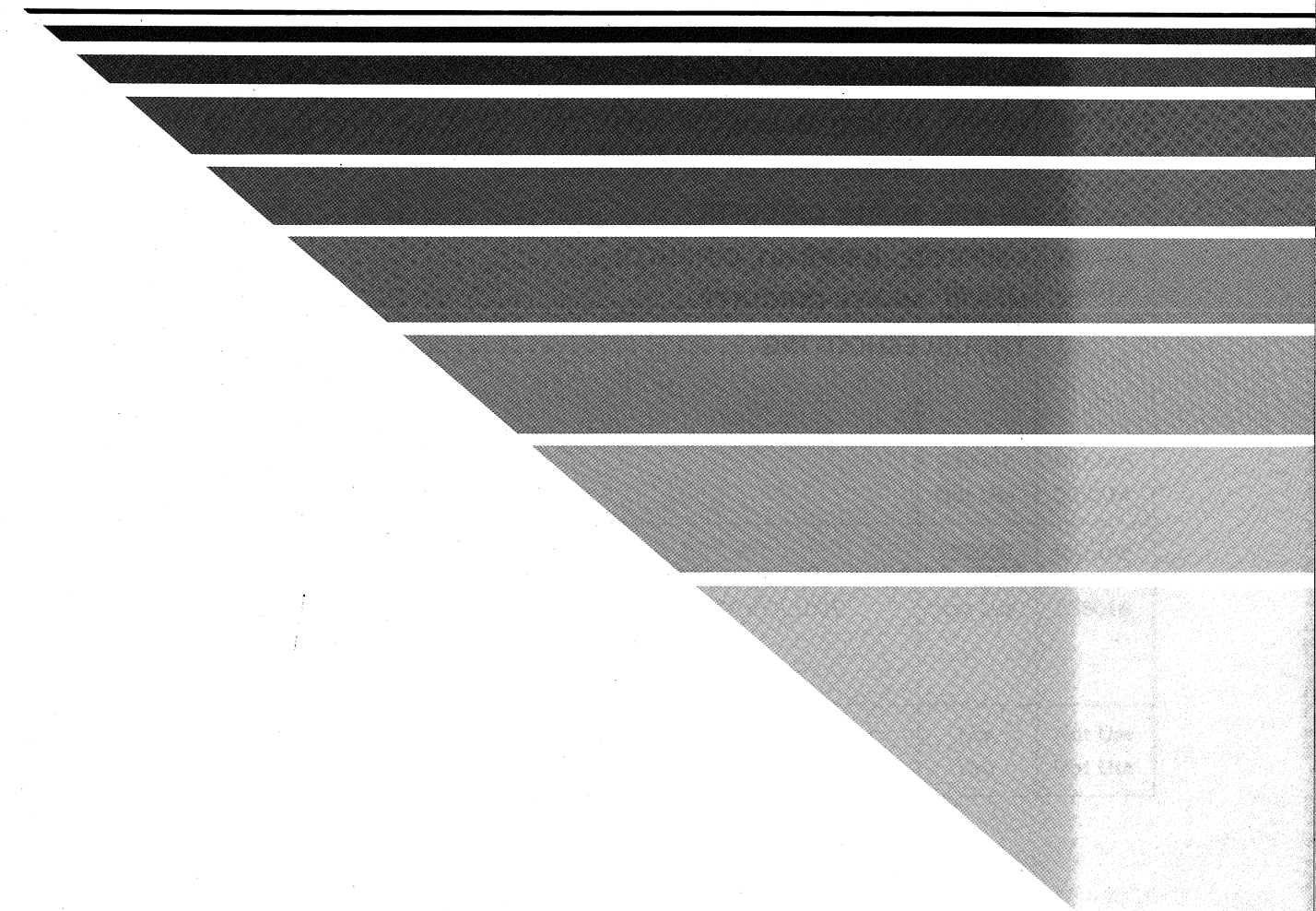


DIGITAL MULTI-DIMENSIONAL
SYNTHESIZER MODULE

KS/KS m

SCHEMATIC DIAGRAM



KAWAI Kawai Musical Instrument
Manufacturing Co., Ltd.

CONTENTS

1. K5/K5m P.W.B. INFORMATION.....	1
2. K5/K5m SPECIFICATION	2
3. K5 PARTS LIST.....	3
4. K5m PARTS LIST	4
5. K5 SEMICONDUCTORS LIST.....	5
6. K5m SEMICONDUCTORS LIST	6
7. K5 WIRING CONNECTION.....	7
8. K5m WIRING CONNECTION	8
9. BLOCK DIAGRAM	9
10. MI-003 CIRCUIT.....	10
11. MI-004 CIRCUIT.....	11
12. MI-005, MI-006, MI-008 CIRCUITS.....	12
13. MI-007, MI-009, MI-013, MI-015 CIRCUITS	13
14. MI-012, MI-014 CIRCUITS.....	14
15. K90PB102, K90PB101 CIRCUITS.....	15
16. MI-010, MI-011 CIRCUITS.....	16
17. TROUBLESHOOTING.....	17

NOTE: P.W.B. Layout Diagrams will be prepared in the separate volume.

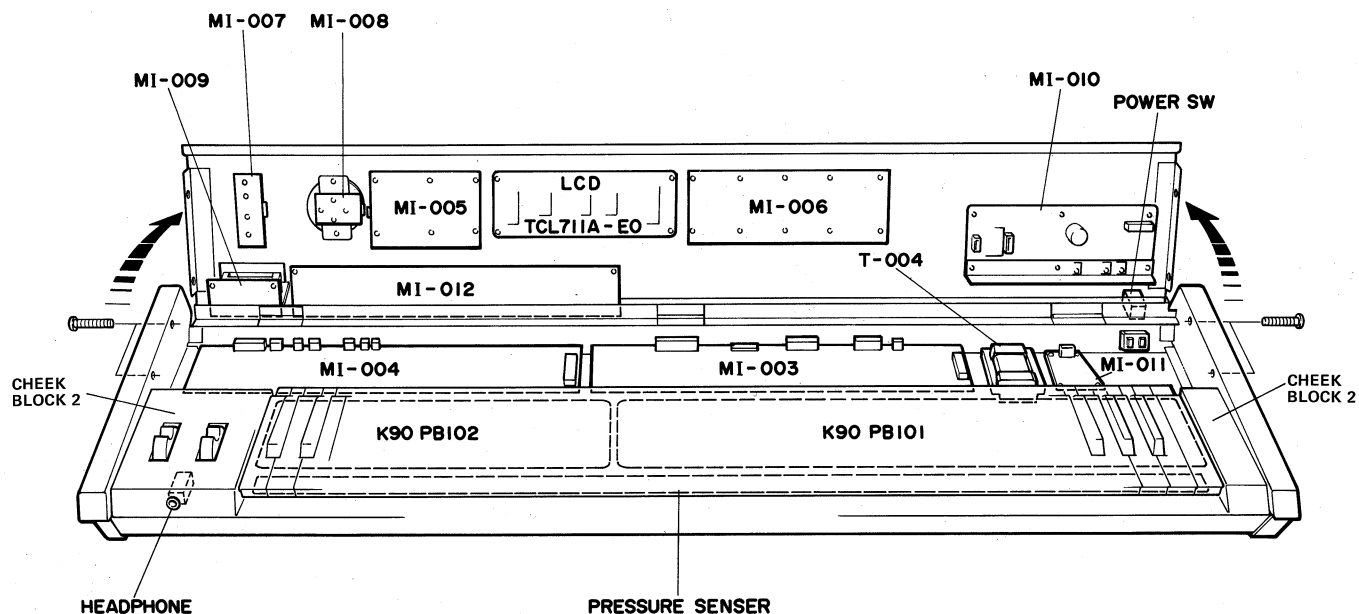
1. K5/K5m P.W.B. INFORMATION

P.W.B. Name	Description	Code No.	
		K5	K5m
MI-003-004 (1): All markets MI-003-004 (2): All markets	MI-003: CPU, PROGRAM ROM I/F, TONE RAM etc MI-004: TONE GENERATOR A/D CONVERTOR	236001 Not Use	Not Use 236009
MI-005-009 (1): All markets MI-005-009 (2): All markets	MI-005: PANEL SW (LEFT) MI-006: PANEL SW (RIGHT) MI-007: MASTER VOLUME MI-008: INCREMENT MI-009: CARD SLOT	236002 Not Use	Not Use 236010
MI-010-011 (1): } Japan (6): } (2): } U.S.A. (7): } (3): } Canada (8): } (4): } Australia, (9): } West Germany, Europe, U.K. (5): } 110/220V (10): } markets	MI-010: POWER SUPPLY MI-011: PRIMARY FUSE	236003 Not Use 236004 Not Use 236005 Not Use 236006 Not Use 236007 Not Use	Not Use 236011 Not Use 236012 Not Use 236013 Not Use 236014 Not Use 236015
MI-012 (1): All markets	MIDI JACK	236008	Not Use
MI-013-015 (1): All markets	MI-013: LCD CONTRAST VOLUME MI-014: MIDI JACK MI-015: PHONES JACK	Not Use	236016
K90PB101 : All markets K90PB102 : All markets	Keyboard SW Circuits Keyboard SW Circuits	Use Use	Not Use Not Use

