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TELEX: 364412 INTR

**REMOTE PROPHET  
OPERATION MANUAL**  
MODEL 1001  
Manual No. CM1001A  
Issued: January, 1982

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## GENERAL

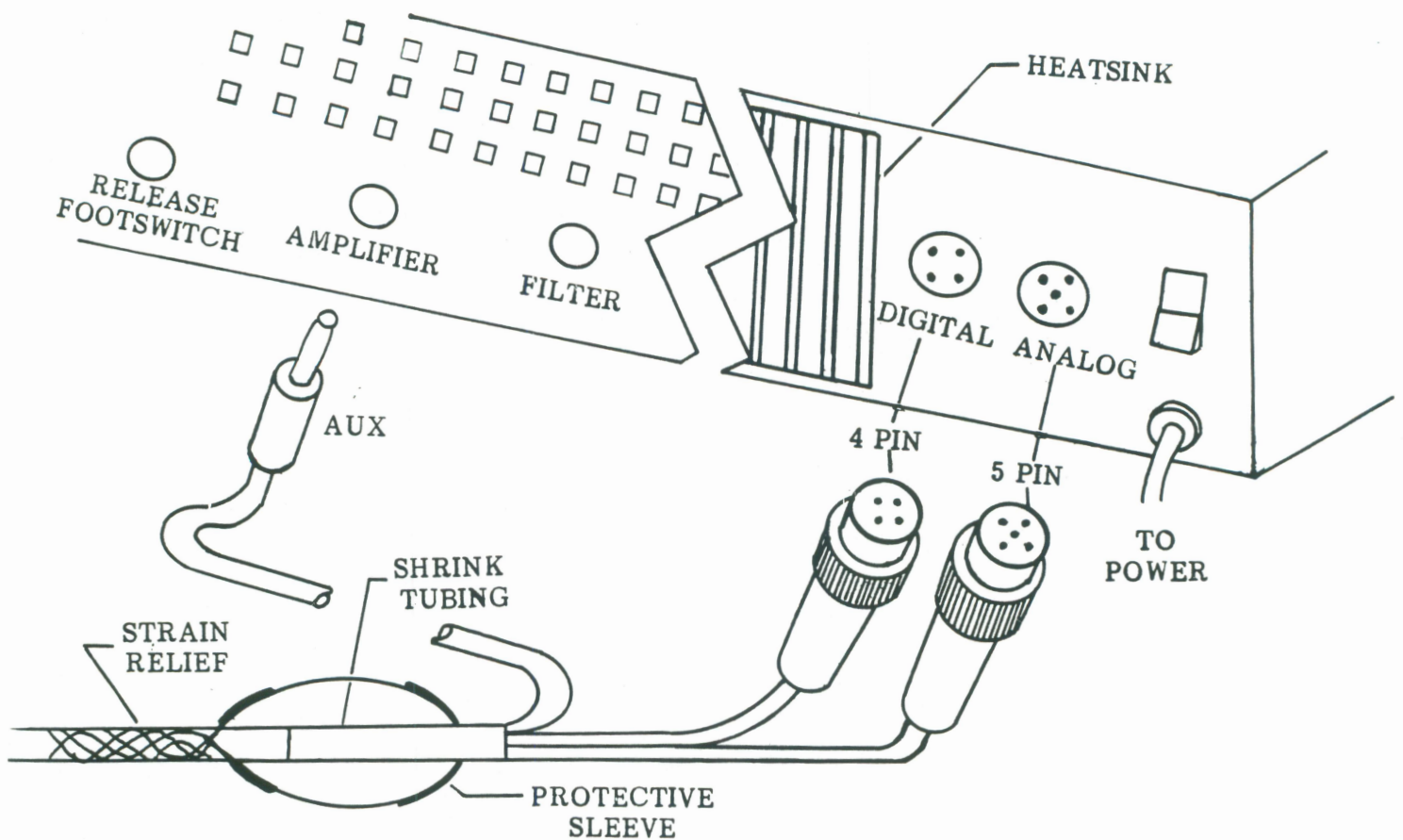
The Model 1001 Remote Keyboard for the Prophet-5 gives four octaves of polyphonic control in a portable, guitar-style controller. The 1001 does not interfere with normal operation of the Prophet-5: both keyboards may be used simultaneously. The 1001 includes miniature PITCH and MOD wheels, plus a third wheel (AUX) which can control the Prophet through its FILTER or AMPLIFIER CV inputs, or control another synthesizer or effect. In addition to the eight PROGRAM SELECT switches with integral LED indicators, five independent BANK LED switches allow completely random program access.

If you intend to frequently transport this product, we recommend you acquire a professional "road" case for it. These should be carried by your music dealer. If you can't find a case, please contact our Sales Department.

## CONNECTION TO PROPHET-5

IMPORTANT! First switch off the Prophet-5's power. If there is any chance power will be switched-on while connecting the 1001, unplug the Prophet's power cable.

1. As shown on the next page, connect the 4-pin DIGITAL cable plug to the Prophet's DIGITAL jack, then connect the 5-pin ANALOG plug.
2. If desired, connect the AUX wheel phone jack to FILTER or AMPLIFIER CV IN, or some other destination. (This output ranges 0 - +7.5V.)
3. To protect this end of the cable, a strain relief loop is provided. This can be secured to any suitable post.
4. Connect cable to 1001.
5. After connection, switch the Prophet's power on. The 1001 will "come-up" after a short delay. While the Prophet is in TUNE, if you press a key or PROGRAM SELECT, an LED on the 1001 will flash--until the Prophet comes out of TUNE.



**WARNING! SWITCH POWER OFF BEFORE CONNECTION.**

## PLAYING

The included neck strap is attached to the 1001 with spring-lock devices. Pull the center knob to release the strap.

The 1001 is now ready to play. Besides keyboard length, there are a few differences between this controller and the Prophet-5 itself. Use of the new BANK switches is straightforward. You only need to remember that the 1001 programmer LEDs only show what program was last selected on the 1001. In other words, if you have selected 2-1 on the 1001, the Prophet will play in 2-1 and show 2-1 on its PROGRAMMER LEDs. But if you then select 3-3 on the Prophet, the 1001 will still show 2-1 (while it plays in 3-3).

When used with Prophet-5s with 120-program memory, the 1001 can only access programs in the current 40-program file. Files can only be switched on the Prophet.

To TUNE the Prophet from the 1001, press BANK SELECTs 1 and 5 simultaneously.

It is not possible to defeat Prophet voices from the 1001. Voices can only be defeated on the Prophet.

Instead of having a center detent, the PITCH wheel normally bends up only, with a spring return to "0." The PITCH and MOD wheels are additive. That is, the overall PITCH or MOD is always adjustable both by the Prophet and the 1001. So when switching between controllers, check that you leave the wheels in their normal (off) positions.

## ROUTINE MAINTENANCE

The keyboard uses self-cleaning, gold-plated contacts, but occasionally a key may become "scratchy" or intermittent because of dirt or oxidation. If this occurs, remove the keyboard (as directed below), and wipe the contacts with an isopropyl alcohol- or freon-wetted cotton swab. Don't use any abrasive techniques, as this will simply remove the gold plating.

To remove the keyboard, first remove the uppermost screw through each wooden end-plate. Then remove 7 screws along rear upper edge, and carefully lift-off top panel assembly. After removing its five mounting screws in the chassis, turn the keyboard over to expose the contacts.

The connector specifications below and wiring list for the Model 821 cable, on the next page, will aid cable repairs.

### Connector Specifications

<u>SCI Part No.</u>	<u>Description</u>	<u>Mfg./Part No.</u>
--Model 821 Cable--		
P-001	AUX plug	1/4" mono phone jack, standard
P-053	4-pin DIGITAL plug	SWITCHCRAFT SL-40-4M
P-054	5-pin ANALOG plug	SWITCHCRAFT SL-40-5M
P-057	10-pin plug	HIROSE RM15TPD-10P
--Model 1000 Prophet-5--		
J-053	4-pin DIGITAL jack	SWITCHCRAFT SL-17-4F
J-054	5-pin ANALOG jack	SWITCHCRAFT SL-17-5F
--Model 1001 Remote--		
J-057	10-pin jack	HIROSE RM15TRD-10S

To disassemble the P-053 and P-054 DIGITAL and ANALOG plugs: grip the black housing; press-in the spring visible on one side of the metal shield; slide shield back.

To disassemble the P-057 10-pin plug, first remove the 2 screws holding the cable grip. Note that one of the screws secures a ground wire from inside the plug. Once you open the plug, you will have to lengthen this ground lead so that the plug can be properly reassembled. Turn the coupling ring to access the allen set screw (.05 in.=1.27 mm), and remove the screw. Hold the plug housing with pliers, and unscrew the shield (turn counter-clockwise). When reassembling plug, remember to pass the ground wire out of the shield and ground to cable-clamp screw.

