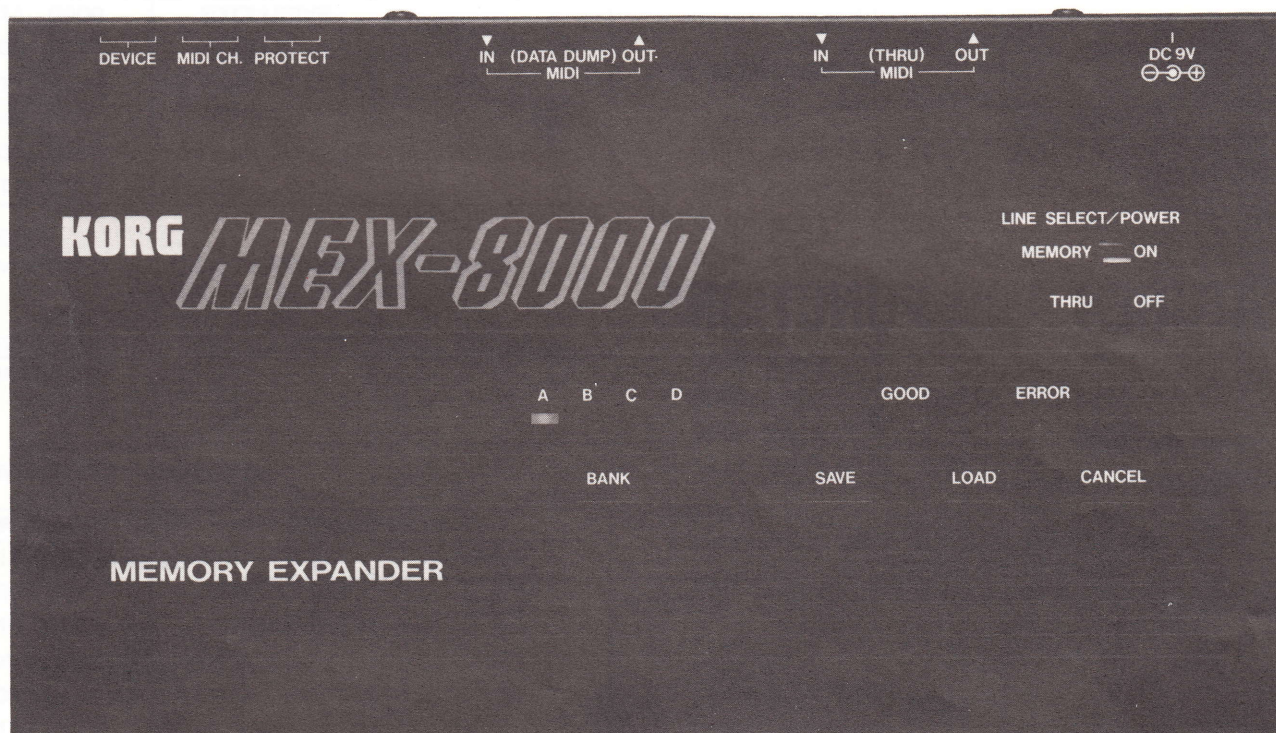


MEX-8000

MEMORY EXPANDER SERVICE MANUAL



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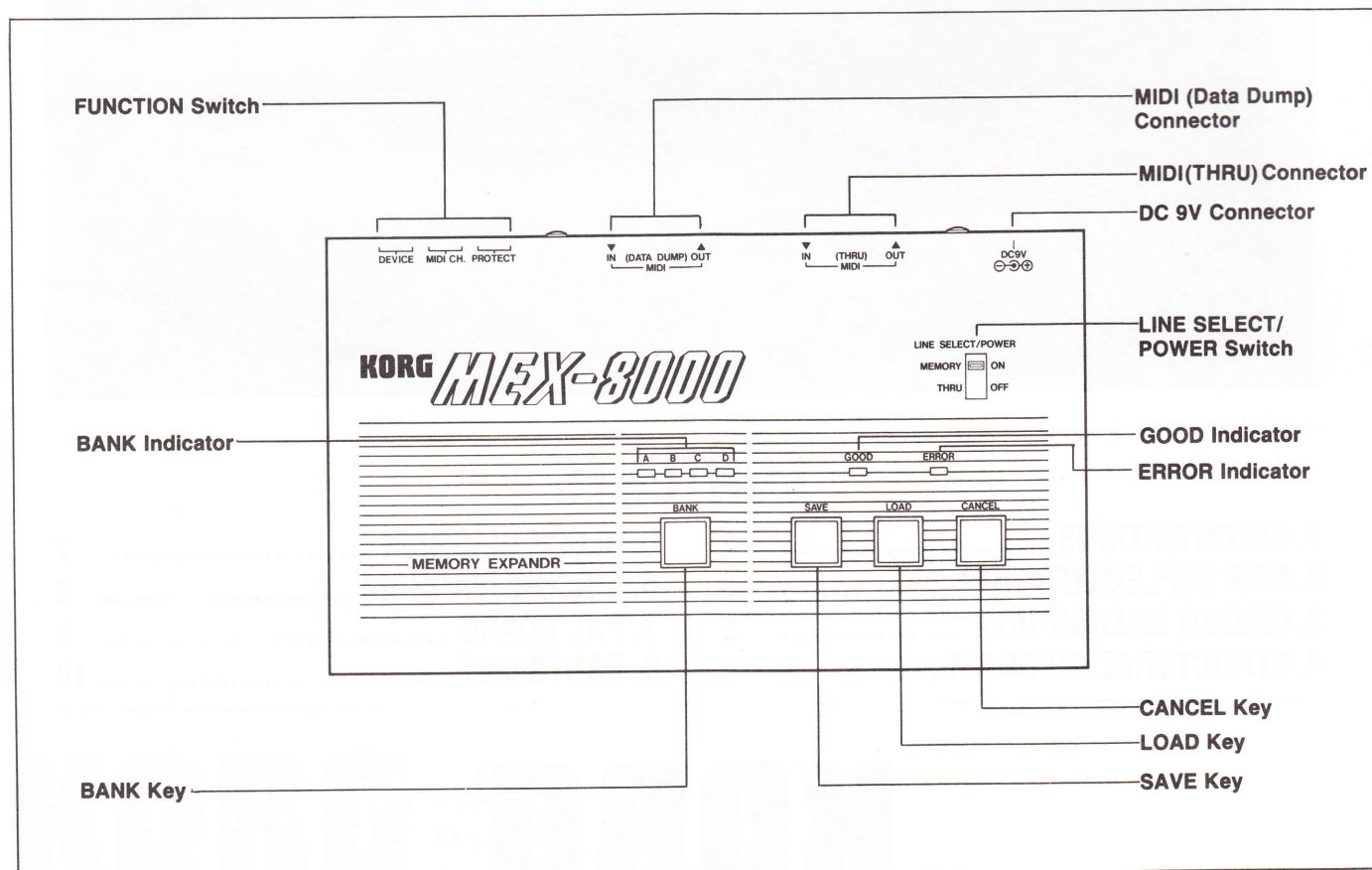
KORG®

1. SPECIFICATION

MEMORY	: 256 Program settings (64 × 4 BANKS)
CONTROL Keys	: BANK, SAVE, LOAD, CANCEL
FUNCTION Switches	: DEVICE, MIDI CH., PROTECT
INDICATORS	: BANK (A, B, C, D) GOOD, ERROR
LINE SELECT Switch	: MEMORY/THRU (Functions as power ON/OFF)
MIDI Connectors	: IN/OUT (Data Dump) IN/OUT (THRU)
POWER	: DC 9V [AC Adaptor, or 6 AA (sum-3) batteries]
BATTERY LIFE	: About 8 hrs. (Continuous operation)
WEIGHT	: 1.1 kg.
DIMENSIONS:	: 232 (W) × 36 (H) × 131 (D) mm

★ Specifications subject to change without notice.

FEATURES AND FUNCTIONS



2. MIDI IMPLEMENTATION

1. TRANSMITTED DATA

1 CHANNEL VOICE MESSAGE

STATUS	SECOND	THIRD	DESCRIPTION
1100 nnnn	0ppp pppp	—	PROGRAM CHANGE

NOTE 1

nnnn = MIDI CHANNEL NUMBER (0000 ~ 1111)

pppppp = PROGRAM NUMBER (0 ~ 63)

If DEVICE SWITCH = 0000 ~ 0010, PROGRAM CHANGE will be send.

1 SYSTEM EXCLUSIVE MESSAGES