2. K5/K5m SPECIFICATION

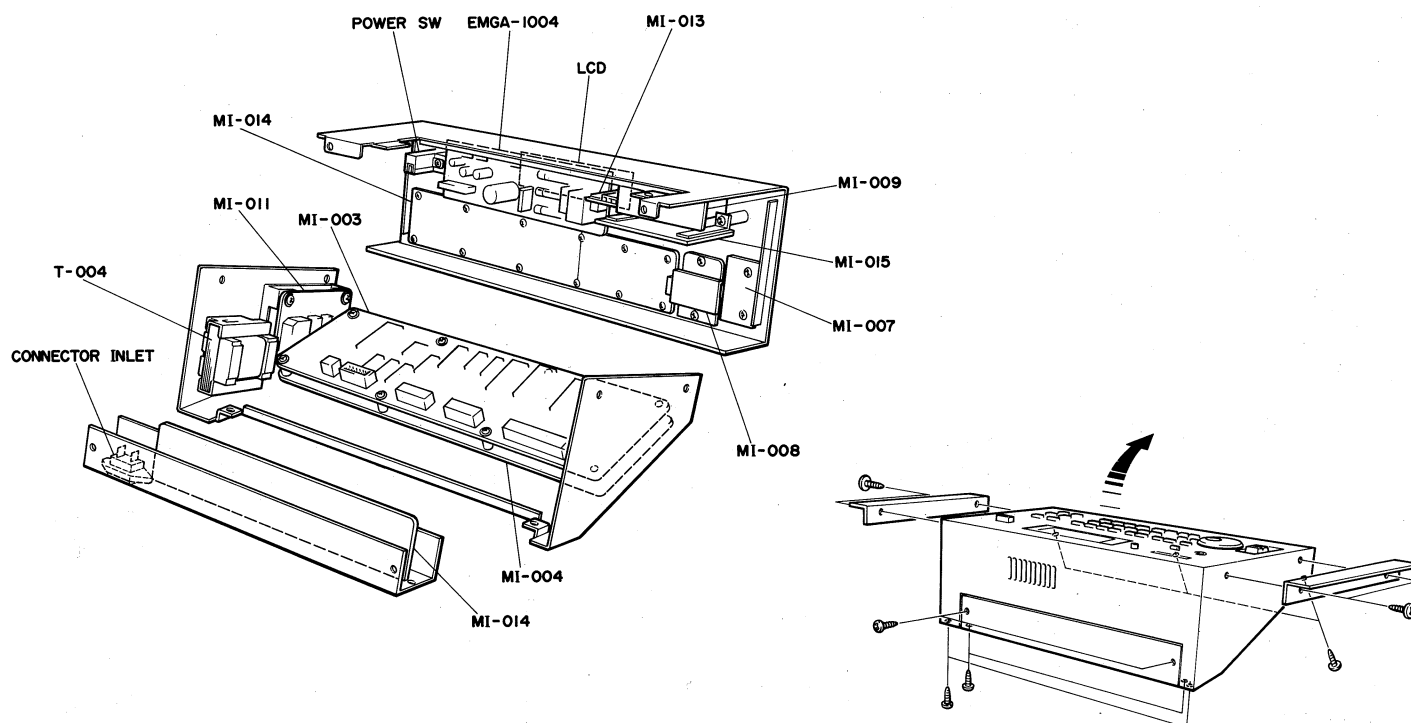
KEYBOARD	: 61 KEYS (K5 ONLY)
SOUND SOURCES	: 16 VOICES
PROGRAM CAPACITY	: INTERNAL 96 (48 TIMBRE/48 MACRO), CARD 96 (48 TIMBRE/48 MACRO)
TIMBRE EDIT PARAMETERS	: MODE — 1-127 HARMONICS/1-63 HARMONICS x 2 NAME COPY 1. DFG : COARSE, FINE, FIXED, PITCH BEND, PORTA SW, PORTA SPEED [DFG MOD] LFO DEP, WHEEL DEP, PRESS DEP, ENV DEP, AT VELO, PRESS LFO 2. DHG 1 : HARMONIC SELECT, INTENSITY, ENV ASSIGN, MOD ASSIGN [GROUP CONTROL PARAMETERS] ALL. ODD, EVEN. OCT, 5TH 3. DCF : ON/OFF, CUTOFF, SLOPE HARMONIC LEVEL [DCF MOD] CUTOFF MOD, SLOPE MOD, by VELO, LFO PRESS, KS 4. DCA : ON/OFF [DCA MOD] AT VELO LEVEL, RL VELO LEVEL, KS LEVEL, AT VELO SPEED, PRESS SPEED, KS SPEED, LFO MOD 5. DFG ENV : 12 PARAMETERS, LOOP (3-4 SEG.) 6. DHG ENV : 12 PARAMETERS, SHADOW, TOP PHASE 7. DCF ENV : 12 PARAMETERS, TOP PHASE 8. DCA ENV : 14 PARAMETERS, TOP PHASE 9. DFT : ON/OFF, CO-C10 10. DHG 2 : ACT, EFFECT (ENV 1-4) [DHG MOD] VELO, PRESS, KS, LFO 11. KS : LEFT DEP, BREAK POINT, RIGHT DEP 12. LFO : SPEED, DELAY, TREND, SHAPE (TRIANGLE, REV-TRI, SQUARE, REV-SQR, SAWTOOTH, REV-SAW, RANDOM)
MACRO EDIT PARAMETERS	: POLY LIMIT ON/OFF, (TRACK 1-15) TUNE, LEVEL, POLY, TIMBRE, MIDI CH, RANGE, VELO SW, OUTPUT ASSIGN
LINK PARAMETERS	: LINK NUMBER, LINK NAME
SYSTEM PARAMETERS	: TUNE, TRANSPOSE, VELO CURVE
MIDI PARAMETERS	: PARAMETER SEND, RCV EXCLUSIVE, MACRO CHANGE, DATA DUMP [MIDI RCV/TRANSMIT] VELO, PRESS, BEND, MOD, PEDAL, EXPRESSION, PORTAMENTO, PROGRAM CHANGE, HOLD, TUNE, VOLUME (RCV ONLY), OMNI SW (RCV ONLY)
SAVE/LOAD	: SAVE/LOAD
FUNCTION SWITCHES	: WRITE, FUNCTION
CONTROLS	: INCREMENTAL VALUE CONTROL, VOLUME, CURSOR
MEMORY CARD	: MEMORY CARD (DC-32)
FRONT PANEL	: HEADPHONE JACK, POWER SW
REAR PANEL	: DISPLAY CONTRAST, MIDI CONNECTORS (IN/OUT/THRU), ROTECT ON/OFF, HOLD JACK, LINK JACK, PEDAL JACK, EXPRESSION JACK, OUTPUT JACK (MIX, 1, 2, 3, 4)
DISPLAY	: 64 x 240 FULL DOT LCD DISPLAY
DIMENSIONS	: K5: 41" (W) x 13.5" (D) x 4" (H) (1,040 (W) x 339 (D) x 99 (H) mm) K5m: 19" (W) x 4.75" (D) x 7" (H) (483 (W) x 120 (D) x 177 (H) mm)
WEIGHT	: K5: 28 Lbs. (12.8 kg) K5m: 10.5 Lbs. (4.8 kg)

3. K5 PARTS LIST



Code No.	Name	Country	Pieces
236001	MI-003 (1) MI-004 (1)	All markets	1
236002	MI-005-009 (1)	All markets	1
236003	MI-010 (1) MI-011 (1)	Japan	1
236004	MI-010 (2) MI-011 (2)	U.S.A.	1
236005	MI-010 (3) MI-011 (3)	Canada	1
236006	MI-010 (4) MI-011 (4)	West Germany, U.K., Australia	1
236007	MI-010 (5) MI-011 (5)	110/220V markets	1
236008	MI-012 (1)	All markets	1
802388	Wheel	All markets	2
802413	Power SW: SDDJA1	All markets	1
802537	AC Inlet: PA-126-6.0	Japan, West Germany, U.K., Australia, 110/220V markets	1
803614	AC Inlet: PA-125	U.S.A., Canada	1
803488	Cheek Block 2 (R)	All markets	1
803503	Sideboard R	All markets	1
803504	Sideboard L	All markets	1
803505	Cheek Block 1 (L)	All markets	1
803507	Volume Cover	All markets	1
803509	Increment Knob	All markets	1
803510	Volume Knob	All markets	1
803519	Power Transformer: T-004-D	Japan	1
803520	Power Transformer: T-004-J	U.S.A., Canada	1
803521	Power Transformer: T-004-I	West Germany, U.K., Australia	1
803522	Power Transformer: T-004-E	110/220V markets	1
803523	Keyboard: ESK-90501	All markets	1
803595	Lithium Battery: CR14250SE-FT	All markets	1
803629	Memory Card: BS32C1-A 32K	All markets	1