# SEQUENTIAL CIRCUITS INC

WIRE LIST WL 820-I-0

WIRING HARNESS NO.  
820/821

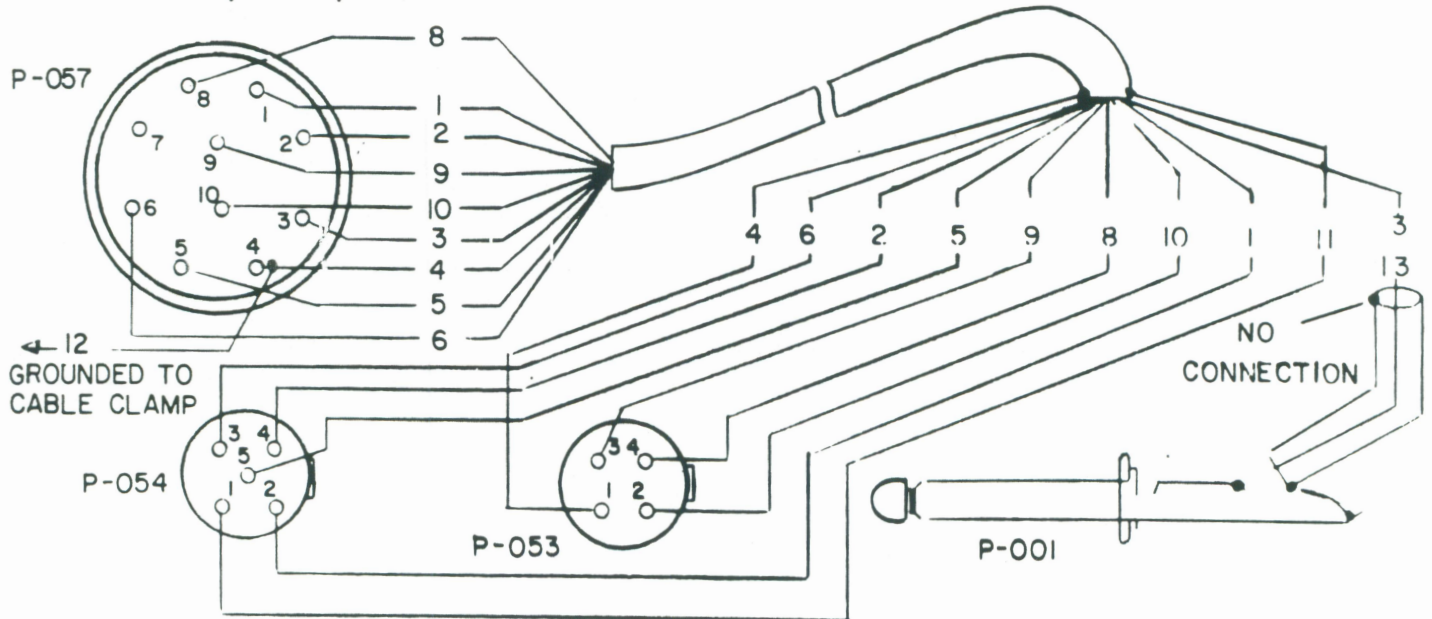
NEXT ASSY.  
1001 CONN CABLE

DATE  
12-17-81

MODEL  
820/821

PAGE 1 OF 1

NOTE: HEATSHRINK OVER ALL PINS ON  
P-057, P-054, P-053



WIRE NO.	SIZE	COLOR	LENGTH	FROM	TO	REMARKS
1		BLACK	21/41"	P-057 PIN 1	P-054 PIN 2	MOD
2		WHITE	"	" 2	" " 4	PITCH
3		RED	"	" 3	WIRE 13	AUX
4		SHIELD	"	" 4	P-053 PIN 1	GND
5		BROWN	"	" 5	P-054 " 5	-V
6		BLUE	"	" 6	" PIN 3	+V
7						NOT USED
8		YELLOW	"	" 8	P-053 PIN 4	TX DIS
9		VIOLET	"	" 9	" " 3	UDATA
10		GRAY	"	" 10	" " 2	UCLK
11		GREEN	9"	WIRE 4	P-054 PIN 1	GND
12		GREEN	2"	P-057 PIN 4	P-057 CASE	GND
13		COAX	30"	WIRE 3	P-001 TIP	AUX
		SHRINK	3/8"			OVER EACH PIN

SCI P/N	DESCRIPTION	QTY
<u>SPK-C-01-0</u>		
C-002	10pF 50V Disc	5
C-005	200pF 50V Mylar	5
C-008	.001 uF 50V Mylar	10
C-012	.01 uF 50V Mylar	10
C-014	.02 uF 50V Mylar	5
C-018	.22 uF 35V Tant	5
C-019	.47 uF 35V Tant	5
C-020	1.0 uF 25V Tant	5
C-021	2.2 uF 25V Tant	10
C-024	1000 uF 25V Elect	2
C-025	2200 25V Elect	2
C-028	6300 uF 25V	2
C-031	10 uF 10V Tant	10
C-032	47 uF 20V Tant	10
C-036	10 uF 25V Tant	5
C-037	10000 uF 35V	1
C-038	150 pF Poly	5
C-039	1000 pF Poly	15
C-040	10000 pF 50V Poly	15
C-041	.1 uF 50V Mylar	2
C-042	2.2 uF 25V Non-Polar	5
C-043	.039 uF 50V Mylar	5
C-045	.1 uF 50V	25
C-046	.0056 100V Mylar	2
C-047	120 pF Disc	2
C-048	.047 uF 50V Mylar	2
C-049	150 pF Disc	5
C-050	1 uF 10V Elect	5
C-051	2.2 uF 10V Tant	2
C-052	2.2 uF 15V Elect	2
C-055	47 uF 35V ELect	10
<u>SPK-D-01-0</u>		
D-001	1N4002 100V 1A	5
D-004	MR501 100V 3A	5
D-005	1N914	20
D-006	6V 1W Zener	2
<u>SPK-E-01-0</u>		
E-017	SQUARE FUSE HOLDER	2
E-018	FUSE HOLDER CAP	4
E-039	2.4576 CRYSTAL	2
E-040	2.9V LITH. BATT.	2
E-051	3/4 A SLO-BLO FUSE	5
E-079	BUS BAR	2
E-094	470 uH INDUCTOR	2

SPK-E-02-0

E-014	12" 16-PIN RIBBON	1
E-033	2" 34 COND RIBBON	1
E-034	8½" 60 COND RIBBON	1
E-071	40-PIN RIBBON	1
E-072	22" 20-PIN EDGE RIBBON	1
E-074	14" 60-PIN RIBBON	1
E-075	11" 16-PIN RIBBON	1
E-076	42" 16-PIN RIBBON	1
E-077	22" 20-PIN RIBBON	1
E-078	2.75" 60 COND RIBBON	1
E-080	16-PIN RIBBON	1

SPK-I-01-0

I-008	7474 DUAL FF	3
I-101	74LS00 QUAD NAND	1
I-102	74LS02 QUAD NOR	1
I-103	74LS04 HEX INV	1
I-104	74LS08 QUAD NAND	1
I-117	74LS138 3-8 DECODER	4
I-122	74LS155 2L-4L DEMUX	1

SPK-I-02-0

I-201	4001 QUAD NOR	1
I-205	4013 DUAL FF	1
I-206	4016 QUAD ANA SW	5
I-209	4049 HEX INV/DRVR	3
I-211	4051 8-IN ANA MUX	5
I-216	4503 HEX 3-STATE BUFF	3
I-218	4514 4-16 DEMUX	1
I-227	4042 QUAD LATCH	1
I-228	4174 HEX LATCH	2
I-229	4556 DUAL 2-4 DEMUX	2
I-230	74C02 QUAD NOR	3
I-233	14066B QUAD ANA SW	5
I-237	14504 HEX LEVEL SHIFT	5
I-240	74C00-4	5

SPK-I-03-0

I-025	Z-80 CPU	1
I-033	2114 1024x4 RAM	2
I-035	2651 (2661) USART	1
I-039	8021 MICROCOMPUTER	1
I-042	2164 64K RAM (5V)	2
I-043	6116 LP	1
I-226	6508 CMOS 1Kx1L RAM	8
I-238	6514 4K CMOS RAM	2
I-414	8253 TIMER	1
I-503	XO-12C 5 MHZ CLOCK	1

SPK-I-04-0

I-239	ICM 7555 TIMER	1
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I-301	311 PRECISION COMPAR	1
I-302	330 QUAD COMPARATOR	1
I-303	1458 DUAL OP AMP	2
I-306	3080 TRANS COND AMP	2
I-312	TL082 DUAL BI FET	5
I-313	LM348 QUAD 741 OP AMP	5
I-317	NE5534	2
I-323	LF356 FET OP AMP	1

SPK-I-05-0

I-308	2020 DUAL VCA	5
I-309	2030 VCO	2
I-310	2040 VCF	3
I-311	2050 ENV GEN	5
I-314	LF13202N QUAD ANA SW	3
I-315	MM5837N NOISE SOURCE	2
I-316	ADC MC8BC 8BIT A-D	1
I-319	3310 ENV GEN	5
I-320	3320 VCF	3
I-321	3340 VCO	5
I-322	3280 DUAL OP AMP	5
I-502	16-BIT DAC 71 CSB	1
I-504	AD558 8-BIT DAC	2
Z-040	GOOPED 2030	5

SPK-I-06-0

I-401	723	1
I-403	78L05 5V	2
I-405	78L15 15V	2
I-406	78M15 15V	5
I-407	79L15 -15V	2
I-408	79M15 -15V	5
I-409	MA78M12UC +12 .5A	2
I-410	MA7805VC +5V 1A(340T-5)	5
I-411	LM7905 -5V 1A	2
I-412	LM317T 15V 1A	5
I-413	LM320T -15V 1A	5
I-417	LM317K	2
I-420	LM337T -1-27V ADJ	2

SPK-P-01-0

J-001	1/4" PHONE SHORTINGS	3
J-007	16-PIN DIP SOCKET	25
J-014	113 MONOJACK	1
J-016	40-PIN DIP SOCKET	2
J-017	24-PIN DIP SOCKET	5
J-027	14-PIN DIP LO-PRO	20
J-038	8-PIN DIP SOCKET	15
J-039	T0-3 SOCKET	1
J-041	18-PIN DIP SOCKET	3
J-045	28-PIN DIP SOCKET	3
J-048	PHONE JACK MONO	3
J-049	PHONE JACK STEREO	3

