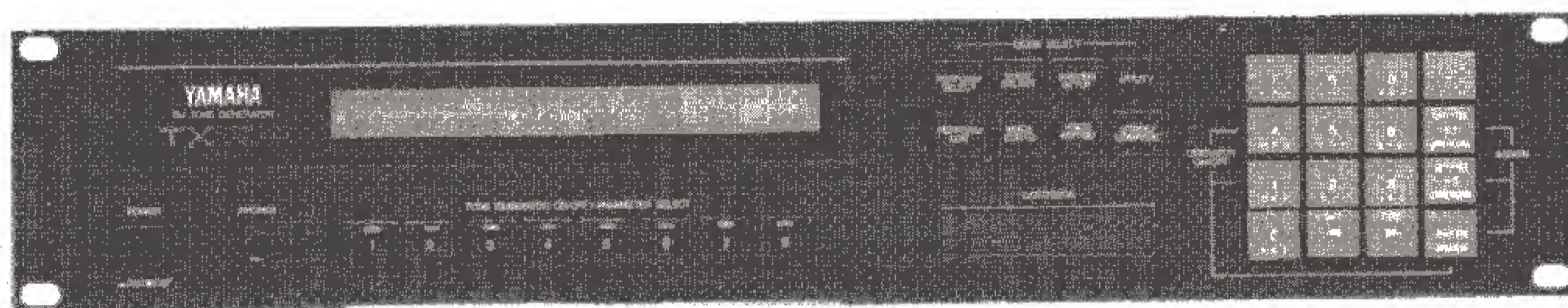


TX892

FM TONE GENERATOR

TX802

SERVICE MANUAL



■CONTENTS (目次)

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008760

IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

This product uses a lithium battery for memory back-up.

WARNING: Lithium batteries are dangerous because they can be exploded by improper handling. Observe the following precautions when handling or replacing lithium batteries.

- Leave lithium battery replacement to qualified service personnel.
- Always replace with batteries of the same type.
- When installing on the PC board, solder using the connection terminals provided on the battery cells. Never solder directly to the cells. Perform the soldering as quickly as possible.
- Never reverse the battery polarities when installing.
- Do not short the batteries.
- Do not attempt to recharge these batteries.
- Do not disassemble the batteries.
- Never heat batteries or throw them into fire.

ADVARSEL!

Lithiumbatteri. Eksplosionsfare.

Udskiftning må kun foretages af en sagkyndig, og som beskrevet i servicemanualen.

SPECIFICATIONS (仕様)

Tone Generator

FM tone generator (6 operators, 32 algorithms)

Simultaneous Note Output

16 notes, assignable to up to 8 timbres

Internal Memory

64 performance memory

64 internal (user) voice memory

128 preset voice memory

External Memory

RAM cartridge: 64 performance, 64 voice

Front Panel Controls and Terminal

Power ON/OFF switch

Tone Generator ON/OFF, Parameter Select keys (8)

Mode Select/Edit/Store keys (8)

Data Entry keys (Ten-key pads 0—9, Cursor < >, +1, -1, -, ENTER).

CARTRIDGE slot

PHONES jack

Rear Panel Terminals

MIDI IN, OUT, THRU

MIXED OUTPUTS I, II

INDIVIDUAL OUTPUTS 1—8

Cartridge Capacity

RAM1: 4K bytes (Read only)

RAM4: 16K bytes

Display

LCD: 40 characters x 2 lines (illuminated)

Power Requirements & Consumption

General Model: 220—240 V (50/60 Hz), 15 W

U.S. & Canadian Models: 120 V (50/60 Hz), 15 W

Dimensions (W x H x D)

480 x 94.5 x 287 mm (18-7/8" x 3-3/4" x 11-1/4")

Weight

4.9 kg (10 lbs 12 oz.)