4. K5m PARTS LIST



Code No.	Name	Country	Pieces
236009	MI-003 (2) MI-004 (2)	All markets	1
236010	AAW-6010 MI-005-009 (2)	All markets	1
236011	MI-010 (6) MI-011 (6)	Japan	1
236012	MI-010 (7) MI-011 (7)	U.S.A.	1
236013	MI-010 (8) MI-011 (8)	Canada	1
236014	MI-010 (9) MI-011 (9)	West Germany, U.K., Australia	1
236015	MI-010 (10) MI-011 (10)	110/220V markets	1
236016	MI-013-015 (1)	All markets	1
802537	AC Inlet: PA-126-6.0	Japan, West Germany, U.K., Australia, 110/220V markets	1
803614	AC Inlet: PA-125	U.S.A., Canada	1
802769	Power SW: SDDL	All markets	1
803507	Volume Cover	All markets	1
803509	Increment Knob	Japan, Canada, West Germany, U.K., Australia, 110/220V markets	1
803510	Volume Knob	All markets	1
803519	Power Transformer: T-004-D	Japan	1
803520	Power Transformer: T-004-U	U.S.A., Canada	1
803521	Power Transformer: T-004-I	West Germany, U.K., Australia	1
803522	Power Transformer: T-004-E	110/220V markets	1
803595	Lithium Battery: CR14250SE-FT	All markets	1
803629	Memory Card: BS32C1-A 32K	Japan, Canada, West Germany, U.K., Australia, 110/220V markets	1
910855	Panel	All markets	1
910865	Sideboard	All markets	1
910870	Rear Panel	All markets	1

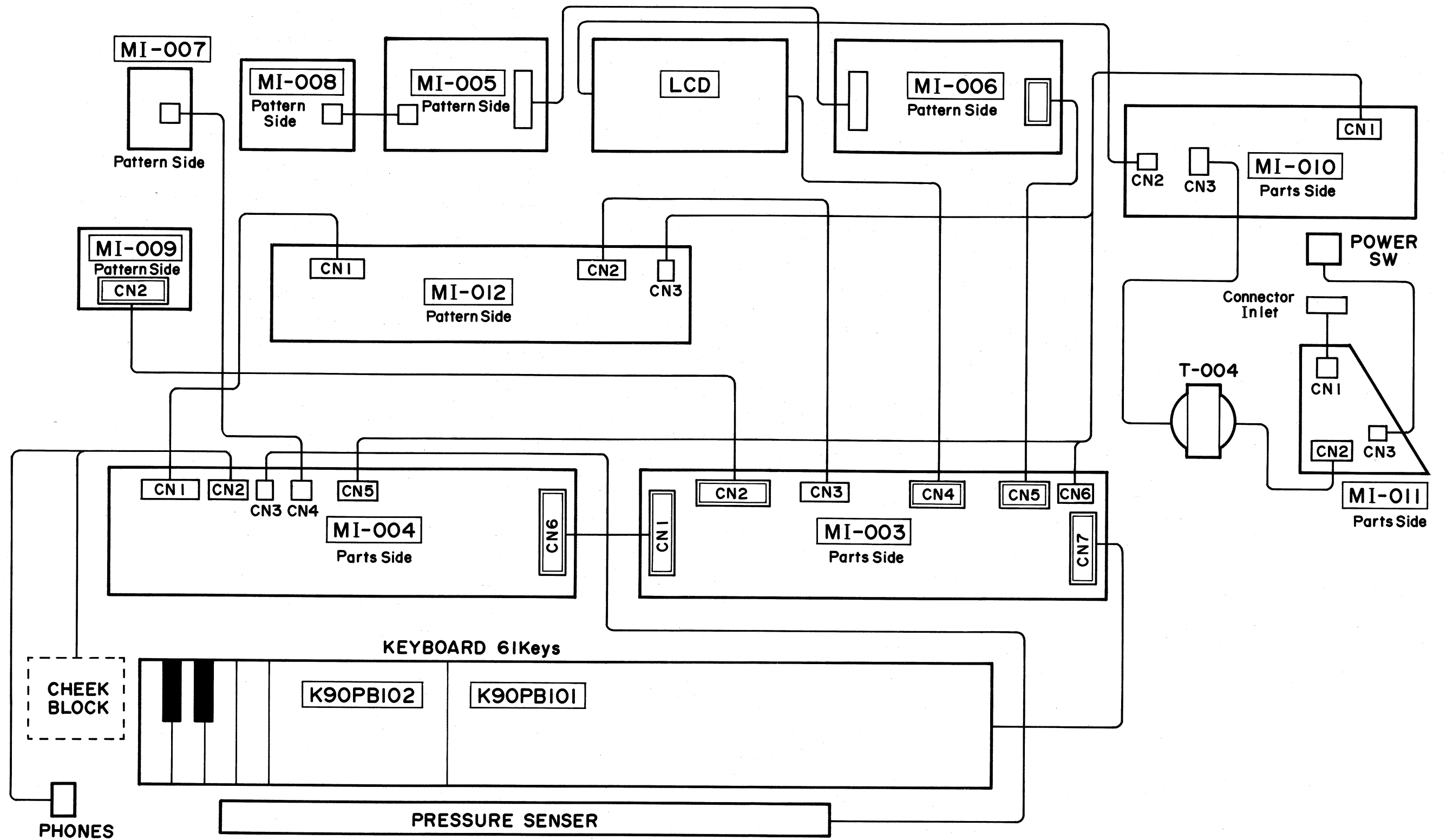
5. K5 SEMICONDUCTORS LIST

	Code No.	Name	Pieces
IC	706985	MB84053B	3
	707005	NJM-386D	1
	800715	5222L	2
	801926	TC74HC08	1
	802825	6116ALSP-15	2
	802832	MSM74HC04	2
	802833	MSM74HC32	2
	802834	MSM74HC74	2
	802835	MSM74HC139	1
	802838	MSM74HC244	5
	802842	MSM74HC373	1
	802931	MSM74HC02	1
	802932	MSM74HC138	1
	802934	MSM74HC240	1
	802935	MSM74HC245	3
	802936	MSM74HC365	2
	802937	TA8505P	1
	803005	MSM74HC00	1
	803397	PCM55HP	2
	803571	NJM-064D	4
	803572	M54534P	1
	803573	NE555	1
	803575	ADC0809CCN	1
	803576	74HC11	1
	803577	74HC352	2
	803578	74ALS74	1
	803579	74ALS137	1
	803580	74ALS139	1
	803581	CXK5864AP-70L	5
	803582	CXK58256AP-15LL	1
	803583	PD4464C-15L	2
	803584	PD70208G	1
	803585	MB63H158	1
	803586	MB87159	2
	803587	MB87160	2
	803588	MB651111U	1
	803589	MB653119A	1
	910785	MB83256-20 (MASKROM: P015)	1
	910790	MBM27C512-25 (EPROM: P019)	1
	910795	MBM27C512-25 (EPROM: P020)	1
	802888	AN7805F	1
	803568	AN7806F	1
	803569	AN7906F	1
	803570	79L15	1
	706951	SN74LS03N	1
	803006	MSM74HC14	1
TRANSISTOR	706102	2SA564R	1
	802508	2SC3331T	2
DIODE	802364	MA-700	3
	802898	DSK-10B	6
	706317	1S2473	32
	706319	RB-152	2
ZENOR DIODE	803591	HZS-2BLL	2
	803592	HZS-4ALL	1
SW	803618	TM1-01	32
INVERTER	803613	NI03-05-05	1
FUSE	803622	MT4 1A	1
	803623	(A)TSC 0.5A	3
	803624	(A)TSC 1A	1
	803625	MT4 0.5A	3
	803626	SET 0.25A	1
	803627	SET 0.5A	2
	803628	SET 1A	1
PHOTO COUPLER	803590	6N137	1