P-013	60-PIN HEADER AP	1
P-022	GOLD PINS	5
P-028	GOLD SOC CONTACTS	5
P-031	POLARIZING PIN	2

SPK-M-01-0

M-003	T-03 INSULATOR	2
M-025	5/16" PHLHD S BLK	10
M-027	SHEETMETAL SCREW	3
M-066	LARGE SCI LABEL	1
M-067	LARGE "PROPHET 5"	1
M-068	SMALL "PROPHET 5"	1
M-069	SMALL SCI LABEL	1
M-070	6-32x1/2" SET SCREWS	2
M-071	6-32x1/4" PNHD MS2P	5
M-073	30-1 TENSION CLIP	1
M-079	KNOB TOP SPR CLIP BLK	3
M-080	KNOB TOP SPR CLIP SILV	1
M-081	43-66-2AP THERMALLOY	5
M-089	8-32x3/8" PNHD MS	5
M-093	8-32x1/2" PNHDSL T S	5
M-107	#411 NYLN SHLDWSHR	10
M-119	6/32x5/8" PNHD M/S BLK	5
M-121	6-32x1/4" FU PNHD S	5
M-156	6-32x3/8" CNTRS NK PHS	5
M-158	8-32x3/4" PNHDSL T S BLK	5
M-160	MEDIUM "PROPHET 5"	1
M-161	8-32x3/4" PNHDSL T S BLK	5
M-170	4-40 BLACK NUT	5
M-181	"PROPHET 10" LABEL	1
M-185	KNOB 1/8" SHAFT DIA	1
M-352	MOLDED WHEEL	4
M-357	KNOB	5
M-361	"PRO-ONE" LABEL	1

SPK-R-01-0

R-107	4.99K	10
R-108	10K	10
R-110	100K	10
R-113	30.1K	10
R-114	54.9K	10
R-115	301K	10
R-116	2.2M	10
R-117	10M	10
R-118	1K 3600PPM TELLAB	2
R-119	13.3K	10
R-121	1M	10
R-122	200K	10
R-123	487K	10
R-125	121	10
R-126	90.9K	10
R-128	182K	10



R-130	249K	10
R-139	1.82K	10
R-140	3.32K	10
R-141	4.75K	10
R-142	5.62K	10
R-144	20.0K	10
R-145	24.3K	10
R-146	26.7K	10
R-147	47.5K	10
R-149	121K	10
R-150	150K	10
R-151	162K	10
R-152	187K	10
R-156	243K	10
R-157	2.55K	10
R-158	1.24K	10
R-159	110K	10
R-161	24.9K	10
R-162	332K	10
R-163	18.2K	10
R-165	261K	10
R-167	52.3K	10
R-168	806K	10
R-169	13.0K	10
R-170	357K	10
R-171	475K	10
R-172	1.50K	10
R-173	7.50K	10
R-174	909K	10
R-175	154K	10
R-177	825K	10
R-178	715K	10

SPK-R-02-0

R-207	100K	2
R-208	100K LINEAR	2
R-209	1K	1
R-211	5K	5
R-212	100K	2
R-214	100K	5
R-215	5K	5
R-217	100K	5
R-218	10K	2
R-219	200K	2
R-221	10K	5
R-222	50K	2
R-225	25K	2
R-226	500K	1
R-228	100K (NO BUSHING)	5
R-229	100K (MINI)	1
R-300	39K x 8	2
R-301	22K x 15	2
R-303	47K x 15	2

SPK-S-01-0

S-025	SWITCH AC W/ RED LED	2
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S-028	SWITCH SRL LED BLK	10
S-029	SWITCH SRL LED GRAY	10
S-030	SWITCH SRL LED ORG	2
S-031	SWITCH SR GRAY	2
S-032	SWITCH 115/230V	2
S-046	SWITCH DPDT SLIDE	10
S-048	SWITCH POWER	5
S-049	SWITCH VOL SEL	1
S-051	J-WIRE	25
S-052	SWITCH DP4T ROTARY	6
S-053	2P3T SWITCH CUT TAILS	6
S-054	SWITCH POWER	2

SPK-T-01-0

T-002	2N3904 NPN	5
T-003	2N4250 PNP	10
T-011	3082 RCA	2

<u>KIT NUMBER</u>	<u>DESCRIPTION</u>	<u>COST</u>
SPK-C-01-0	CAPACITORS	86.00
SPK-D-01-0	DIODES	3.00
SPK-E-01-0	ELECTRICAL	30.00
SPK-E-02-0	CABLES	N/A
SPK-I-01-0	ICs TTL	5.00
SPK-I-02-0	ICs CMOS	28.00
SPK-I-03-0	ICs MICROPROCESSOR	195.00
SPK-I-04-0	ICs LINEAR	17.00
SPK-I-05-0	ICs SPECIAL	280.00
SPK-I-06-0	ICs V-REGULATORS	55.00
SPK-M-01-0	HARDWARE	23.00
SPK-P-01-0	CONNECTORS	49.00
SPK-R-01-0	1% RESISTORS	31.00
SPK-R-02-0	POTS TRIMMER	46.00
SPK-S-01-0	SWITCHES	84.00
SPK-T-01-0	TRANSISTORS	5.00

## PROPHET-5 REMOTE

## 22-0 GENERAL

The Model 1001 contains a microcomputerized keyboard plus voltage wheels for remote control of the Prophet. To transmit keyboard data, the 1001 uses the same data format as the sequencer. No USART is used; all data I/O being performed by the microcomputer itself.

## 22-1 THEORY OF OPERATION

See schematic SD001-1-1. The 1001 uses the Prophet-5 as power source. The +/-V dc voltages from the Prophet's back panel ANALOG jack enters through back panel connector J3, J2, then through P102-6 and -5. R116-19 are current-limiting resistors to protect the Prophet. U105-07 provide the regulated operating voltages.

Prophet-5 Rev 3.2 adds CV inputs for PITCH and MOD. R1 PITCH wheel is spring-loaded to return to "0" from a normally-upward bend. Its circuit contains "deadband" diodes D102/03 and buffer U101-1. R2 MOD is buffered by U101-7. And R3 AUX is buffered by U101-14, whose gain is adjusted by R105. Trim R105 so the AUX output is +7.5V when the wheel is fully advanced.

The principal Remote component is the 8748 EPROM microcomputer. The 8748 contains 1K x 8 bits of EPROM programmed with operating instructions, and 64 x 8 bits of data memory. All of the 8748's peripheral buses (P1, P2, DB) are active low. To scan the keyboard, the computer first sets DB2/DB3 high, inhibiting the switch matrix. It then sequentially pulls P10-17 low. Whichever keys held in each row, will pull the P20-27 lines low when they are sampled.

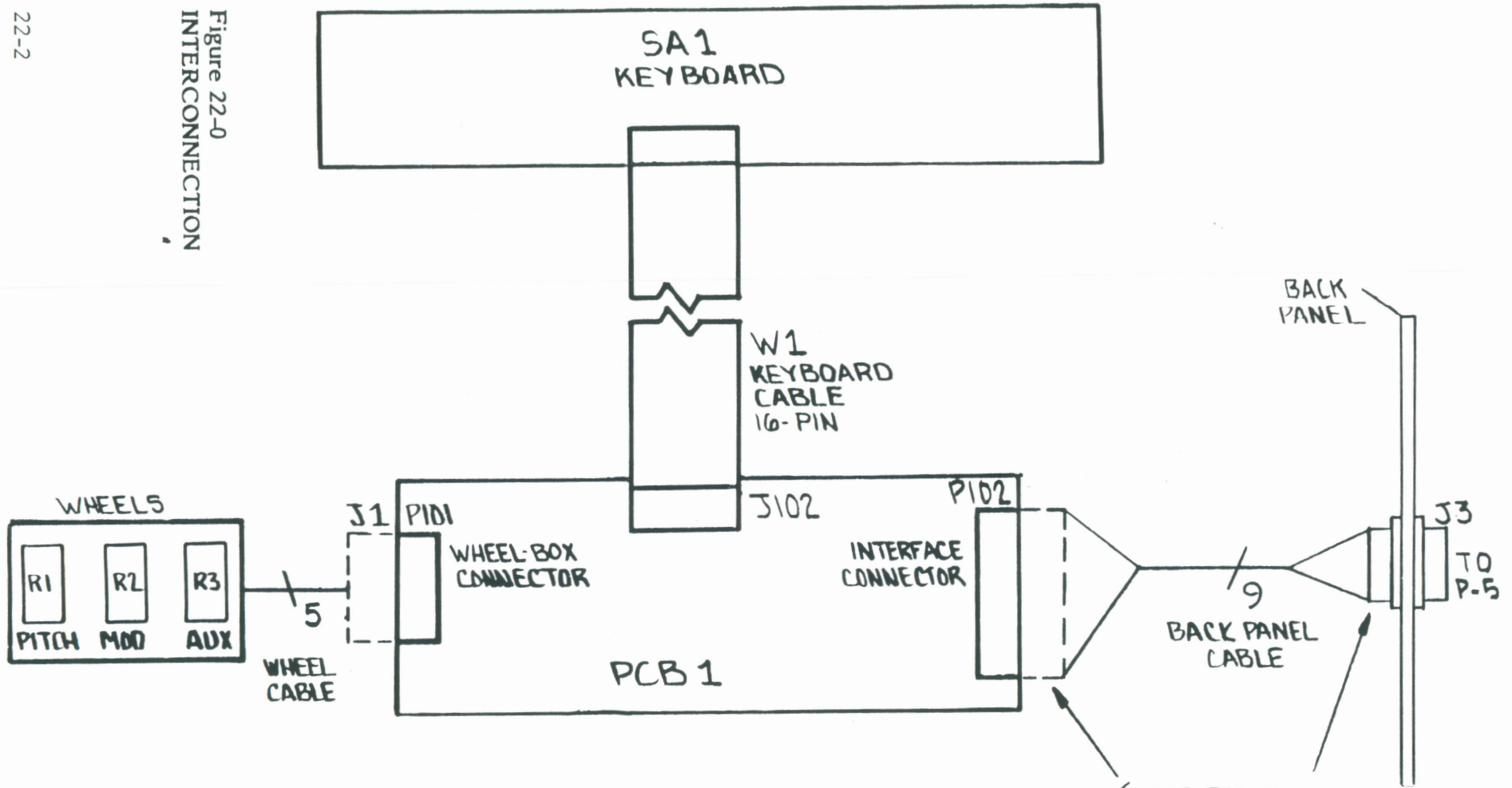
To read the switches, the computer strobes DB2 and DB3 low, and checks the resulting inputs on P20-27. To light the LEDs, U102/03 invert active-low data to active-high to drive the LED anodes. High outputs from DB0 and DB1 are inverted by U103-2 and -4, to sink the LEDs, through R106/07.