1 DATA DUMP REQUEST (1)

BYTES	DESCRIPTION
1111 0000	EXCLUSIVE
0100 0010	KORG ID 42H
0011 nnnn	FORMAT ID 3*H (* = CH)
0vvv vvvv	DEVICE ID
0001 0000	DATA DUMP REQUEST 10H
1111 0111	EOX

NOTE 2

vvvvvvv = 0000011: DW-8000/EX-8000 (DEVICE = 0)

= 0000100: DW-6000 (DEVICE = 1)

= 0001001: DVP-1 (DEVICE = 2)

If DEVICE SWITCH = 0001 (DW-6000), FORMAT ID will be designated 30H.

2 DATA DUMP REQUEST (2)

BYTES	DESCRIPTION
1111 0000	EXCLUSIVE
0100 0010	KORG ID 42H
0010 0001	FORMAT ID 21H
0vvv vvvv	DEVICE ID
0001 0000	DATA DUMP REQUEST 10H
1111 0111	EOX

NOTE 3

vvvvvvv = 0001100: POLY-800II (DEVICE = 3)

= 0000001: EX-800 (DEVICE = 4)

= 0000110: POLY-800 + MDK (DEVICE = 5)

3 DATA DUMP (1)

BYTES	DESCRIPTION
1111 0000	EXCLUSIVE
0100 0010	KORG ID 42H
0011 nnnn	FORMAT ID 3*H (* = CH)
0vvv vvvv	DEVICE ID
0100 0000	DATA DUMP 40H
0ddd dddd	
:	DATA
0ddd dddd	
1111 0111	EOX

NOTE 4

vvvvvvv = 0000011: DW-8000/EX-8000 (DEVICE = 0)

= 0000100: DW-6000 (DEVICE = 1)

= 0001001: DVP-1 (DEVICE = 2)

If DEVICE SWITCH = 0001 (DW-6000), FORMAT ID will be designated 30H.