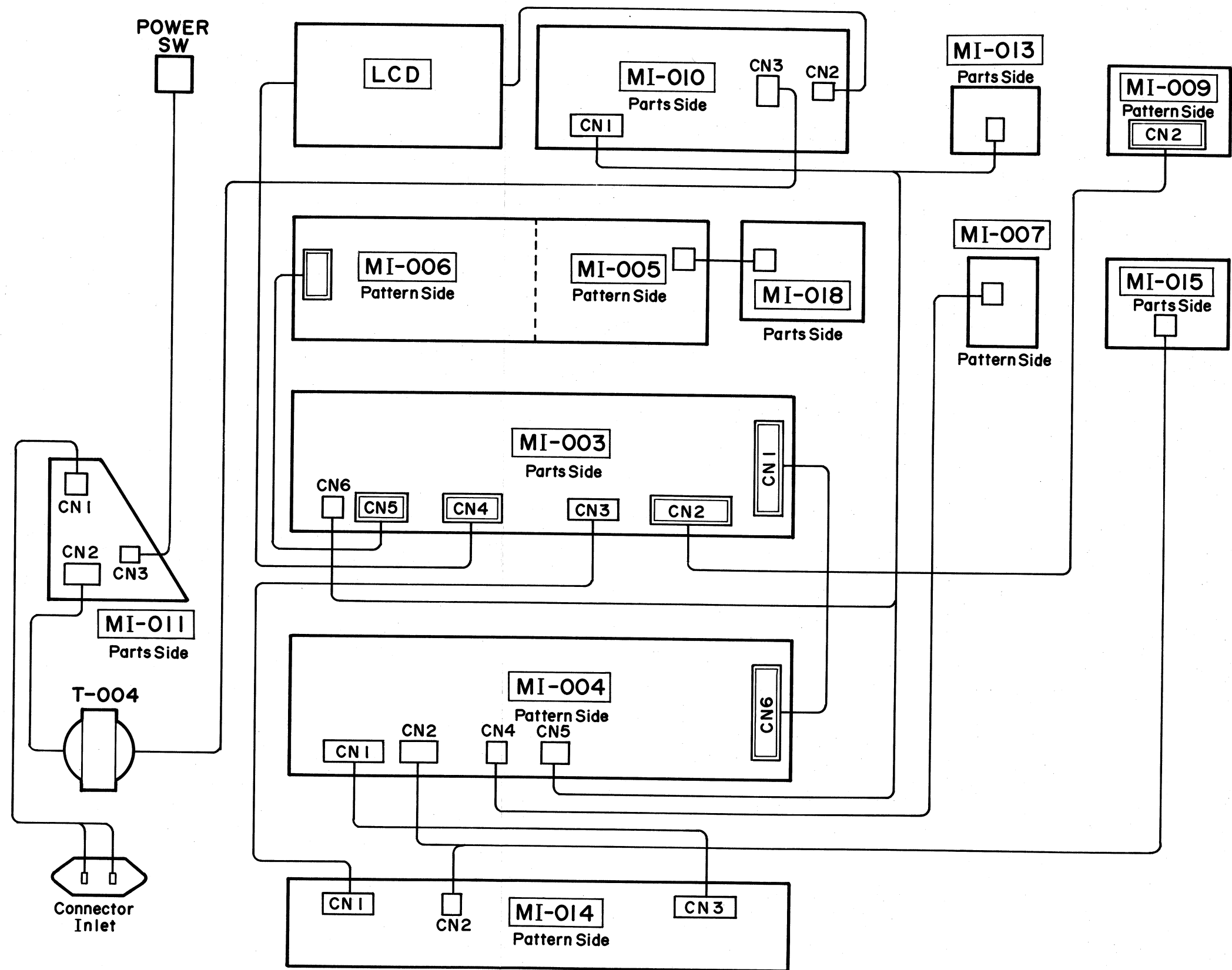
6. K5m SEMICONDUCTORS LIST

	Code No.	Name	Pieces
IC	706985	MB84053B	3
	707005	NJM-386D	1
	800715	5222L	2
	801926	TC74HC08	1
	802832	MSM74HC04	2
	802833	MSM74HC32	2
	802834	MSM74HC74	2
	802835	MSM74HC139	1
	802838	MSM74HC244	5
	802842	MSM74HC373	1
	802931	MSM74HC02	1
	802934	MSM74HC240	1
	802935	MSM74HC245	3
	802936	MSM74HC365	2
	802937	TA8505P	1
	803005	MSM74HC00	1
	803397	PCM55HP	2
	803571	NJM-064D	4
	803572	M54534P	1
	803573	NE555	1
	803575	ADC0809CCN	1
	803576	74HC11	1
	803578	74ALS74	1
	803579	74ALS137	1
	803580	74ALS139	1
	803581	CXK5864AP-70L	5
	803582	CXK58256AP-15LL	1
	803583	PD4464C-15L	2
	803584	PD70208G	1
	803586	MB87159	2
	803587	MB87160	2
	803588	MB651111U	1
	803589	MB653119A	1
	910785	MB83256-20 (MASKROM: P015)	1
	910790	MBM27C512-25 (EPROM: P019)	1
	910795	MBM27C512-25 (EPROM: P020)	1
	802888	AN7805F	1
	803568	AN7806F	1
	803569	AN7906F	1
	803570	79L15	1
	706951	SN74LS03N	1
	803006	MSM74HC14	1
TRANSISTOR	706102	2SA564R	1
	802508	2SC3331T	2
DIODE	802364	MA-700	3
	802898	DSK-10B	9
	706317	1S2473	32
	706319	RB-152	2
ZENOR DIODE	803591	HZS-2BLL	2
	803592	HZS-4ALL	1
INVERTER	803613	NI03-05-05	1
FUSE	803622	MT4 1A	1
	803623	(A)TSC 0.5A	3
	803624	(A)TSC 1A	1
	803625	MT4 0.5A	3
	803626	SET 0.25A	1
	803627	SET 0.5A	2
	803628	SET 1A	1
PHOTO COUPLER	803399	6N137	1