DB6 and DB7 are the CLOCK and DATA TO SYNTH outputs, inverted by U103-6 and -8. DATA FROM SYNTH is input through timer pin U104-1. The Prophet transmits the low -BREAK signal over this line, informing the 1001 when it is TUNING. Zener diodes D116/17 protect the circuitry from damage which could result from accidentally pushing the DIGITAL plug into the Prophet's ANALOG jack.

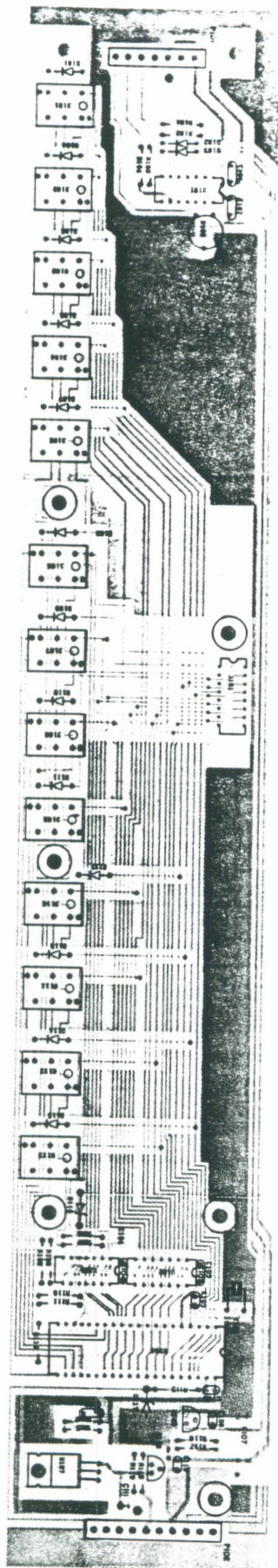
## 22-2 DOCUMENTS

Figure 22-0	Interconnect
PP001-1-1	Parts ID
SD001-1-1	PCB schematic

Figure 22-0  
INTERCONNECTION



CHASSIS	
LAST	NOT USED
J3	
R3	
SA1	
W1	



## 22-3 SERVICE

**CAUTION:** Switch off Prophet power before connecting the Model 1001.

### Functional Test

As you can see from the schematic, there is not very much of service interest in the 1001. A functional test consists of simply verifying that the keyboard, switches, LEDs, and wheels work:

1. All keys work without intermittent or scratchy operation.
2. All PROGRAM SELECT switches work reliably.
3. The Prophet goes into TUNE when Banks 1 and 5 are selected simulatneously.
4. While the Prophet is in TUNE and a switch or key is pressed on the Remote Keyboard, a random Program or Bank LED should blink until the Prophet comes out of TUNE.
5. The PITCH wheel should bend the pitch up at least a major third, but not more than a perfect fifth.
6. While holding down a key on the Prophet, disconnect the ANALOG plug from the back of the Prophet. The pitch should not change more than  $\pm 1/2$  semitone. Switch power off and reconnect the ANALOG plug.
7. The PITCH return spring should return the wheel to the end of travel every time it is released.
8. The MOD wheel should work as it does on the Prophet although the modulation range will be somewhat less than on the Prophet.
9. Connect the AUX plug to the Prophet's AMPLIFIER CV IN jack.
10. With the Prophet's VOLUME knob all the way up, the AUX wheel should be able to turn the volume all the way off.
11. Move AUX plug from AMPLIFIER to FILTER CV IN. Check operation.

If a problem develops or a test is failed and the cable could be at fault, try repeating the tests with a "known good" cable.

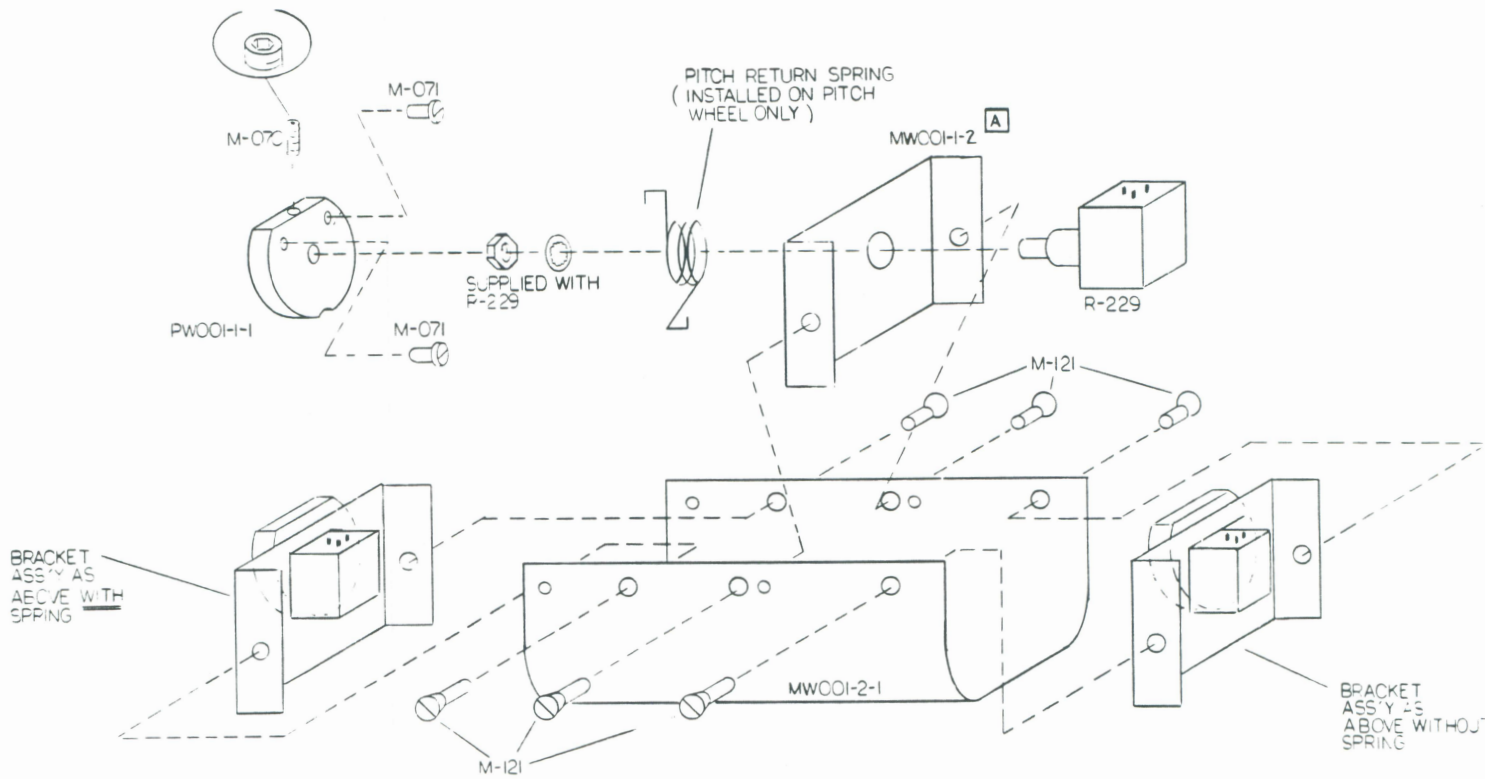
### Adjustments

The only trimmer is R105 AUX GAIN, which is normally set for a maximum +7.5V output.

DZ-188 illustrates the wheel box assembly. When replacing wheels or potentiometers, before tightening the wheel set screw on the pot shaft, make sure that the pot wiper is properly positioned. For the MOD and AUX wheels, adjust so when the wheel is fully counterclockwise, the buffered output reads +0.05 - 0.15V. When spring-held to minimum, the PITCH wheel buffered output should read between +/- 0.05V. This PITCH wheel adjustment will serve in the general case.