Standard Accessories

MIDI Cable MIDI-03

●音源方式、発音数

6オペレータ、32アルゴリズム、FM音源×8、独立出力付き

同時発音数 最大16音

同時発音可能な音色数 最大8音色

キーアサイン方式 後着優先

●外形寸法、重量

ラックマウント方式 2 U

幅 480mm×奥行 287mm×高さ 94.5 mm

重量 4.9kg

●定格消費電力

100 V 8 W

●内部メモリー

64パフォーマンスメモリー

64インターナルボイスメモリー

128プリセットボイスメモリー (読み出し専用)

カートリッジにより、さらに64パフォーマンス、

64ボイスの使用が可能

●パネル表示器、パネルキー

40文字×2行 バック照明付き LCD

TONE GENERATOR ON/OFF および PARAMETER SELECT キー (8個、LED 付き)

MODE SELECT および STORE/COMPARE キー

DATA ENTRY キー (10キー、エンターキー、カーソルキー、+1/-1キー)

POWER SWITCH

●カートリッジ

4KByte (RAM1:読み出し専用)

16KByte (RAM4)

その他、1バンク16KByte として16バンクまでのRAMまたはROMカートリッジの使用可能

●出力端子

INDIVIDUAL OUTPUT 1 ~ 8

MIXED OUTPUT I, II

PHONES (MIXED OUTPUT I, II をそれぞれ L, Rに出力)