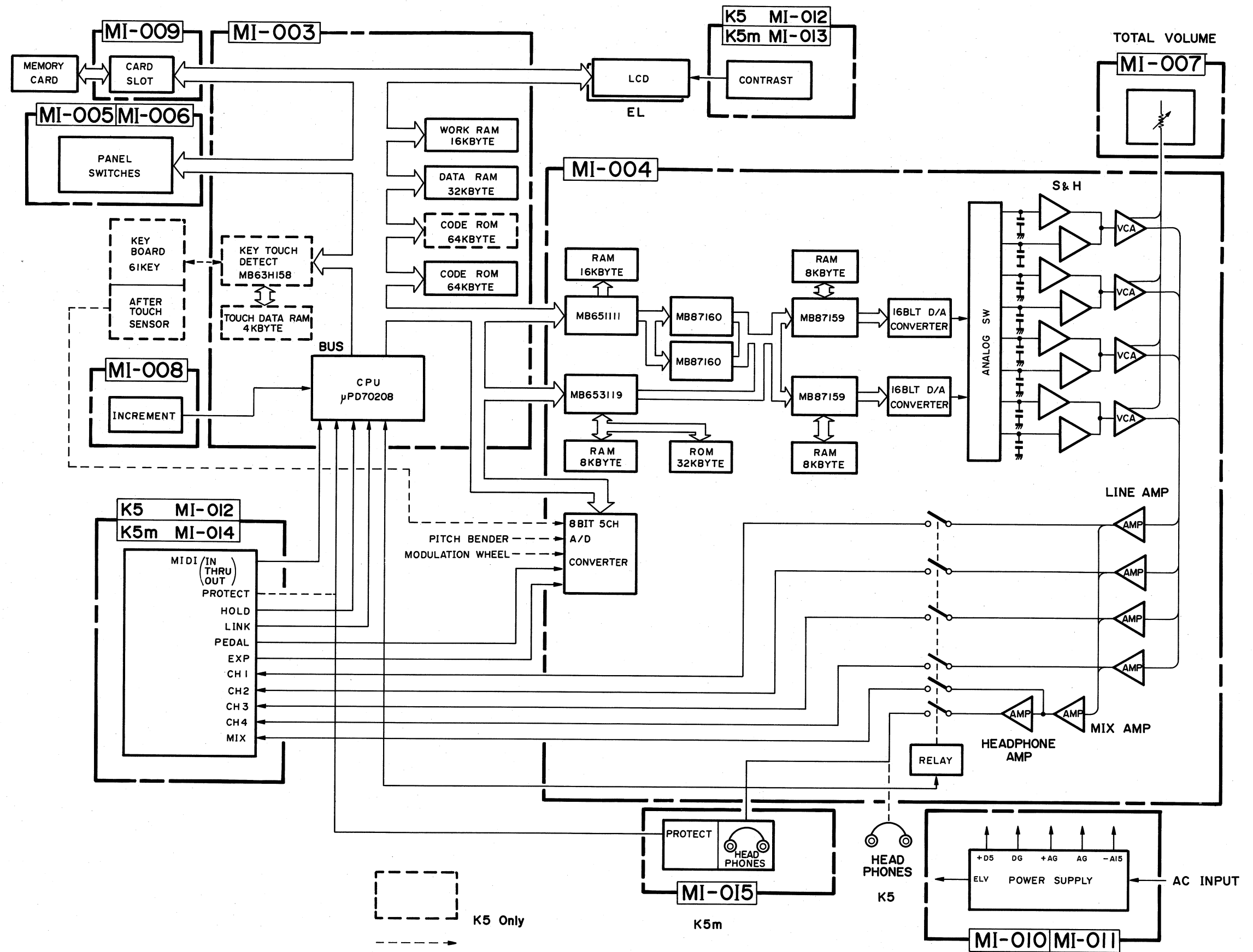
7. K5 WIRING CONNECTION



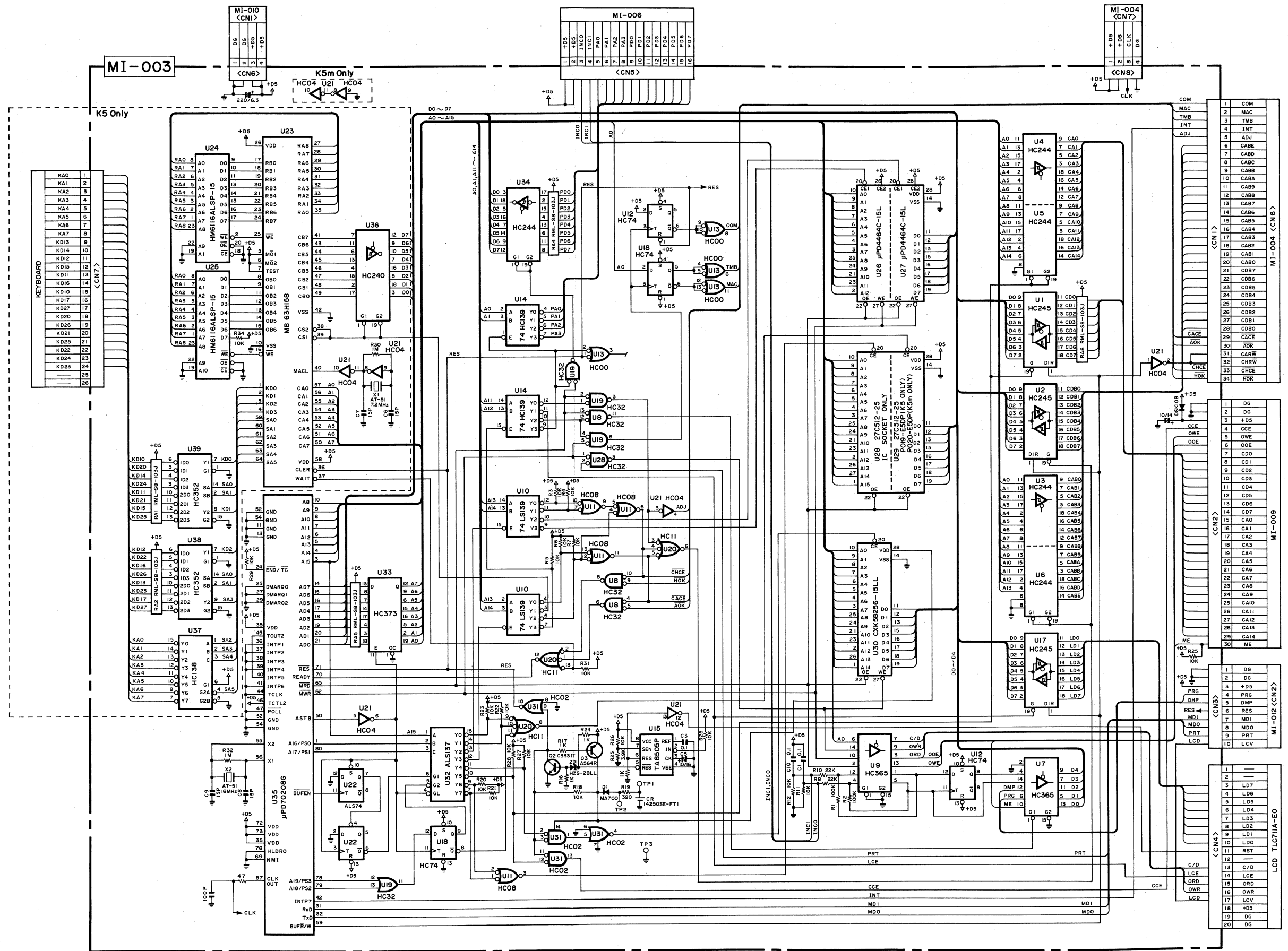
8. K5m WIRING CONNECTION



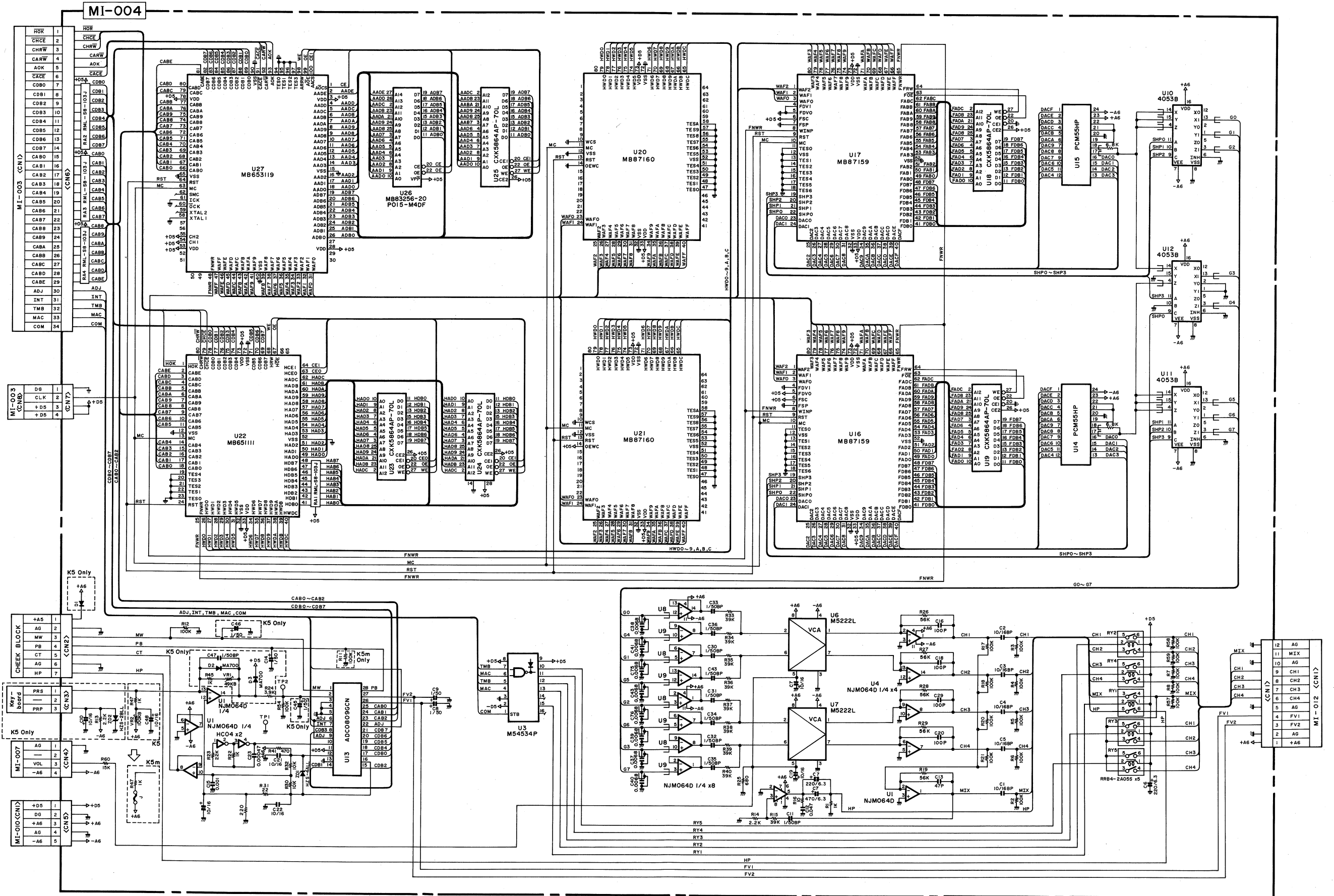
9. BLOCK DIAGRAM