For specific pairs of 1001s and Prophet-5s, it is preferable that connecting the Remote will not at all detune the Prophet. For this result, the following directions will apply:

1. Warm-up the Prophet well and check that its PITCH wheel is centered (and MOD is at minimum).
2. TUNE it. Hold an appropriate A key, and set MASTER TUNE against the A-440 reference.
3. Switch power off briefly while you connect the 1001.
4. Switch Prophet power back on. When it completes tuning, again enable A-440 and hold the A key. Note: Don't readjust MASTER TUNE.
5. Adjust the 1001 PITCH wheel pot shaft so the A is in tune. (If the pitch is too high, turn pot counter-clockwise. Too low: clockwise.
6. Move 1001 PITCH wheel up and check for consistent, repeatable return to zero-beat.
7. When pitch return is satisfactory, secure wheel set screw.



NOTES

1. TIGHTEN SET SCREWS AS PER WHEEL BOX CALIBRATION PROCEDURE.
2. RETURN SPRING MOUNTED ONLY ON PITCH WHEEL ASS'Y

FIG 23-1

				<b>SEQUENTIAL CIRCUITS INC</b>			
				TITLE WHEEL BOX ASS'Y			
				DWN <i>Fulsom</i>		DATE 12-11-81	SIZE C
				DSN		MODEL No 1001	
				DWG		DOCUMENT No	
				APP <i>Fulbright</i>		1-4-81	
DATE	REV No	REVISION	LTR	ISS	SHEET 1 OF 1		



## 22-4 PARTS LIST

	821 20 FOOT CABLE (STANDARD)
	820 40-FOOT CABLE
J1	J-043 7-PIN MOLEX HOUSING (PINS: P-022)
J2	J-059 10-PIN MOLEX HOUSING
J3	J-057 10-PIN CABLE CONNECTOR
R1-3	R-229 100K POT
SA1	S-055 4 OCTAVE KEYBOARD
W1	E-075 11" 16-PIN RIBBON CABLE
C101-4	C-045 .1uF 50V
C105	C-020 1.uF 25V
C106	C-021 2.2uF 25V
C107	C-054 10uF 35V
C108	C-021 2.2uF 25V
C109	C-032 47uF 20V
C110	C-021 2.2uF 25V
C111	C-055 47uF 35V
D101-15	D-005 1N914
D116/17	D-006 6V 1W ZENER
DS101-13	SEE S101-13
J102	J-007 16-PIN SOCKET
P101	P-027 7-PIN RT. ANGLE (cut pin #2)
P102	P-059 10-PIN RT. ANGLE (cut pin #7)
<u>NOTE:</u>	<u>SCI #R-001 THROUGH R-092 ARE 5%</u>
	<u>R-101 THROUGH R-177 ARE 1%</u>
	<u>R-200 THROUGH R-228 ARE POTENTIOMETERS</u>
R101	R-025 100K
R102	R-026 200K
R103-5	R-025 100K
R106/7	R-018 47K
R108/9	R-010 2K
R110/11	R-012 10K
R112	R-026 200K
R113	R-025 100K
R114	R-178 715
R115	R-156 243
R116/9	R-046 5.1K
S101-13	S-029 GREY LED SWITCH SRL

U101 I-313 LM348 QUAD 741 OP-AMP  
U102/3 I-103 74LS04 HEX INVERTER  
U104 I-041 8748 CPU / EPROM  
U105 I-407 79L15 -15V VOLTAGE REGULATOR  
U106 I-405 78L15 +15V VOLTAGE REGULATOR  
U107 I-412 LM317T ADJ VOLTAGE REGULATOR

Y101 E-103 6 MHz CRYSTAL

J-016 40-PIN SOCKET

M-016 LARGE RUBBER FEET  
M-025 5/16" BLK FLATHEAD PHILLIP  
M-031 6-32 LW EX TOOTH  
M-081 MICA INSULATOR  
M-099 4-40 X 1/2" OD NUT  
M-107 #411 REG NYLON SHLDWSHR  
M-140 TIEWRAPS  
M-154 #8 FIBER WASHERS  
M-156 3/8" X 6-32 PHLP CNTRS NK  
M-158 8-32 X 1/2" BLK PANHDSL T  
M-192 #8 BLK OXIDE WASHER  
M-193 7/8" X 6-32 OVAL PHILLIPS  
M-194 5/8" #6 OVAL PHILLIPS NUT  
M-196 4-40 X 3/8" PHILLIPS BLK  
M-374 STRAPLOCKS  
M-369 HEATSINK THM 6070

MW001-1-2 WHEEL BRACKET  
MW001-2-1 WHEEL COVER  
MW001-3-1 FRONT PANEL  
MW001-4-1 CHASSIS

PW001-1-1 SMALL CONTROL WHEEL  
PW001-2-0 INSTRUMENT STRAP

WD001-1-1 RIGHT SIDE PANEL  
WD001-2-1 LEFT SIDE PANEL  
WD001-3-1 END CAP

**SEQUENTIAL CIRCUITS, INC.**  
**WARRANTY REIMBURSEMENT PROCEDURE**

**Warranty Verification**

The burden of warranty verification is on the customer. The customer must provide a dated receipt for the unit or the unit must have a valid Warranty Verification Tag.

**Warranty Verification Tags**

When SCI receives a Warranty Registration Card, a Warranty Verification Tag is sent to the customer. The customer attaches the tag to his/her unit. This tag is dated with the last day the warranty is valid. This tag is proof of Warranty Registration and no other verification is needed.

If the Warranty Verification Tag is not attached to the unit, the customer must provide a copy of the original Purchase Receipt. Telephone verification from a dealer is not acceptable, we must see a copy of the original receipt.

**Warranty Claim Forms**

All Warranty Claims must be submitted on SCI Warranty Claim Forms. Warranty Claim Forms are provided by SCI. Warranty Claims should be submitted to SCI within 30 days of the repair date. When Warranty Claims are received at SCI for payment, an equal number of blank forms are sent back. Additional Warranty Claim Forms are available upon request. Warranty Claim Forms must be completely filled out or they will be returned.

**Filling out Warranty Claim Forms**

Please do not write in any grey area on the form.

Customer Information

The customer's unit model and serial number as well as the customer's name and address must be included on the form. The date of purchase should have either the date on the customer's receipt or the date of expiration which is on the Warranty Verification Tag. If you use the expiration date, then write "TAG" in the box marked Proof of Purchase, otherwise write "RECEIPT" in the box.

Repair Data

When entering the repair data use as much detail as possible, this will help to give us an idea of what you did to correct a problem if the repair time seems excessive. Please fill in a time for each problem repaired, then write the total time in the appropriate box. Please do not enter any dollar amounts.

Parts

When parts are used in a repair they should be entered in the parts section. The SCI part numbers must be included along with the reference numbers, (found on the schematics) and the actual part number. The SCI part numbers are listed in the back of the Technical Manuals in the "PARTS" Section. The use of SCI numbers will help speed the processing of the Warranty Claims.

Parts that are used in a warranty repair will be replaced or the cost of the parts (the same price SCI charges you) will be refunded at SCI's option. All parts used must be attached to the Warranty Claim Form that they were used on. If the old parts are not returned there will be no replacement or refund. Large parts or parts being returned that you were not originally charged for, must be returned via RA #1410. These parts include EPROMs, keyboards, metalwork and PCBs. These parts should not be listed on the Warranty Claim Form. Please reference the original Parts Order number on your return package.

#### Freight

Freight is to be paid by the customer. If there are any cases where the freight is to be paid by SCI it must first be cleared by the SCI Service Department. If freight payment is to be authorized, you will be given an Authorization Number which should be included with a copy of the freight bill.

#### Units Returned for Factory Repair

If a unit is to be returned to the factory, the box at the bottom of the form should be checked. This applies even if the customer ships the unit. No unit should be returned to the factory without prior authorization.

#### **Limitations**

No repair should exceed 3 hours without prior authorization from the factory Service Department. If the Service Department authorizes overtime on the unit, an Authorization Number will be given. This number should be written in the appropriate box on the Warranty Claim Form. If no Authorization is given for a repair over 3 hours, then only 3 hours will be paid.

All keyboard repairs (cleaning, adjustments, or replacement of contacts) are limited to 3/4 hour. If a keyboard repair will exceed 3/4 hour the factory should be notified.

Freight damage is not covered under Warranty. If a unit has been damaged during shipping, the customer must file a claim with the carrier. No Warranty Claims will be paid on freight damaged units.

For other Warranty Limitations please consult the SCI Warranty Registration Card.