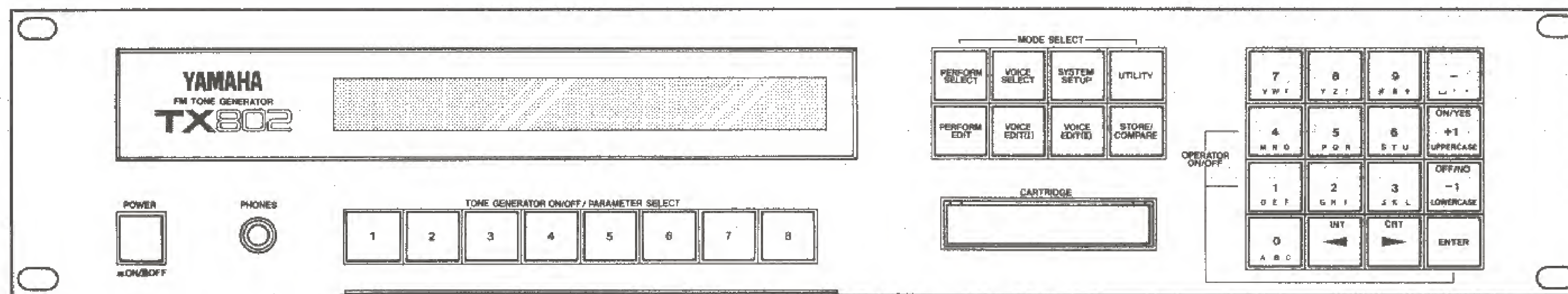
MIDI IN、MIDI OUT、MIDI THRU

●付属品

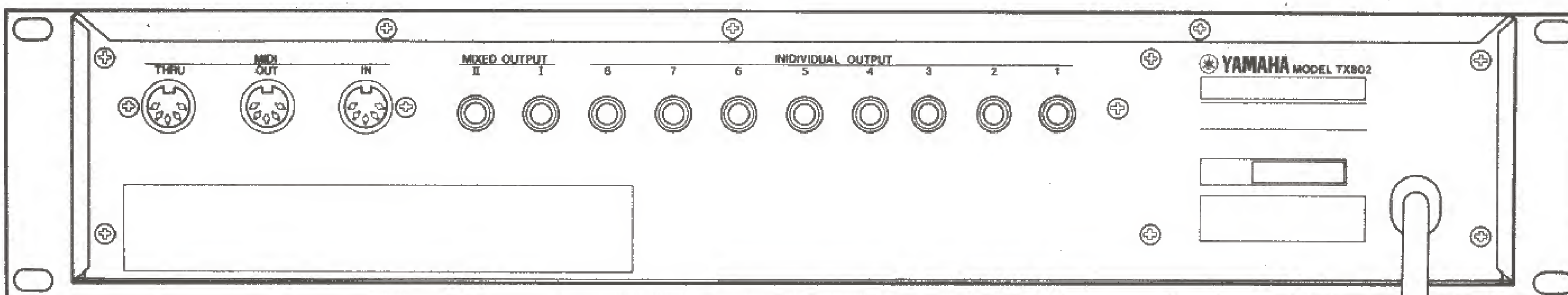
MIDIケーブル MIDI03×2

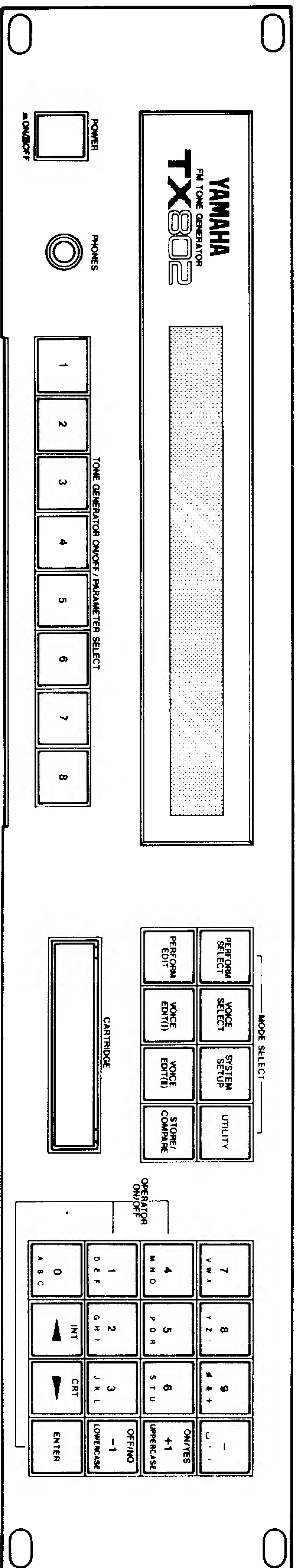
PANEL LAYOUT (パネルレイアウト)

●FRONT PANEL (フロントパネル)

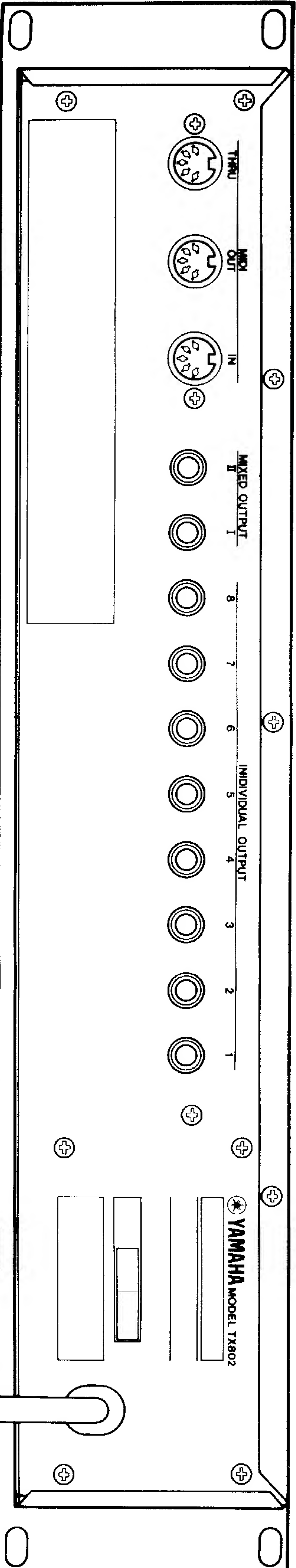


●REAR PANEL (リアパネル)