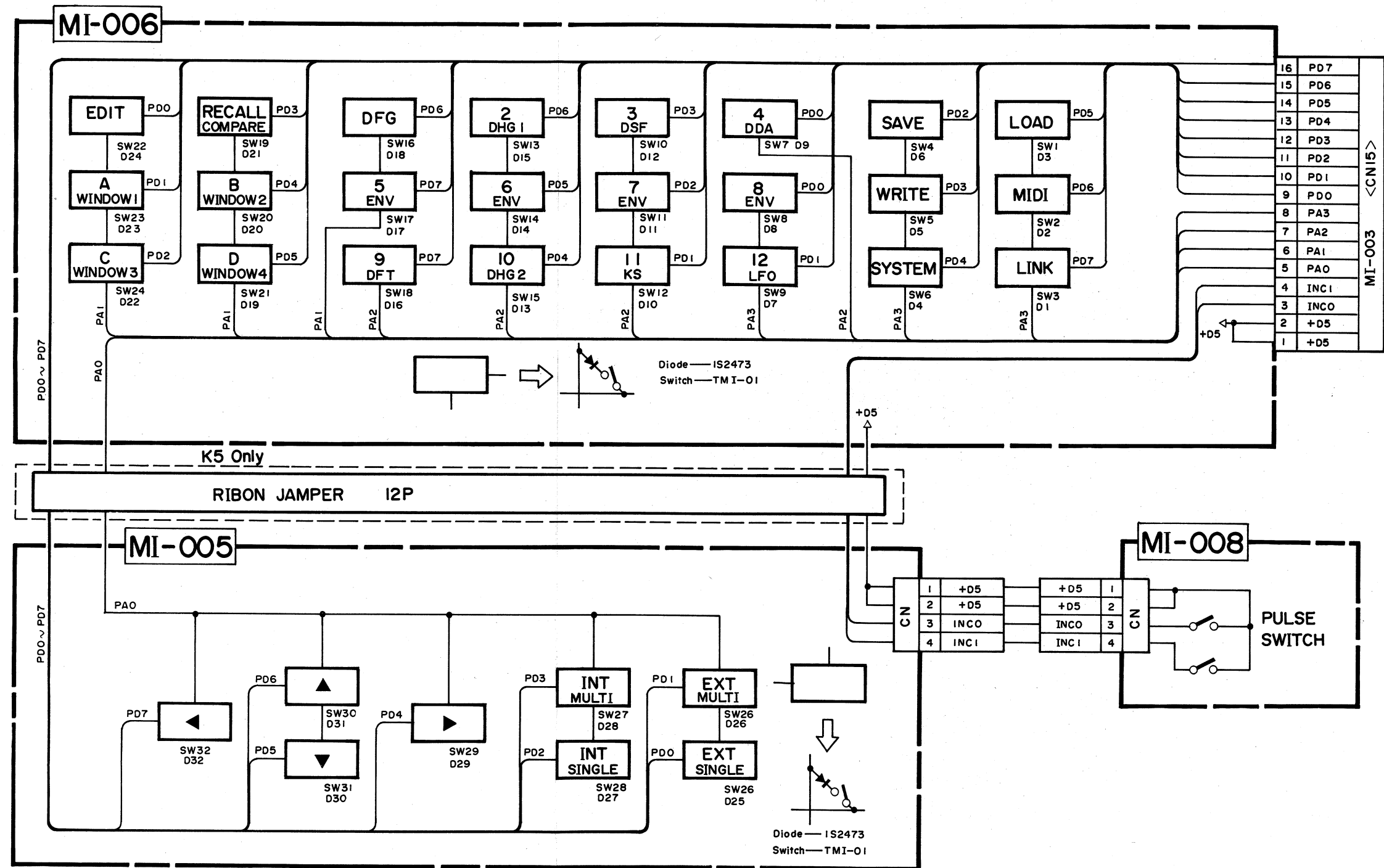


10. MI-003 CIRCUIT



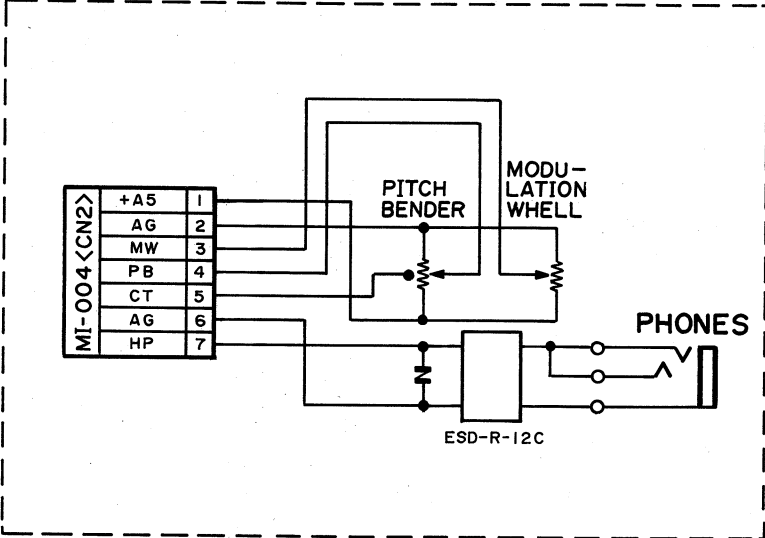
11. MI-004 CIRCUIT



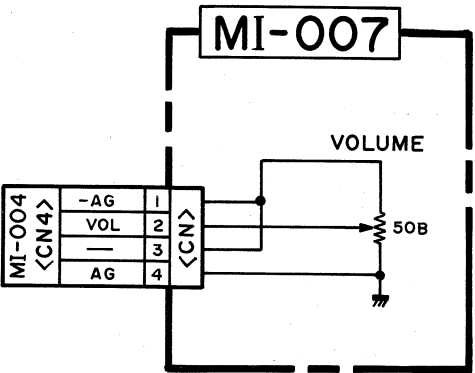