#### **Warranty Claim Payment Procedure**

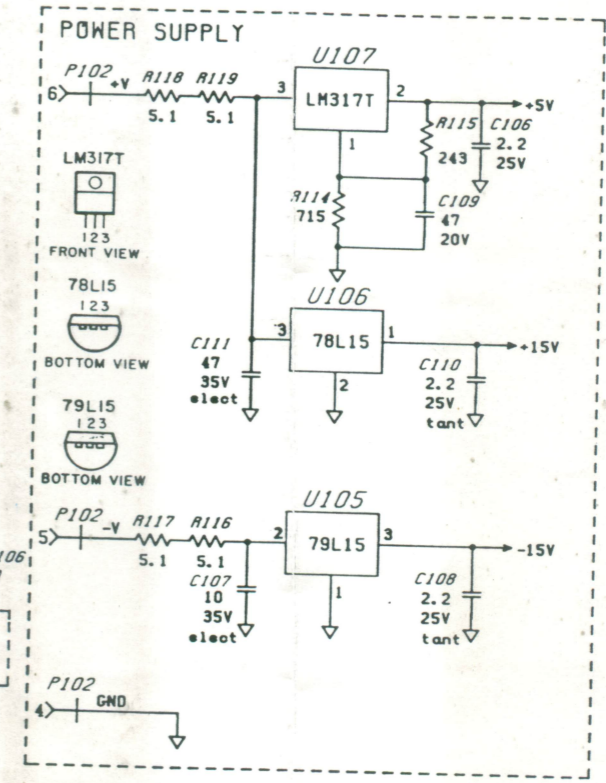
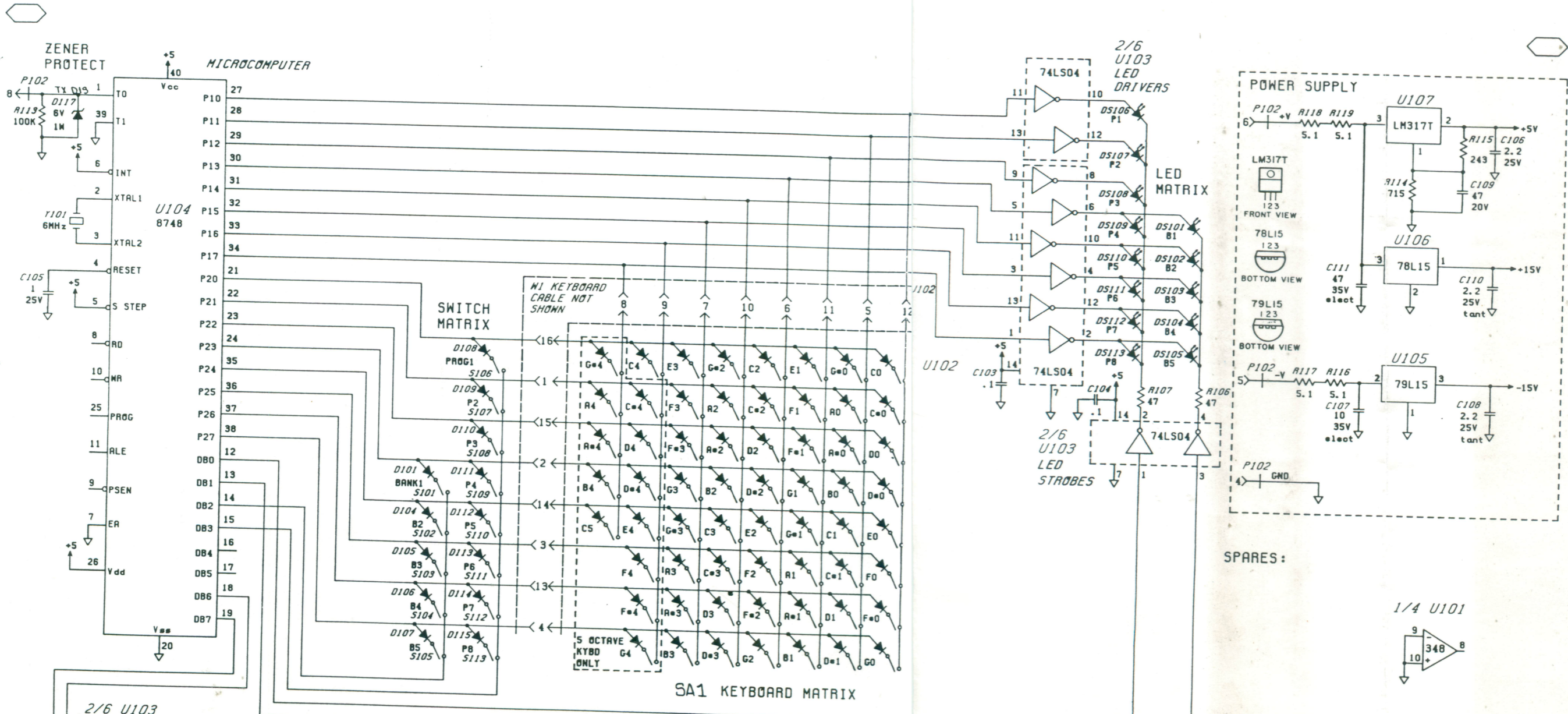
Warranty Claim Form is filled out by Authorized Service Center. The last copy of the form is removed and the rest of the form is sent to SCI.

The Warranty Claim is approved, reduced or rejected by the Field Service Representative or the Service Manager.

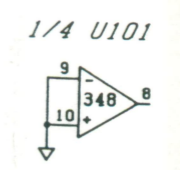
If the Warranty Claim has any replacement parts to be sent, the claim goes to the Parts Department. The replacement parts are pulled and shipped together with a copy of the Warranty Claim Form. The Warranty Claim Form is then sent to the Accounting Department.

If there are no parts to be shipped, the Warranty Claim Form is sent directly to the Accounting Department. A check is written to cover the Warranty Claim and sent together with a copy of the Warranty Claim Form.

**SCI 5/82**

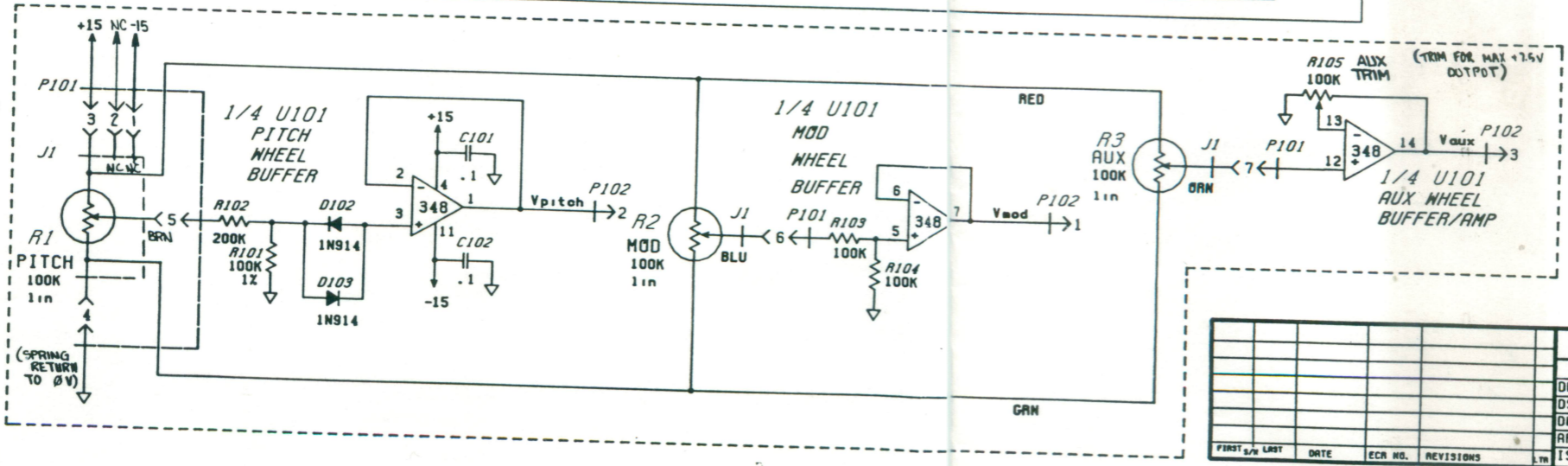
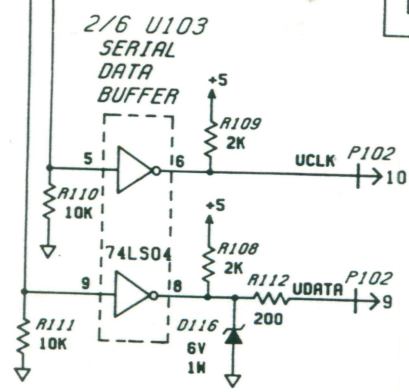


SPARES:



PCB 1

LAST USED	NOT USED
C111	
D117	
D113	
J102	J101
P102	
R119	
S113	
SA1	
U107	
Y101	



APPROVALS		DATE		TITLE	
DMN	JAY	SCOTT	06/15/82	REMOTE KEYBOARD	
DSN	BL	BL	06/15/82	REV	1001
DWG	BL	BL	06/15/82	REVISION	
APP	BL	BL	06/15/82	SD001-1-1	
FIRST	LAST	DATE	ECR NO.	REVISIONS	ISS

## SCI MODIFICATION and PRICE LIST

<u>Modification Name</u>	<u>Service Ctr. Cost</u>	<u>Customer Cost</u>
Prophet-5 REV 2 Cassette Interface	\$150.00	\$250.00
Prophet-5 REV 3.0 to REV 3.3	\$290.00	\$350.00
Prophet-5 REV 3.1 to REV 3.3	\$290.00	\$350.00
Prophet-5 REV 3.2 to REV 3.3	\$60.00	\$100.00
Prophet-10 Exatron to Braemar Tape	\$360.00	\$500.00
1005 Poly-Sequencer Ver 1&2 to Ver 5*	\$110.00	\$150.00
1005 Poly-Sequencer Ver 3 to Ver 5*	\$40.00	\$75.00
1005 Poly-Sequencer Ver 4 to Ver 5*	\$40.00	\$75.00
Prophet-5 (Rev. 1.0) Tune Mod	N/C	N/C
Prophet-5 (Rev. 2) Low Note Priority	\$30.00	\$50.00
Prophet-10 Ugly Mod	N/C	N/C
Other software updates on existing products	Cost of ROMS unless old ROMS returned	N/C (w/warranty service)

\*1005 Ver 1&2 have 16K RAMs require several cuts and jumps S/Ns 1-79, 107, 132-134  
 1005 Ver 3 has 64K RAMs requires 2 cut and jumps  
 1005 Ver 4 has 64K RAMs requires straight EPROM exchange  
 1005 Ver 5 has 64K RAMs with current expanded memory and grouping software

Tapes made on old Exatron tape drives can be copied onto Braemar tapes at SCI for \$15.00 each, plus \$2.00 shipping and handling per 10 tapes. This can only be done if the Service Center pulls out the Exatron drive and ships it with the tapes and cash for proper update.