4 DATA DUMP (2)

BYTES	DESCRIPTION
1111 0000	EXCLUSIVE
0100 0010	KORG ID 42H
0010 0001	FORMAT ID 21H
0vvv vvvv	DEVICE ID
0000 dddd	
:	DATA
0000 dddd	
0000 ssss	CHECK SUM (LSB)
0000 ssss	(MSB)
1111 0111	EOX

NOTE 5

vvvvvvv = 0001100: POLY-800II (DEVICE = 3)

= 0000001: EX-800 (DEVICE = 4)

= 0000110: POLY-800 + MDK (DEVICE = 5)

5 WRITE REQUEST

BYTES	DESCRIPTION
1111 0000	EXCLUSIVE
0100 0010	KORG ID 42H
0011 nnnn	FORMAT ID 3*H (* = CH)
0vvv vvvv	DEVICE ID
0001 0001	WRITE REQUEST 11H
0ppp pppp	Program number = 0 ~ 63
1111 0111	EOX

NOTE 6

vvvvvvv = 0000011: DW-8000/EX-8000 (DEVICE = 0)

= 0000100: DW-6000 (DEVICE = 1)

= 0001001: DVP-1 (DEVICE = 2)

If DEVICE SWITCH = 0001 (DW-6000), FORMAT ID will be designated 30H.

2. RECOGNIZED RECEIVE DATA

1 SYSTEM EXCLUSIVE MESSAGES

1 DATA DUMP (1)

BYTES	DESCRIPTION
1111 0000	EXCLUSIVE
0100 0010	KORG ID 42H
0011 nnnn	FORMAT ID 3*H (* = CH)
0vvv vvvv	DEVICE ID (NOTE 4)
0100 0000	DATA DUMP REQUEST 40H
0ddd dddd	
:	DATA
0ddd dddd	
1111 0111	EOX

2 DATA DUMP (2)

BYTES	DESCRIPTION
1111 0000	EXCLUSIVE
0100 0010	KORG ID 42H
0010 0001	FORMAT ID 21H
0vvv vvvv	DEVICE ID (NOTE 5)
0000 dddd	
:	DATA
0000 dddd	
0000 ssss	CHECK SUM (LSB)
0000 ssss	(MSB)
1111 0111	EOX

3 WRITE COMPLETED

BYTES	DESCRIPTION
1111 0000	EXCLUSIVE
0100 0010	KORG ID 42H
0011 nnnn	FORMAT ID 3*H (* = CH)
0vvv vvvv	DEVICE ID
0010 0001	WRITE COMPLETED 21H
1111 0111	EOX

NOTE 7

vvvvvvv = 0000011: DW-8000/EX-8000 (DEVICE = 0)
 = 0000100: DW-6000 (DEVICE = 1)
 = 0001001: DVP-1 (DEVICE = 2)

If DEVICE SWITCH = 0001 (DW-6000), FORMAT ID will be designated 30H.

4 WRITE ERROR

BYTES	DESCRIPTION
1111 0000	EXCLUSIVE
0100 0010	KORG ID 42H
0011 nnnn	FORMAT ID 3*H (* = CH)
0vvv vvvv	DEVICE ID
0010 0010	WRITE ERROR 22H
1111 0111	EOX

NOTE 8

vvvvvvv = 0000011: DW-8000/EX-8000 (DEVICE = 0)
 = 0000100: DW-6000 (DEVICE = 1)
 = 0001001: DVP-1 (DEVICE = 2)

If DEVICE SWITCH = 0001 (DW-6000), FORMAT ID will be designated 30H.

5 DUMP ERROR

BYTES	DESCRIPTION
1111 0000	EXCLUSIVE
0100 0010	KORG ID 42H
0010 0001	FORMAT ID 21G
0vvv vvvv	DEVICE ID
0010 0000	DUMP ERROR 20H
1111 0111	EOX

NOTE 9

vvvvvvv = 0001100: POLY-800II (DEVICE = 3)
 = 0000001: EX-800 (DEVICE = 4)
 = 0000110: POLY-800 + MDK (DEVICE = 5)

3. CIRCUIT DESCRIPTION

■ Outline

The MEX-8000 has been marketed as a memory expander, which is also capable of application with other units capable of data dump for MIDI data processing.