13. MI-007, MI-009, MI-013, MI-015 CIRCUITS

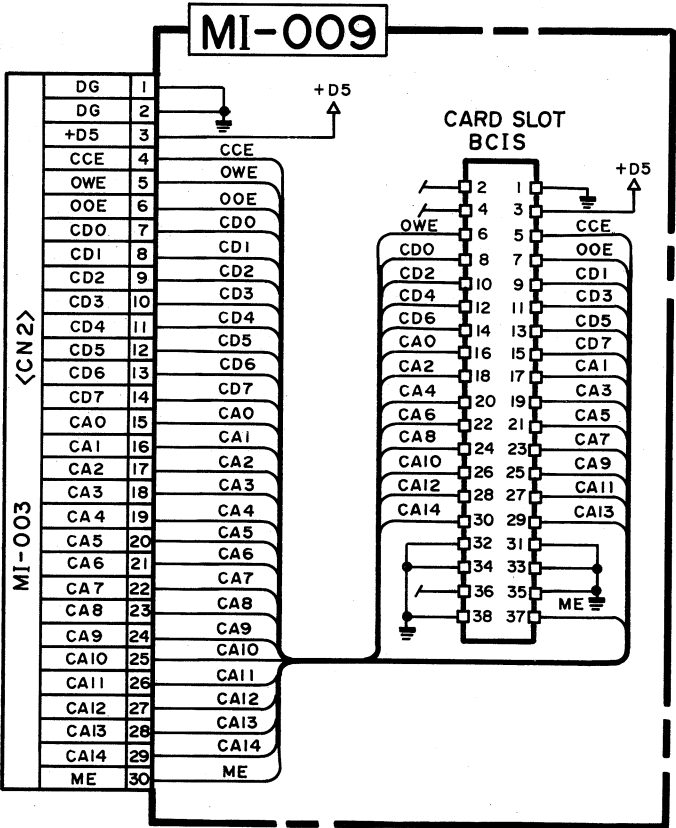
K5 Only



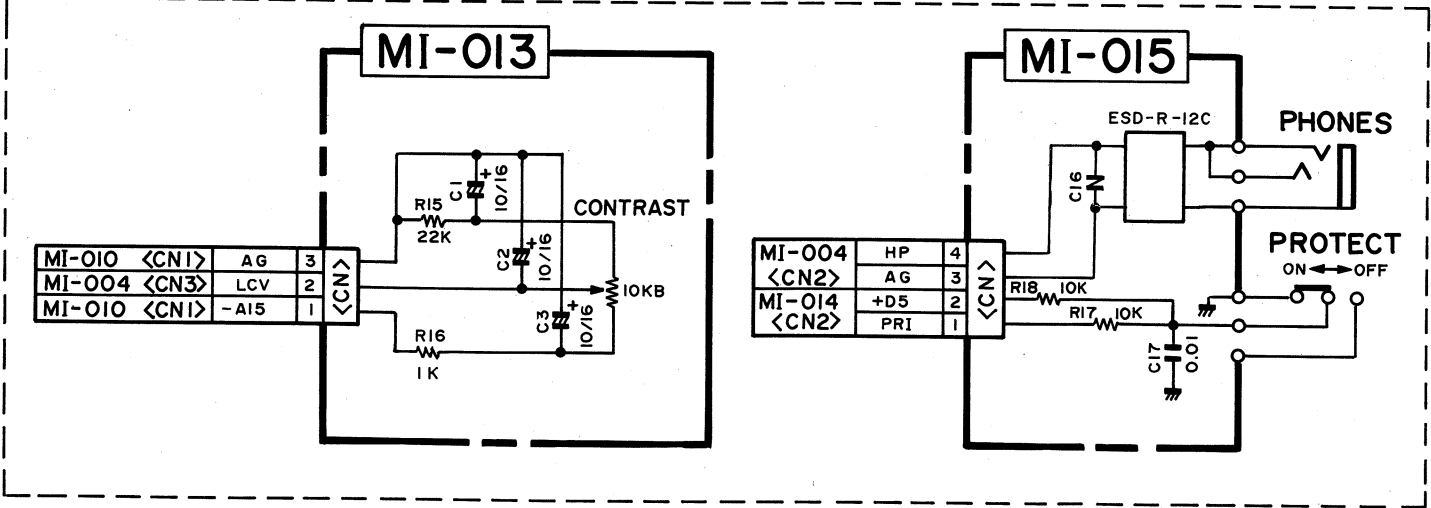
MI-007

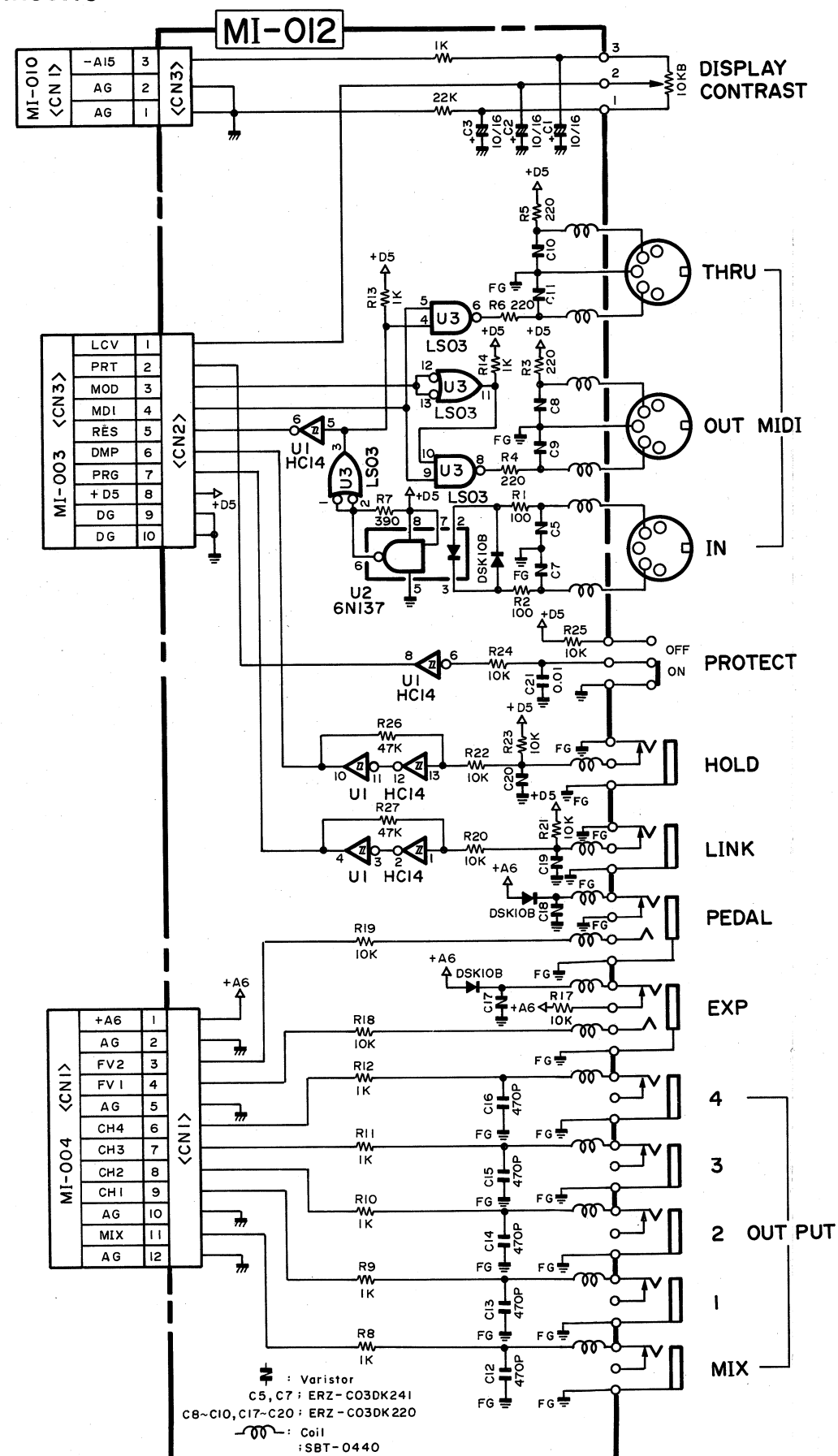


MI-009