### Conditions:

Modifications must be installed by SCI or an SCI Authorized Service Center.

All old parts must be returned. SCI Service Department will keep a log on all PCBs sent out, no additional PCBs will be sent out until old PCBs are returned. If old PCBs are not returned within 30 days the Service Center will be charged for the board at no less than twice cost.

Freight costs both ways will be paid by the customer.

There are no Dealer discounts on modifications.

Customer service and Service dept. only should make arrangements for mods.

## Contents

- Improved J-Wires
  - Cramolin Approved (ECR #176/PR #21)
  - Pitch/Mod Wheel Mounting
  - Pro-One Socket Removal
  - Pro-One Ground Strap (ECR #193)
  - Prophet-5 Software Update (ECR #178)
  - Prophet-5 Rev 3.0/3.1 (ECR #143)
  - Prophet-5/Prophet-10 Noise Source Change (ECR #167A)
  - Prophet-5 Rev 3 Modification Note (ECR #172A)
  - Remote Prophet Modification (ECR #175)
  - TL1016A System Technical Manual
  - Obsolete Field Bulletins
  - Warranty Claim Procedures
  - SCI Modification Price List
  - Spare Parts Kit Listings

### Improved J-Wires

In conjunction with its keyboard supplier, SCI has made a dramatic improvement in keyboard reliability. Although in life tests the original J-wire design typically lasts longer than 1,000,000 blows, there has tended to be some breakage after 250,000 blows--usually at the stress point where the J-wire is inserted into the PCB.

Recent production keyboards use new J-wires with an extended, flexible loop. Life tests on this design were discontinued after it survived 6,500,000 blows.

The new J-wires are not usable on older keyboards because different actuators (the hole block attached to the key) are used. The old actuators have one hole for the J-wire. The new ones have nine.

On older keyboards, broken J-wires are most easily fixed by soldering a replacement to the longer of the two wires remaining in the PCB after the break. Cut the J-wire to length of others.

### Cramolin Approved (ECR #176/PR #21)

SCI now recommends using Cramolin R-5 aerosol to clean, lubricate, and protect electromechanical parts. Spray a small amount of Cramolin aerosol into slider switches and toggle them several times. Pots can also be cleaned by spraying a short blast of Cramolin aerosol directly into them (and rotating, obviously).

The fluid inhibits oxidation, which is the major source of keyboard problems. Apply a very thin film of Cramolin to j-wires and bus bars on all keyboards using swab. Wipe off excess Cramolin with a lint-free cloth.

The spray may be ordered from SCI as part #Q-082 (6 oz.). Or contact the manufacturer: Caig Laboratories, P.O. Box J, Escondido, CA, 95025 (714) 743-7143.

### **Pitch/Mod Wheel Mounting**

The problem of cracked wheels was mentioned in the Pro-One Tech Manual (page 4-4), but perhaps not anywhere else. It applies to Prophets, too. Whenever you open the case, inspect both wheels carefully for cracks which usually occur perpendicular to the set screw. If you see a cracked wheel, replace it.

To cure the problem with cracking, the wheels are now injection-molded with polycarbonate resin. While virtually identical in appearance, the polycarbonate material will better resist stresses from the set screw.

The new wheels are molded with a 1½ degree angle on their edge to facilitate easier ejection from the mold. While this angle is slight, it may be objectionable to the player if the top of the wheel slopes away from, rather than toward the keyboard. Therefore when replacing wheels, orient them so the plastic bosses ("stops") face away from the keyboard.

Be sure to tighten the wheel set screws to a maximum of 2 inch-lbs.

### **Pro-One Socket Removal**

On Pro-Ones where ICs U107 (LM348), U108 (5532), and U114 (4049) are replaced, do not use a socket when replacing. A low profile is needed so that the pins won't short against adjacent metal. Check all machines. If a socket has been installed for U114, it may be necessary to remove it.

### **Pro-One Ground Strap (ECR #193)**

The standard grounding system in the Pro-One leaves it at the mercy of destructive AC currents which may result when the audio output is connected to faulty external equipment. To correct this syndrome, modify all Pro-Ones serviced as follows (refer to WL150, enclosed):

1. Remove the ground wire between J1 circuit board power connector and the right rear foot screw.
2. Install Faston ground lug (SCI #E-106, AMP #61365-1) on the right rear foot screw.
3. Solder an 8-inch (black) wire to the PCB ground plane at the right side of J8 Audio Out jack.
4. Connect ¼-inch Faston terminal (SCI # M-019) to wire.
5. When PCB is installed, connect ground wire to ground terminal on chassis.



### **Prophet-5 Software Update (ECR #178)**

Improving upon V.9.4, current production Prophet-5's use a new release, V.9.5, which has the following changes:

- A. All memory tests have been removed. For troubleshooting, use DEBUG TEST PROM (Z-1002) according to enclosed PR #7.
- B. Do not attempt to enter Oscillator Scale routine with the REL FTSW depressed (input grounded) or the CPU will crash.
- C. Improvements in Scale Mode have been made, which are explained on the enclosed page. Add this page to the latest Prophet-5 Operation Manual (Rev 3.3), CM1000D.

### **Prophet-5 Rev 3.0/3.1 (ECR #143)**

On Rev 3.0/3.1 Prophet-5s, there is a small electrical flaw. The Chip Select -CSOL4 going to U322 MISC LATCH (see middle of page 3-12 and 10-3, TM1000D) is pulled up by R316 not to +5V, as indicated, but to +15V. This could damage latch U322 or U319 74LS138 decoder which selects it.

To correct this problem, cut trace connecting R316 to +15V rail and jumper to leg of C315 which connects to +5V rail.

### **Prophet-5/Prophet-10 Noise Source Change (ECR #167A)**

Instead of the National MM5837, we are using the AMI S2688 noise source in some places. In such cases, pins 1 and 2 are jumpered. The 47K series resistor (R395, Prophet-5) is increased to 100K.

### **Prophet-5 Rev 3 Modification Note (ECR #172A)**

The reason certain Rev 3 Prophet-5s and an occasional Prophet-10 spontaneously put themselves into edit mode has been traced to the input of the ADC window comparator. The Vmux signal line couples stray signals into the highly-sensitive comparator inputs. This can be corrected by installing a 470K input resistor to lower the input impedance at the comparator.

On Prophet-5s, the resistor should connect from U365-9/10 to ground. On Prophet-10s, connect it from U3120-5/6. Both mods should be done on the top of the board (so the next person doesn't have to remove the board to see that it has been done).

### **Remote Prophet Modification (ECR #175)**

On Remote Prophets through serial number 100, it may be necessary to add some small washers at the three front keyboard mounting hole locations only, to prevent the keys from hitting the cosmetic strip under the keyboard.

The Remote Operation Manual CM1001A is enclosed for your reference.

## **1005 New Software**

An operation manual addendum is enclosed (CN1005-1), covering enhanced memory and software functions for the Prophet-5 and -10 Polysequencers.

## **TM1016A System Technical Manual**

Follow the change instructions on the first page, to convert your current Prophet-5 Technical Manual into the Prophet System Technical Manual. The new information documents the whole family of Prophet products. Of special interest are:

- A. Instructions for updating Rev 3.2 to 3.3. See Section 13.
- B. BALANCE control modification for Prophet-10. See Section 16.
- C. Documentation for latest Polysequencer versions 64K. See Section 18-21.
- D. Instructions for updating Prophet-10 Polysequencers with new mini-cassette deck, new software and enhanced memory. See Section 20.
- E. Documentation for Remote. See Section 22.

## **Obsolete Field Bulletins**

With the appearance of the System Technical Manual, Field Bulletins #1, #2, #4, #5 and #6 are now obsolete. All of the important information has been finalized in the System Manual.

Field Bulletin #3 has been obsoleted by the Pro-One Technical Manual (TL100A).

