 POSITION	1	J1	DB9-F 747905-2 AMP
JACK STEREO 3.5mm	1	J2	16PJ108 MOUSER
SOCKET .100 8 POS. SIP	1	JP1	744-8 T&B ANSLEY or CES-108-01-T-S SAMTEC

22 GAUGE HOOK-UP WIRE	A/R	JUMPER	ANY (AS REQUIRED)
PWB FAB (Rev D. films)	1	400	BCI P/N71001B1(Rev. 1 Drawing)
COVER SHIELD NEWOX1	1	401	BCI P/N71017B1
SOFTWARE ASM	1	402	*-BCI P/N 71029A3
BARRIER INSULATING 2 MIL	1	404	*-BCI P/N 20511B1
BARRIER INSULATING 11 MIL	1	405	*-BCI P/N 20511B2
GLUE, HOT MELT (FULLER)	1/R	406	HM-2124-10

*- INDICATES SUPPLIED BY BCI

[illegible]

REVISIONS		
REV	DESCRIPTION	DATE

+6V POWER SUPPLY BOARD PARTS LIST
(701-078-521) REV. D

PART NO.	PART NAME	DESCRIPTION	QTY.	DESIGNATION
101-136-002	47 uF. 16V	ELECTROLYTIC CAP.	1	C7
101-143-001	330 uF. 25V	ELECTROLYTIC CAP.	1	C2
101-147-002	1000 uF. 16V	ELECTROLYTIC CAP.	2	C1, C3
102-103-001	1.2 OHMS	5%, 2.0 W RESISTOR	1	R3
102-121-001	15 OHM	5%, 0.25W RESISTOR	1	R13
102-153-001	680 OHMS	5%, 0.25W RESISTOR	1	R11
102-156-001	1K	5%, 0.25W RESISTOR	1	R2
102-159-001	1.5K	5%, 0.25W RESISTOR	3	R4, R6, R8
102-183-001	10K	5%, 0.25W RESISTOR	1	R1
103-104-002	50K	10 TURN TOP POT.	2	R5, R7
104-101-001	MPSA13	NPN TRANSISTOR	2	Q2
104-103-001	NPN 2N3904	NPN TRANSISTOR	1	Q1
107-101-001	1N4148	SIGNAL DIODE	1	CR2
107-102-001	1N4004	RECTIFIER DIODE	2	CR1, CR4
107-108-001	1N5822 40V	SCHOTTKY DIODE	1	CR3
111-120-001	100 uH	INDUCTORS	1	L1
201-101-001	LZ-5H-C RELAY	SPDT RELAY	1	K1
305-037-001	LM2576	ADJ. REGULATOR	1	U1
402-031-002	HEADER 2	2 PIN HEADER/LOCK	5	J2, J3, J6, J7, J8
402-033-002	HEADER 3	3 PIN HEADER/LOCK	1	J1
402-038-001	HEADER 5	5 PIN HEADER/LOCK	1	Attached to U1
701-078-001	PCB. BOARD	POWER SUPPLY BD.	1	REV. C