■ Main Features

1. Input/Output of MIDI data
2. 64 Program setting memory in each of 4 banks (64 × 4)
3. Selection of connected device via Device Switch

DEVICE Switch

SW1	SW2	SW3	SW4	Device
0	0	0	0	DW-8000/EX-8000
0	0	0	1	DW-6000
0	0	1	0	DVP-1
0	0	1	1	POLY-800II
0	1	0	0	EX-800
0	1	0	1	POLY-800 + MDK
0	1	1	0	Not used
1	1	1	1	

(However, if the connected device is capable of sound data dump by itself then LOAD, SAVE operations may be performed with these switches set to 0110. At this time, Bank D may not be used.)

4. Changing of MIDI Channel via MIDI CH switch

MIDI CH. Switches

SW1	SW2	SW3	SW4	MIDI CHANNEL
0	0	0	0	ch 1
0	0	0	1	ch 2
0	0	1	0	ch 3
0	0	1	1	ch 4
0	1	0	0	ch 5
0	1	0	1	ch 6
0	1	1	0	ch 7
0	1	1	1	ch 8
1	0	0	0	ch 9
1	0	0	1	ch 10
1	0	1	0	ch 11
1	0	1	1	ch 12
1	1	0	0	ch 13
1	1	0	1	ch 14
1	1	1	0	ch 15
1	1	1	1	ch 16

5. Protection of data in various banks via PROTECT switch

PROTECT Switches

	SW1	SW2	SW3	SW4
PROTECT ON	1	1	1	1
PROTECT OFF	0	0	0	0

6. ERROR LED indication of weak batteries (ERROR LED blinks)



■ Hardware Layout

(Refer to Block diagram and Circuit diagram)

The basic system is made up of a CPU using a C-MOS 63B03X (IC5), 64 K EPROM 2764 (IC6) for system program, and a 64K CMOS RAM 6264 (× 2) for program setting data. This RAM is backed up by a lithium battery.

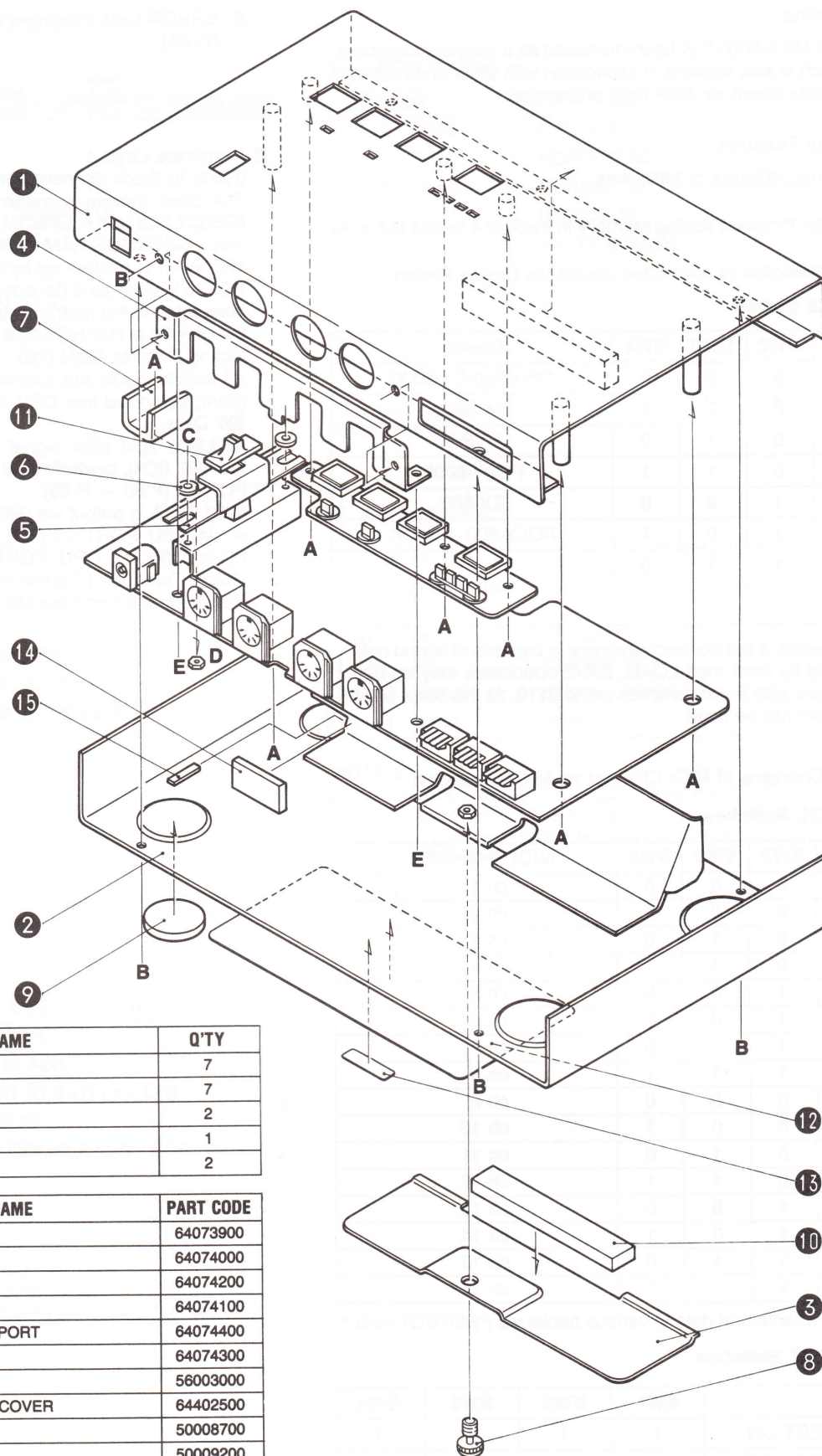
HC139 is used as a decoder. On one side (1/2 HC139) it is connected to the matrix switch for switch selection, while on the other side (1/2 HC139) it decodes address (A13-A15) selecting RAM or ROM chip.