## **ENCLOSURES**

WL150

PR #7 DEBUG TEST PROM PROCEDURE

CM1000D, page 5-7

CM1001A

CN1005-1

TL1016A

Spare Parts Kit Listings

Warranty Claim Procedure

SCI Modification Price List

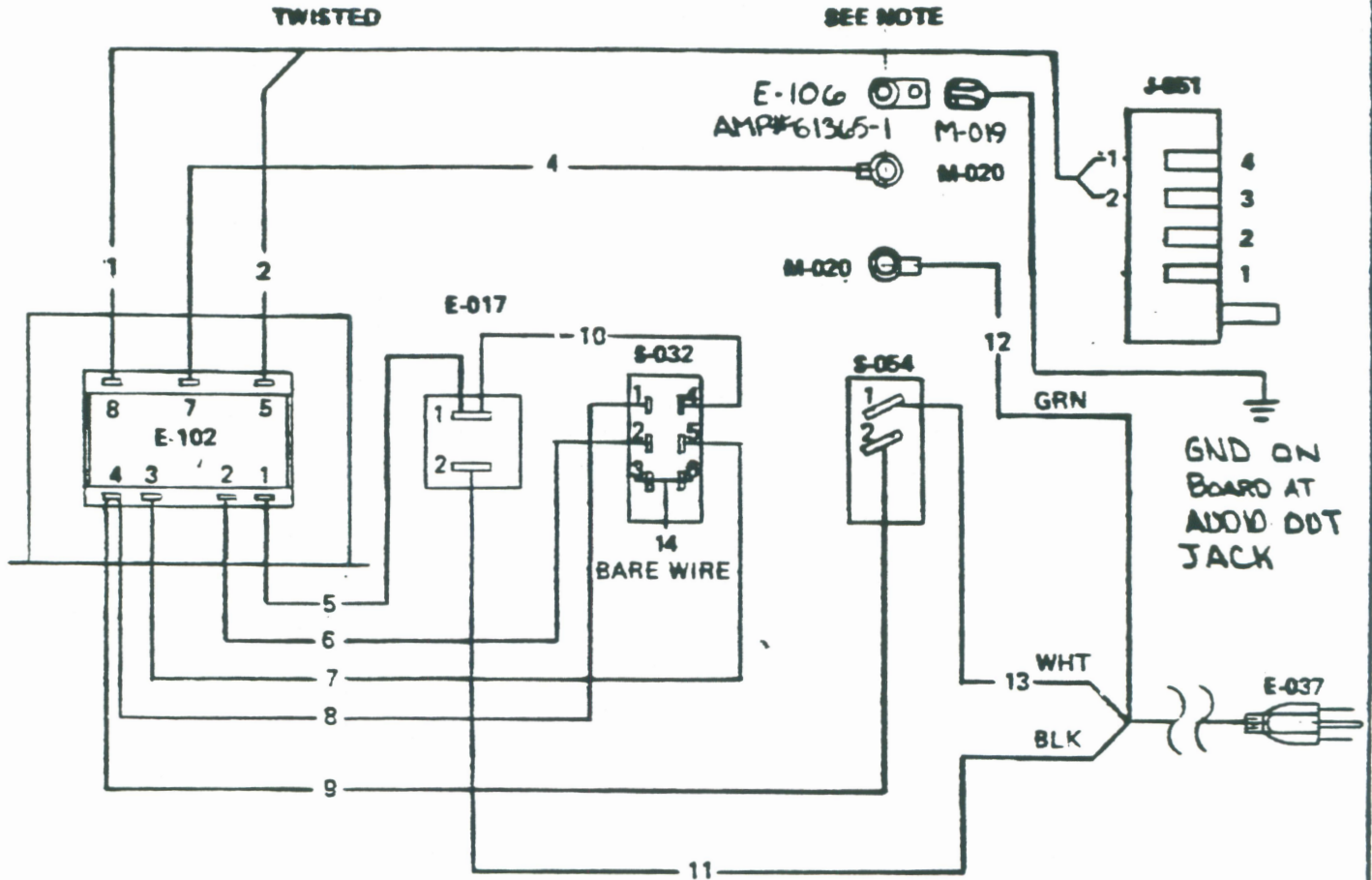
# SEQUENTIAL CIRCUITS INC

8851 NORTH FIRST STREET, SAN JOSE CA 95134 4081 946-8240

WIRE LIST **WL150**

DATE **7/7/81** PAGE **1** OF **1**  
 MODEL **100** ASSY NO. **E-100**

TITLE **BOTTOM PANEL WIRING** HARNESS NO. NEXT ASSEMBLY **CHASSIS**



NOTE:  
 1. ATTACH ALL M-020 TO RT. REAR FOOT SCREW

WIRE	SIZE	COLOR	LENGTH	STOCK No.	FROM	TO	REMARKS (Signal name, heat shrink, etc.)
1	18	RED	9	E-001	E-102(8)	J-051(4)	HEATSHRINK @ XFMR LUG
2	18	RED	8	E-001	E-102(5)	J-051(3)	" " "
3	18	BLACK	8	E-002	M-019	AUDIO OUT GND	THIS WIRE (M-019 ARE IN 2-14G (FOR PCB)
4	18	BLACK	5.5	E-002	E-102(7)	M-020	HEATSHRINK @ XFMR LUG
5	18	BLACK	4	E-002	E-017(1)	E-102(1)	HEATSHRINK BOTH ENDS
6	18	WHITE	4.5	E-063	E-102(2)	S-032(2)	" " "
7	18	RED	5	E-001	E-102(3)	S-032(5)	" " "
8	18	BLUE	5	E-001	E-102(4)	S-032(1)	" " "
9	18	ORANGE	8.5	E-064	E-102(4)	S-054(2)	" " "
10	18	BLACK	3	E-002	E-017(1)	S-032(4)	" " "
11	18	BLACK	2.5	E-037	E-017(2)	E-037	HEATSHRINK @ SWITCH LUG
12	18	GREEN	1	E-037	M-020	E-037	NO HEATSHRINK
13	18	WHITE	2.5	E-037	S-054(1)	E-037	HEATSHRINK @ SWITCH LUG
14	16		.5	E-008	S-032(3)	S-032(6)	BUSS WIRE - NO HEATSHRINK
15							
16							
17							
18							
19							
20							

Place test ROM in ROM 0 socket and turn on power to instrument. A "-" prompt will appear in the BANK display. This is the main monitor section of the test and the program switches assume the following functions.

#1 Branches to test of Scratch Pad RAM then enters memory test "Sub-monitor". If no bad bits are detected the "-" prompt is displayed in the PROG display. In this mode the prog switches assume the following functions.

- #1 Tests Scratch Pad RAM (1k bytes)
- #2 Tests 6116 NVRAM (2k bytes).
- #3 Tests 6514 NVRAM (1k bytes).
- #4-7 No function.
- #8 Returns to main monitor or from error status to sub monitor.

If any of these tests fail the failing bits are displayed in the PROG SW LEDs and the program is halted. This test restores the original contents of NVRAM if the Scratch Pad tests OK.

#2 LED TEST. Lights all LEDs in rapid succession.

- #8 Returns control to main monitor.

### #3 DAC TEST

During the DAC test the program switches assume the following functions.

- #1 Outputs 0.00000v to DAC. Make note of offset from 0. It should be less than .0041V.
- #2 Outputs 10.66667V to DAC. Adjust DAC gain to equal 10.66667V plus offset from #1.
- #3 Steps sequentially through bits of DAC. The values plus offset, +/- .3mV are as follows:

Bit 1	.000651
Bit 2	.001302
Bit 3	.002604
Bit 4	.005208
Bit 5	.010420
Bit 6	.020830
Bit 7	.041667
Bit 8	.083333
Bit 9	.166667
Bit 10	.333333
Bit 11	.666667
Bit 12	1.333333
Bit 13	2.666667
Bit 14	5.333333

- #8 Returns control to the main monitor.

### #4 SAMPLE AND HOLD TEST

Outputs a constant 1.333V to all S/H's. Look for droop or noise on outputs of S/H's. SW #8 returns control to main monitor.

## TEST PROM CONTINUED...

### #5 ADC TEST

Performs an A to D conversion on one pot at a time.

SW #1 steps to next pot on Pot MUX.

SW #8 returns control to monitor.

### #6 I/O TEST

Toggles outputs of all IO ports.

SW #8 returns control to main monitor.

### #7 8253 TIMER TEST

Functional test of timer and associated circuitry. If the test passes it automatically returns to the main monitor with the "-" prompt displayed. If it fails it lights up the program switch LED's.

SW #8 returns control to main monitor from the failure mode.

### #8 USART TEST

Test of 2661 USART and associated circuitry. This test requires a hardware test jig to operate. The jig ties the RxD and TxD lines together and supplies a 625KHz clock to the USART.

If the test passes it returns automatically to the monitor and displays the "-" prompt in the bank LED display.

If the test fails the test halts and displays error information in the Prog switch LED's as follows:

LED	1=Data not transmitted.
LED	2=Received data does not match transmitted data.
LED	4=Parity error.
LED	5=Overrun error.
LED	6=Framing error.
LED	7,8=Not used.
LED	3=Data not recieved

SW #8 returns control to main monitor from the failure mode.

### 5-3 REVISED SCALE MODE OPERATION

This version of the Prophet-5 has three enhanced Scale Mode operations.

The tuning range in the Scale Mode for each note has been increased to +1, -1/2 semitone (approximately +94 to -50 cents) from nominal equal-tempered center. Existing Scale Mode programs will still work with no modification. Each note now has two ranges: Range 1 is -50 to about +44 cents. Range 2 is 0 to about +94 cents. At power up, all notes are in Range 1. After going into Scale Mode, turning a pot all the way clockwise will cause it to automatically switch to Range 2. You will hear the jump in pitch. Turning the knob counter-clockwise again, you can dial the exact pitch you want, and turning it completely counter-clockwise will cause a switch back to Range 1. (You will notice a random LED will light on the front panel when a knob is in Range 1. This LED has no useful meaning and can be ignored.) Scale Mode programs can still be recorded as usual.

For those with REV 3.3 machines (120 programs), a new feature has been added to allow more flexible operation in Scale Mode with the three files. A file can be independently selected in Scale Mode, so it is possible to have one file just for Scale Mode programs, and one for Patch programs. Additionally, moving Scale Mode programs between files is now easier—it's the same as in Patch Mode. Just switch to Scale Mode and follow the same instructions as given for regular Patch Mode File operations. Saving or loading programs to tape (either sequencer or regular cassette) always references the file selected in Patch Mode.

It is now possible to switch both Patch and Scale Mode programs in a sequence. The sequencer now remembers whether you were in Patch or Scale Mode when a program change was recorded, and when playing back, the changes will be loaded accordingly, although the actual front panel mode does not change. For example, say you are in Patch Mode when playing back a sequence. Patch Mode changes will be displayed in the front panel, but Scale Mode changes will not—even though you can hear the tunings change. To produce such a sequence, you would probably want to edit Patch Mode programs in on a second pass after recording the notes, then go out of Edit, switch to Scale Mode and enter another Edit cycle to add the Scale Mode changes. (Note: After power on, remember to enter Scale Mode and switch PRESET on before running sequences with Scale Mode changes.)