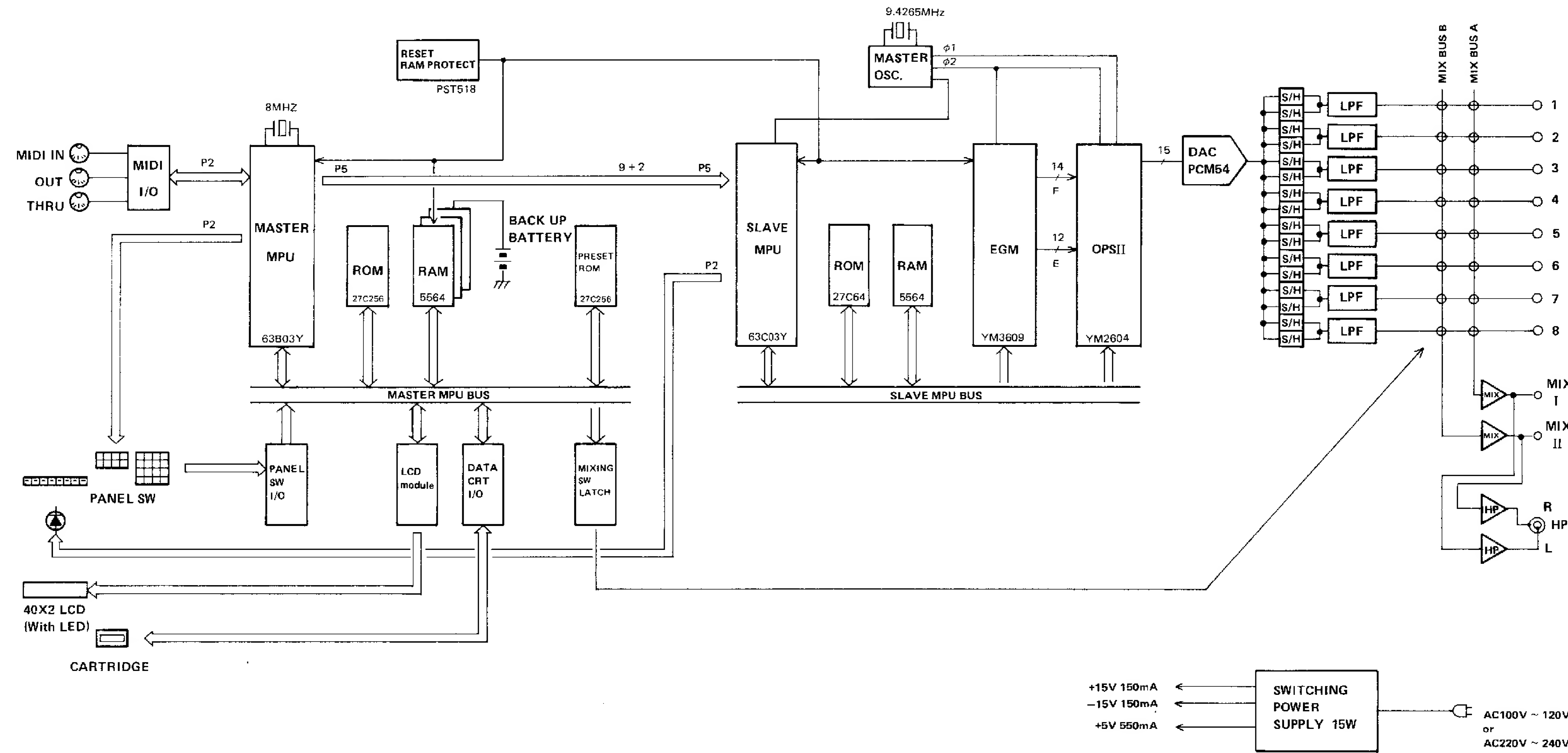




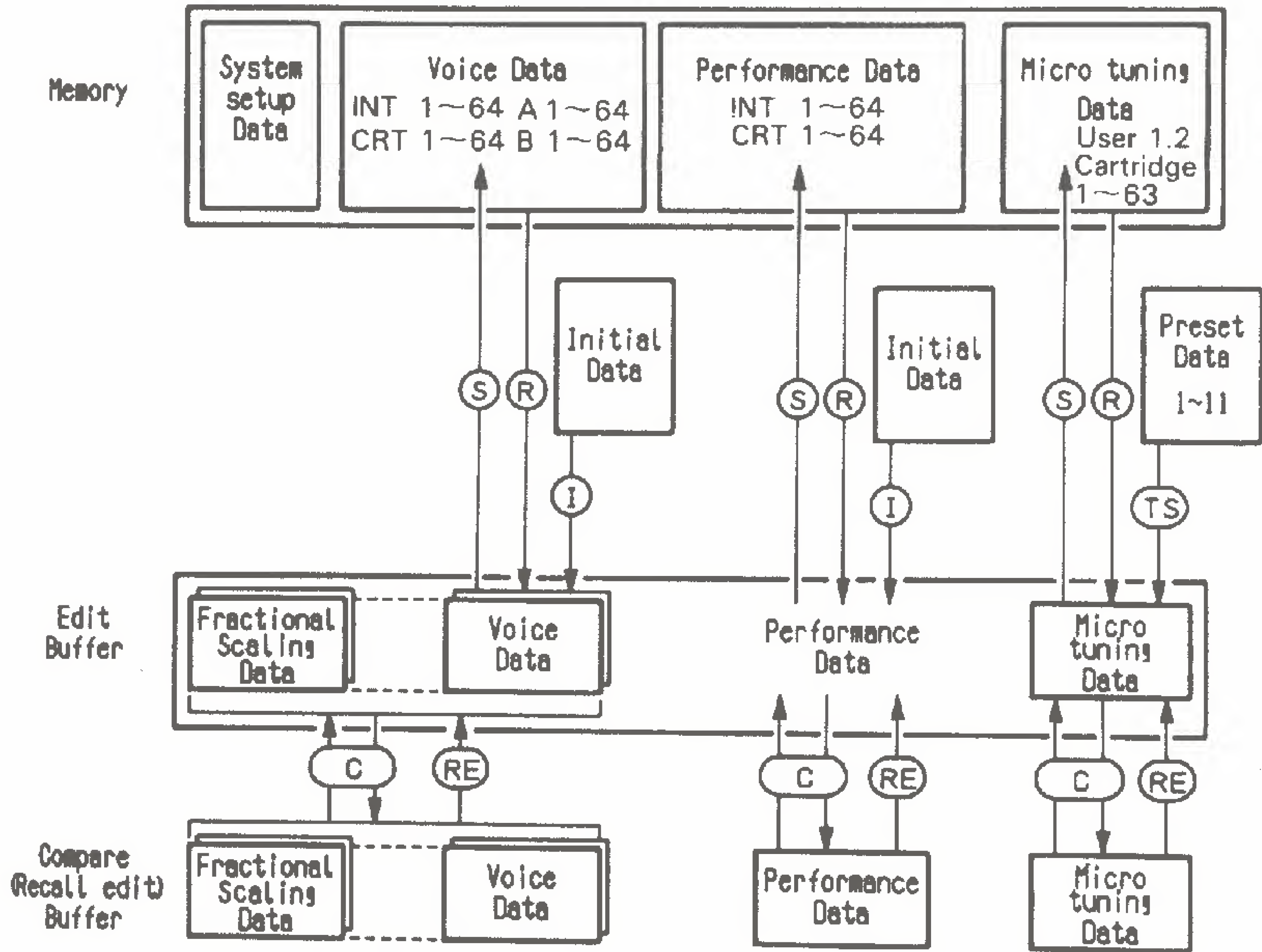
PANEL (リファパネル)



■ BLOCK DIAGRAM (ブロックダイアグラム)