All switch inputs are processed according to system program, being fed into CPU PORT 5 (P.54 ~ P.57) as 4 bit SW Data.

All LEDs light after signal passes through LED DRIVER M54527 (IC4), controlled by 6 bit data output through CPU PORT 6 (P.60 ~ P.65).

MIDI DATA is output via (MIDI IN) PORT 24 (TX), being fed in via CPU PORT 23 (RX), passing through Auto-coupler PC-900 (PC-1). CPU PORT 52 is used for battery level check. Turns to "L" when battery level goes below 6.2V. Reset circuits comprise MB3761 (IC10).

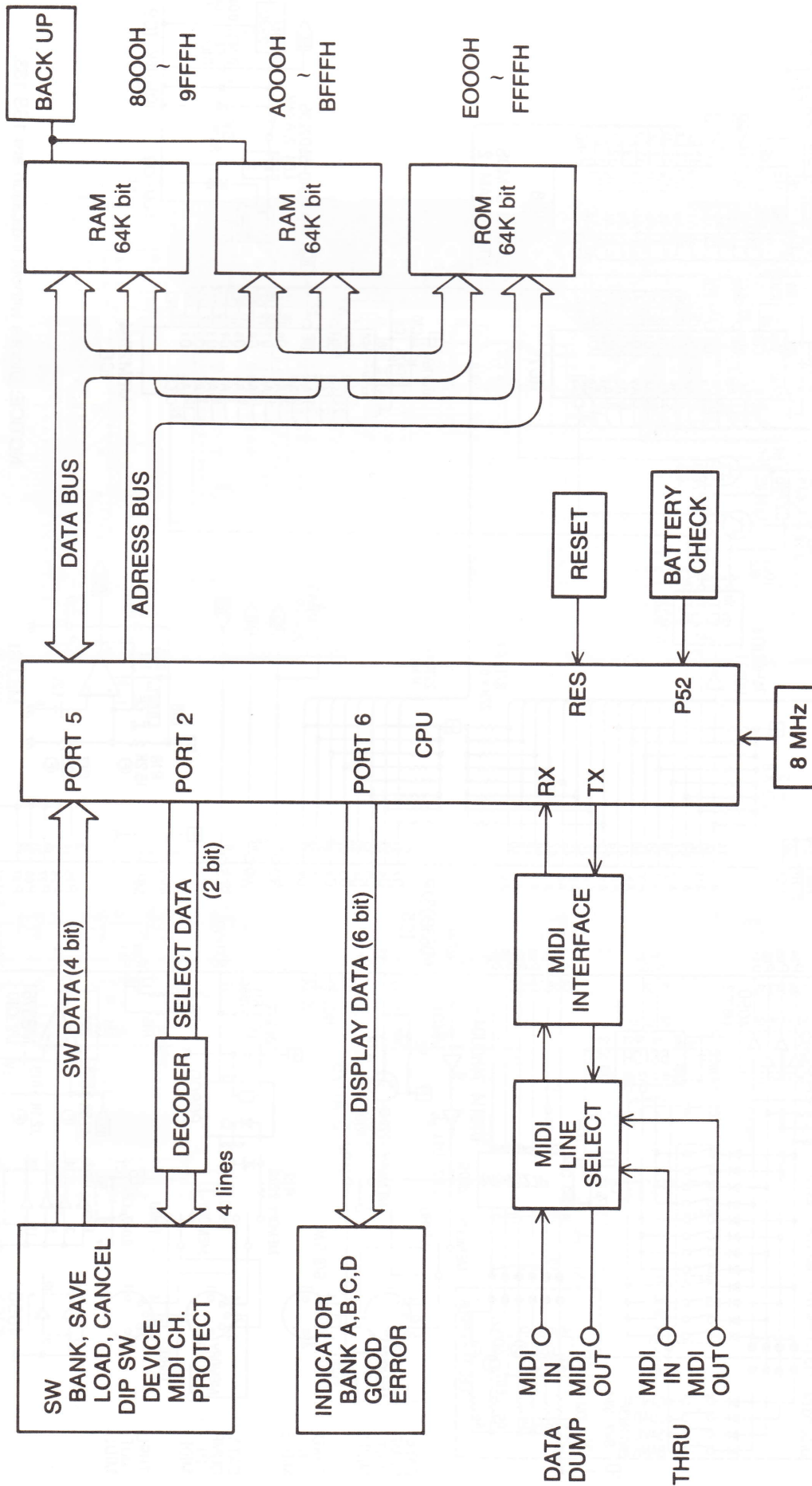
4. STRUCTURAL DIAGRAM