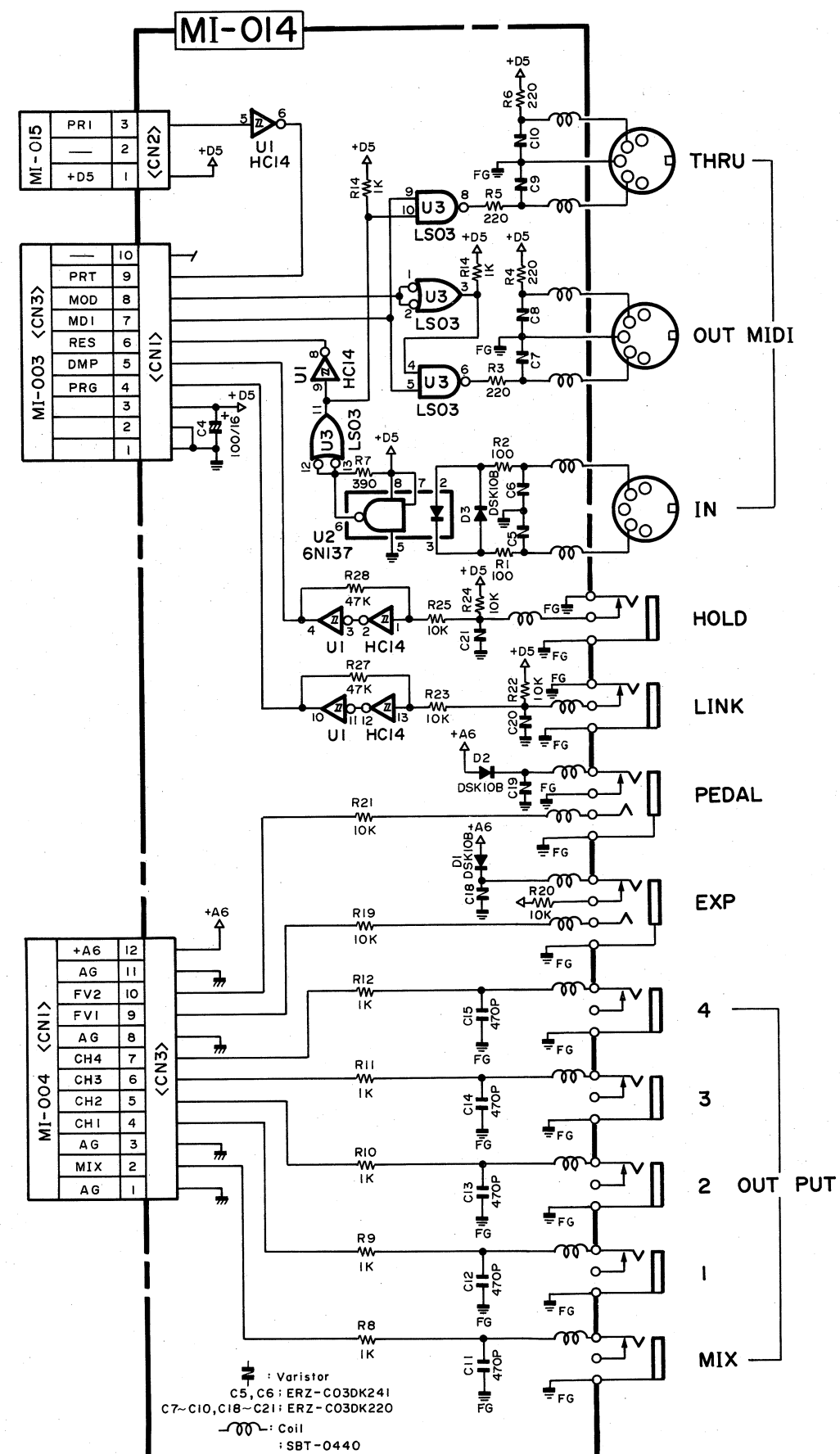


K5m Only



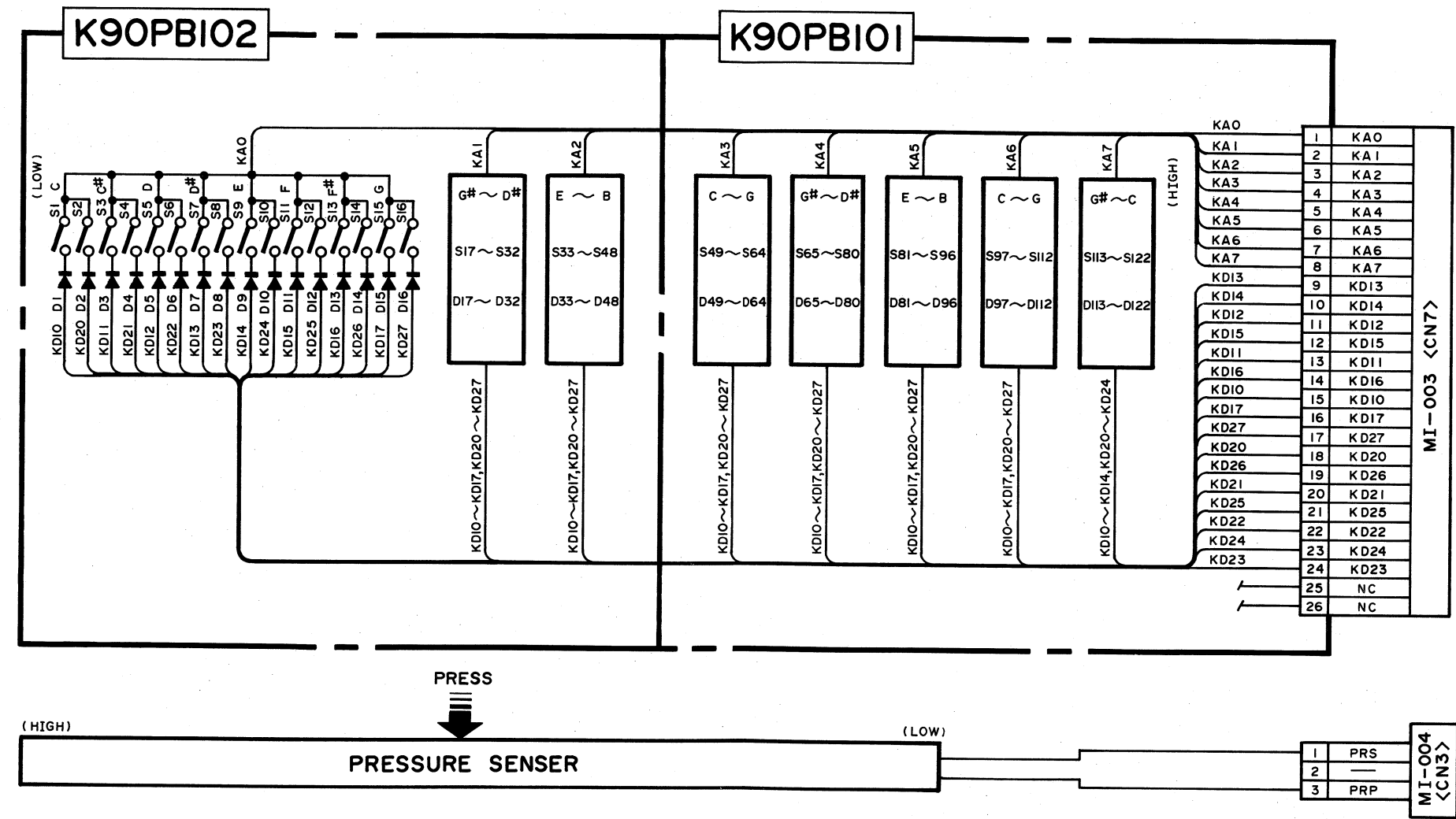


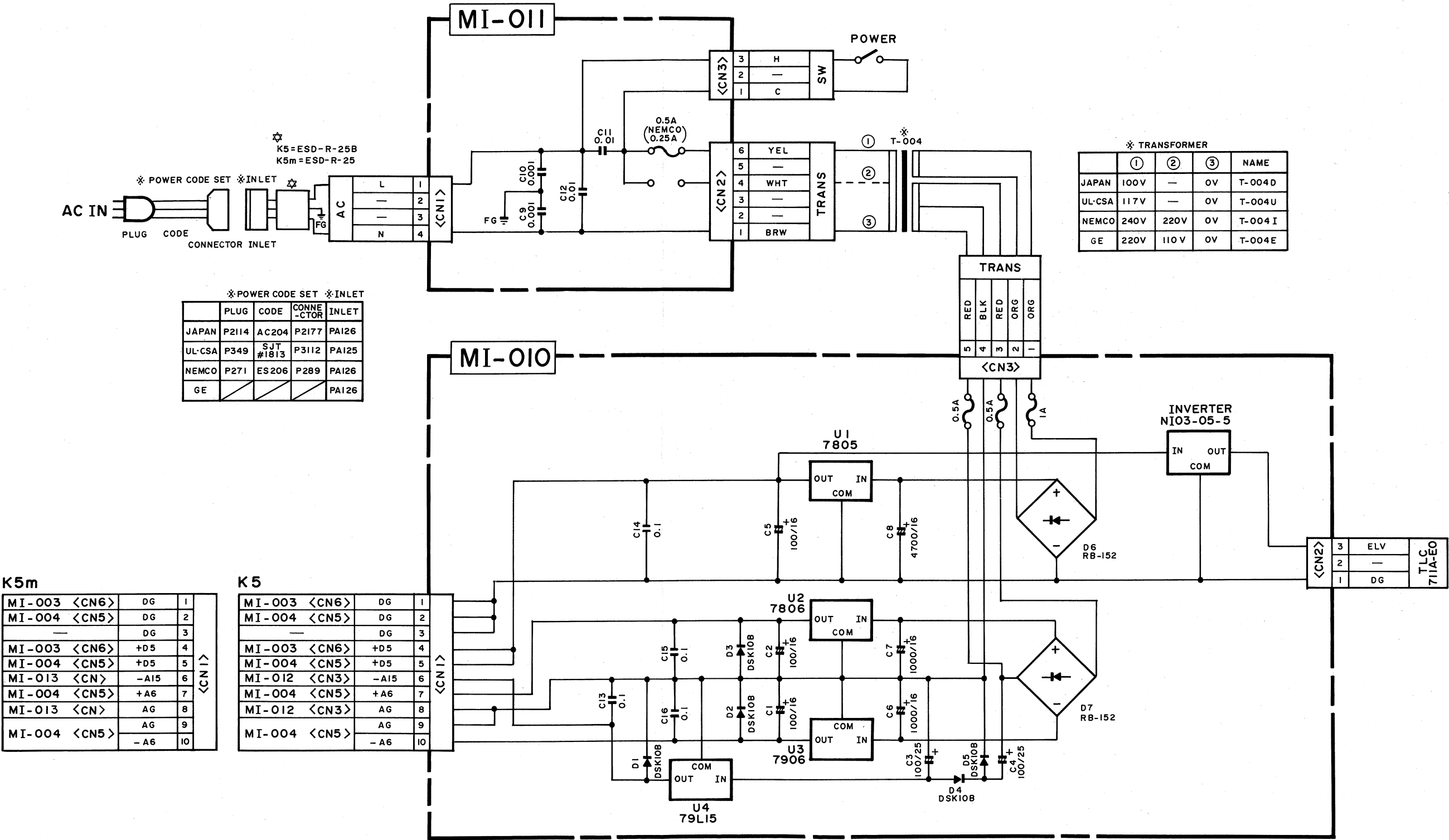
K5



K5m

15. K90PB102, K90PB101 CIRCUITS





17. TROUBLESHOOTING