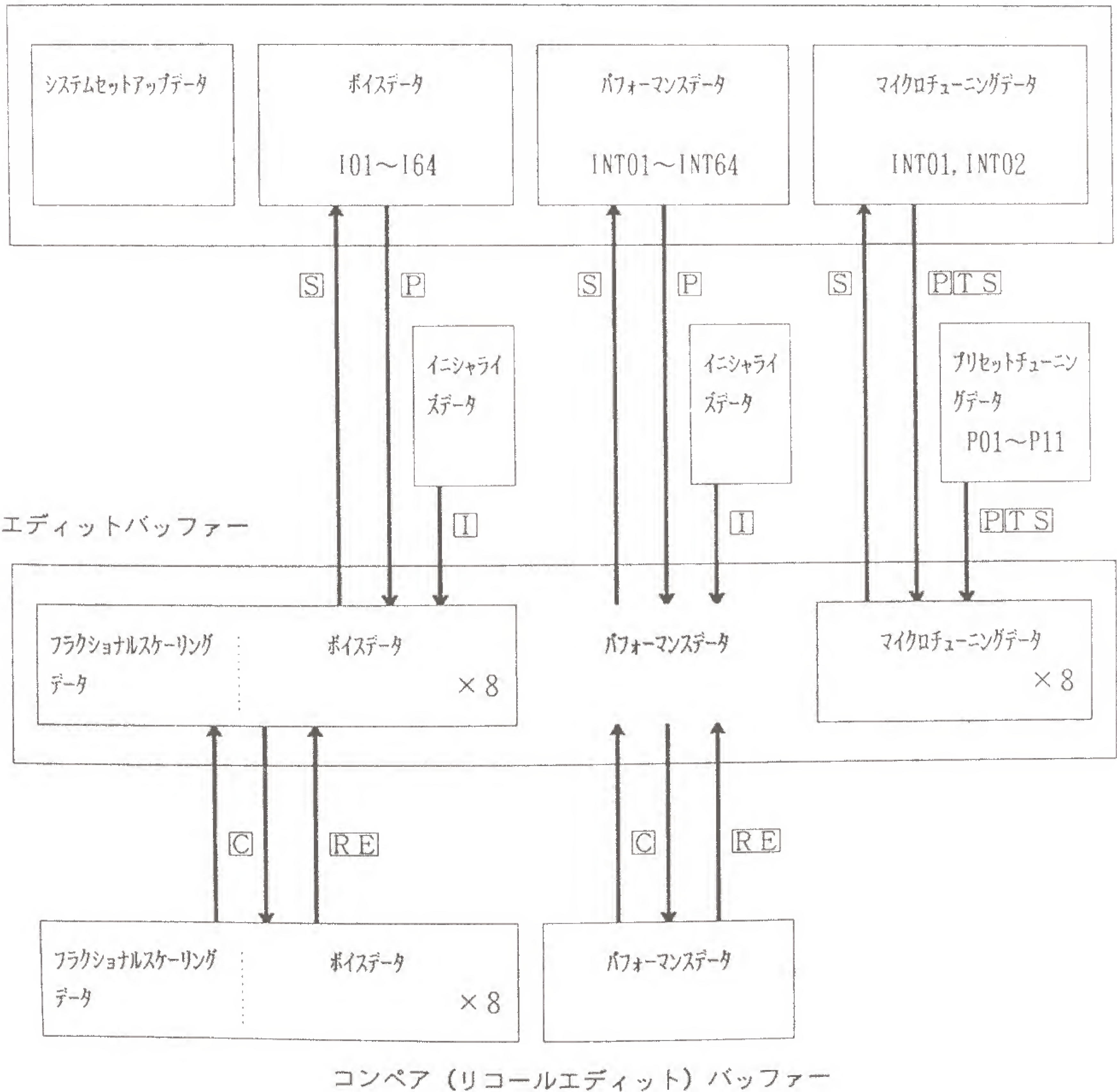
MEMORY CONFIGURATION



(S) = Store, (R) = Recall, (C) = Compare, (RE) = Recall edit
 (I) = Initialize, (TS) = Micro tuning table select

■ メモリー構成

メモリー



[S] : ストア [P] : プレイ [C] : コンペア [RE] : リコールエディット
 [I] : イニシャライズ [TS] : マイクロチューニングセレクト

- カートリッジのセーブ (Save) は上図の「メモリー」の部分保存します。
- 鍵盤を弾いたときに出る音は、「エディットバッファ」内のデータで構成されたものです。

■BANK A/B VOICE LIST (プリセットボイス)