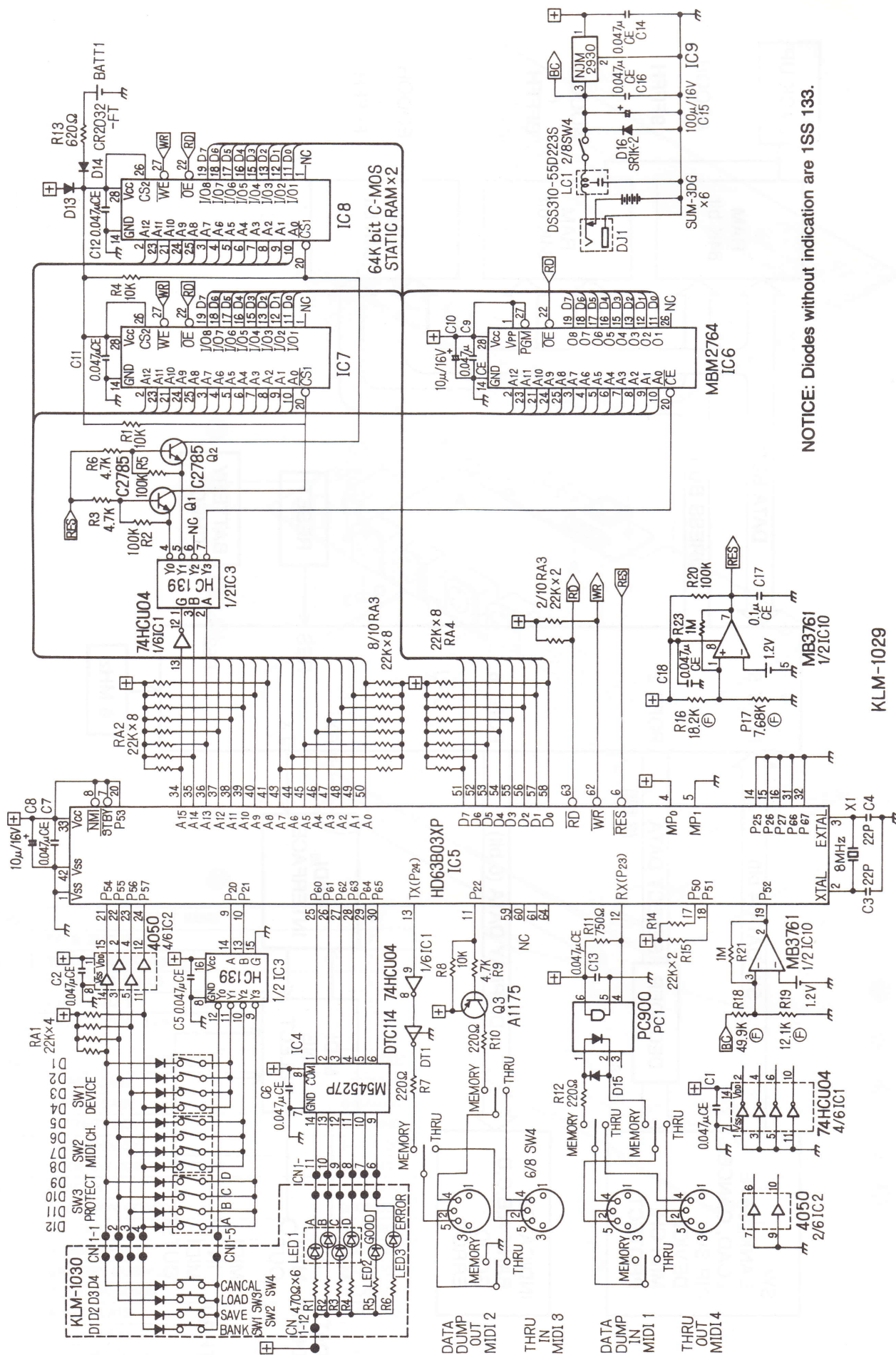
PART NO.	PART NAME	Q'TY
A	FE B ZMC 3×8	7
B	TP2G B BZMC 3×6	7
C	FE B ZMC 2.6×6	2
D	HN 1 ZMC 3	1
E	TP2G B ZMC 3×6	2

PART NO.	PART NAME	PART CODE
1	UPPER CASE	64073900
2	LOWER CASE	64074000
3	BATTERY COVER	64074200
4	JACK CHASSIS	64074100
5	SLIDE SW. KNOB SUPPORT	64074400
6	SPACER	64074300
7	RADIATION BOARD	56003000
8	SCREW OF BATTERY COVER	64402500
9	RUBBER FEET	50008700
10	BATTERY CUSHION	50009200
11	SLIDE SW. KNOB	62009600
12	NAME PLATE	58024000
13	SERIAL SEAL	
14	BATTERY CUSHION	50008800
15	SPONGE CUSHION	50009800

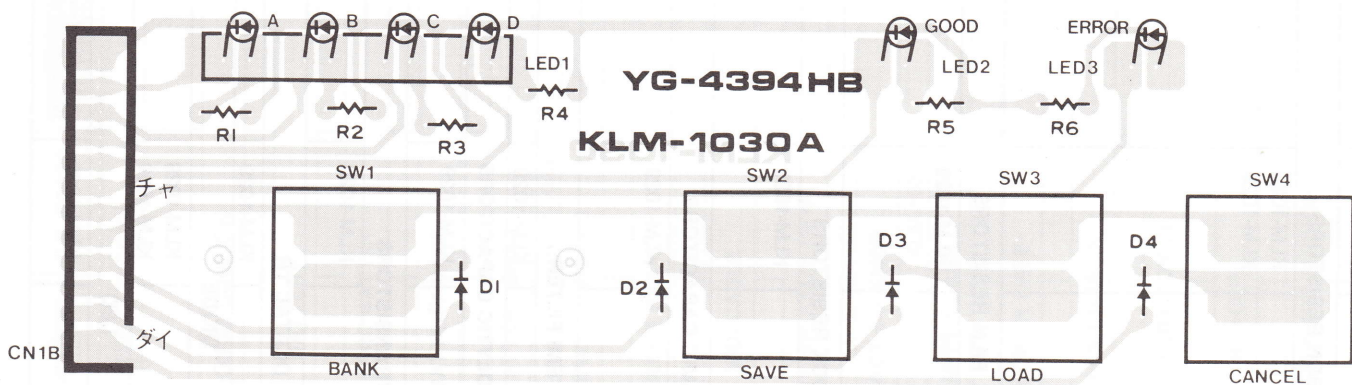
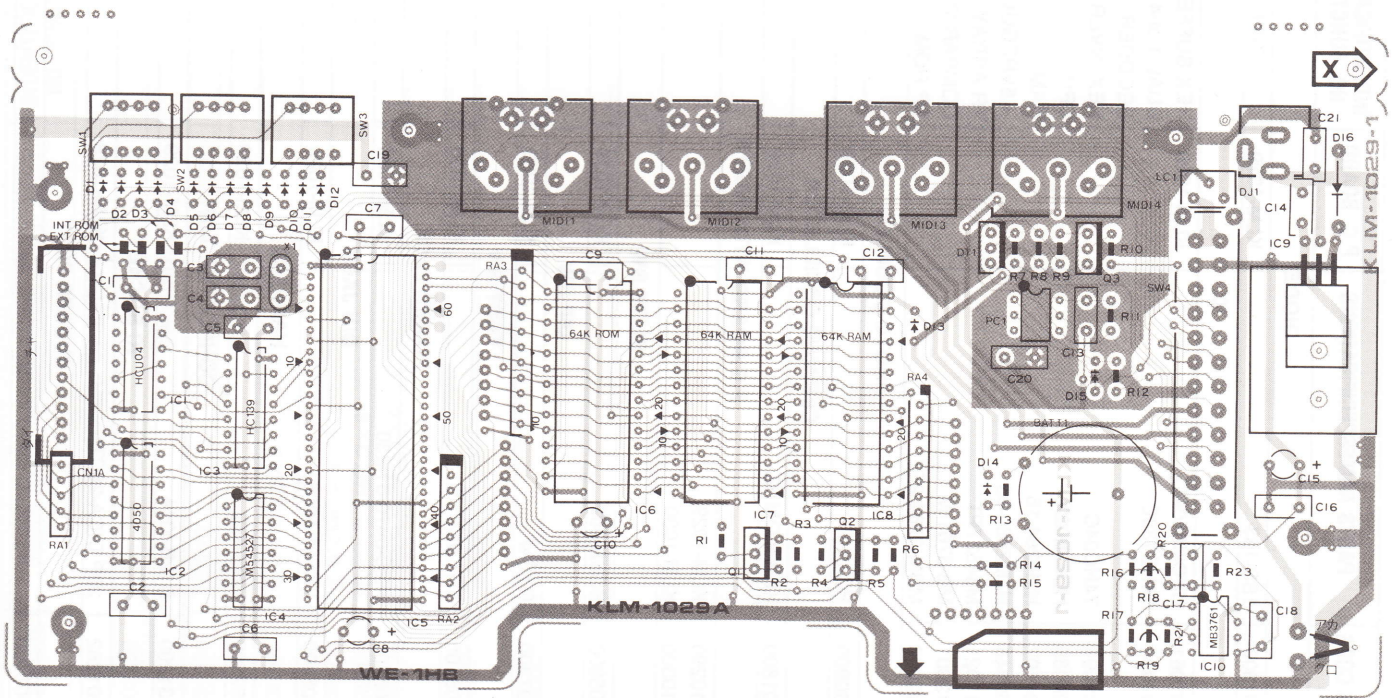
5. BLOCK DIAGRAM



6. CIRCUIT DIAGRAM



7. P.C. BOARD



8. PARTS LIST

PARTS LIST

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
CARBON RESISTORS				
10016347	1/6JY 470 OHM	KLM-1030		6
10416000	1/6JY TP 0 OHM	KLM-1029		2
10416322	1/6JY TP 220 OHM			3
10416362	1/6JY TP 620 OHM			1
10416375	1/6JY TP 750 OHM			1
10416447	1/6JY TP 4.7K			3
10416510	1/6JY TP 10K			3
10416522	1/6JY TP 22K			2
10416610	1/6JY TP 100K			3
10416710	1/6JY TP 1.0M			2
METAL FILM RESISTORS				
12514768	1/6TP 7.68K	KLM-1029		1
12515121	1/6TP 12.1K			1
12515182	1/6TP 18.2K			1
12515499	1/6TP 49.9K			1
BLOCK RESISTORS				
13504522	RKC1/8B4J 22K	KLM-1029		1
13508522	RKC1/8B8J 22K			2
13510522	RKC1/8B10J 22K			1
CERAMIC CAPACITORS				
21452220	50V 22PF TP	KLM-1029		2
21455470	50V 0.047UF TP			12
21456100	25V 0.1UF TP			1
EMI FILTER				
21950100	DSS310-55D223S	KLM-1029		1
ELECTROLYTIC CAPACITORS				
25403210	16V 10UF	KLM-1029		2
25403310	16V 100UF			1
TRANSISTORS				
30400050	TR 2SA1175	KLM-1029		1
30420070	TR 2SC2785			2
DIGITAL TR				
30430020	TR DTC-114N	KLM-1029		1
DIODE				
31001500	SR1K-2	KLM-1029		1
31001700	1SS-133	KLM-1030		4
LED				
31206300	SLP155B-01	KLM-1030		2
31206400	SLP166B-04			1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
DIODE				
31401300	1SS-133	KLM-1029	T-77	15
IC				
32001061	UPD-4050BC	KLM-1029	HEX BUFFER	1
32001094	74HC139C		DUAL 1-of-4	1
32001097	74HC04C		HEX INVERTER	1
32004085	HD63B03X		CPU	1
32004107	HM6264-15		RAM	2
32009045	NJM2930-05		+5VREGULATOR	1
32011021	M54527PT		TR ARRAY	1
32012001	MB-3761 M		COMPARATOR	1
32012003	MBM-2764-25Z		EP ROM	1
PHOTO COUPLER				
33000900	PC-900	KLM-1029		1
CERAMIC OSCILLATOR				
33501800	KBR-8.0MHZ	KLM-1029		1
P.C. BOARD WITH PARTS				
34310290	KLM-1029			1
34310300	KLM-1030			1
SLIDE SW				
37305800	SSSB-082	KLM-1029		1
DIP SW				
37507300	DYS-4	KLM-1029		3
TACT SW				
37508100	TR1-01	KLM-1030		4
POWER JACK				
45400300	HEC-0470-01-230	KLM-1029		1
DIN JACK				
45405400	YKF51-5008	KLM-1029		4
HARNES				
47057200	HNS-472	KLM-1030		1
CONNECTER TOP				
47131200	B12B-XHA	KLM-1029		1
IC SOCKET				
48001282	28P DICA-28CTI	KLM-1029		1
RUBBER FEET				
50008700				4

PARTS CODE	PARTS NAMESPECIFICATIONS	P.C. BOARD	INDENTIFICATION NO. FUNCTION	Q'TY
BATTERY CUSHION				
50008800	16 × 30 × 4			1
50009200	8 × 15 × 100			2
SPONGE CUSHION				
50009800	BLK5 × 20 × 1.5			1
BATTERY				
52000300	SUM-3DG 1.5V			6
LITHIC BATTERY				
52001300	CR2032-FT			1
BATTERY CASE				
54010000	AH-520			1
BATTERY SNAP				
54012100	150MM	KLM-1029		1
RADIATION BOARD				
56003000				1
NAME PLATE				
58024000				1
MIDI CABLE				
60202500	0.5M WHT			2
SLIDE SW.KNOB NEW				
62009600				1
TACT SW KNOB				
62016100	TZ0310 BLK	KLM-1030		4
UPPER CASE				
64073900				1
LOWER CASE				
64074000				1
JACK CHASSIS				
64074100				1
BATTERY COVER				
64074200				1
SPACER				
64074300				2
SLIDE SW KNOB SUPPORT				
64074400				1

PARTS CODE	PARTS NAMESPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
SCREW OF BATTERY COVER				
64402500				1
SW.GUIDE				
64621600	TZ2210	KLM-1030		4
SCREW				
70530308	FE B ZMC 3 × 8			6
70532605	FE B ZMC 2.6 × 5			1
72530306	TP 2G B ZMC 3 × 6			2
72560306	TP2G B BZMC 3 × 6			2
NUT				
77130300	HN1 ZMC 3			7
WASHER				
78590300	PCW 3			1