BANK A

BANK B

| | | | | | | | |
|----|------------|----|------------|----|------------|----|------------|
| 1 | MellowHorn | 33 | Piano 1 | 1 | SuperBass | 33 | Analog-X |
| 2 | SilvaBrass | 34 | Piano 2 | 2 | StringBass | 34 | FMilters |
| 3 | ReverbBras | 35 | KnockRoad | 3 | SkweekBass | 35 | Phasers |
| 4 | Tuba | 36 | RubbaRoad | 4 | SmoochBass | 36 | Ensemble |
| 5 | Trombone | 37 | HardRoads | 5 | BopBass | 37 | MalletHorn |
| 6 | HardTrumps | 38 | FullTines | 6 | OwlBass | 38 | FM-Growth |
| 7 | Trumpet A | 39 | ClaviStuff | 7 | JazzBass | 39 | ElectoComb |
| 8 | SilvaTrmpt | 40 | Clavi | 8 | HardBass | 40 | ClariSolo |
| 9 | Trumpet B | 41 | Clavecin | 9 | GuitarBox | 41 | PitchaPad |
| 10 | FrenchHorn | 42 | ClaviPluck | 10 | PickGuitar | 42 | ClaviBrass |
| 11 | Strings | 43 | NasalClav | 11 | FingaPicka | 43 | WhapSynth |
| 12 | HallOrch | 44 | HarpsiBox | 12 | LeadaPicka | 44 | Whasers |
| 13 | NewOrchest | 45 | HarpsiWire | 13 | YesBunk | 45 | Fifths |
| 14 | Analog-Str | 46 | WireStrg A | 14 | 12 Strings | 46 | ElecBrass |
| 15 | LiveStrg | 47 | WireStrg B | 15 | Classipika | 47 | ElectroBak |
| 16 | BowedBass | 48 | TouchOrgan | 16 | Shami | 48 | HarmoSynth |
| 17 | EleCello A | 49 | ShOrgan | 17 | Maribumba | 49 | PianoBells |
| 18 | EleCello B | 50 | TapOrgan | 18 | DX Marimba | 50 | St.Elmo's |
| 19 | Violins | 51 | BriteOrgan | 19 | Nu Marimba | 51 | MilkyWays |
| 20 | Bassoon | 52 | MagicOrgan | 20 | StonePhone | 52 | Pluk |
| 21 | Clarinet | 53 | SoftOrgan | 21 | VibraPhone | 53 | TingVoice |
| 22 | Oboe | 54 | PipeOrgan | 22 | Celeste | 54 | Plukatan |
| 23 | Flute | 55 | PuffOrgan1 | 23 | Swissnare | 55 | OctiLate |
| 24 | SongFlute | 56 | PuffPipes | 24 | Tom C4 | 56 | LateDown |
| 25 | SpitFlute | 57 | PuffOrgan2 | 25 | CongaDrum | 57 | Glastine |
| 26 | PanFlood | 58 | Harmonium1 | 26 | Tub Bells | 58 | BellWahh |
| 27 | Piccolo | 59 | Harmonium2 | 27 | Gong | 59 | RubberGong |
| 28 | Sax | 60 | Whisper A | 28 | Timpani | 60 | Wallop |
| 29 | Harmonica | 61 | Choir | 29 | Claves | 61 | Explosion |
| 30 | Harp | 62 | LadyVox | 30 | Bells | 62 | KoikeCycle |
| 31 | EbonyIvory | 63 | MaleChoir | 31 | SteelCans | 63 | Thunderon |
| 32 | PianoBrite | 64 | Whisper B | 32 | Handrum | 64 | Science |

[FM tone generator]

Model TX802 MIDI Implementation Chart Version : 1.0

| Function ... | Transmitted | Recognized | Remarks |
|-------------------|---|----------------------------|---|
| Basic Default | 1 - 16 | 1 - 16 | memorized |
| Channel Changed | 1 - 16 | 1 - 16 | |
| Mode Default | x | 1, 2, 3, 4 | memorized |
| Mode Messages | | POLY, MONO(M=1) | |
| Mode Altered | XXXXXXXXXXXXXXXXXX | x | |
| Note Number | x | 0 - 127 | |
| Note True voice | XXXXXXXXXXXXXXXXXX | 0 - 127 | |
| Velocity Note ON | x | o v=1-127 | |
| Velocity Note OFF | x | x | |
| After Key's | x | x | |
| Touch Ch's | x | o | |
| Pitch Bender | x | o 0-12 semi X2 | 7 bit resolution |
| Control Change | 1 : x 2 : x 4 : x 5 : x 7 : 64 : x 65 : x | o o o o o o | X1 : Modulation wheel X1 : Breath control X1 : Foot control X1 : Portamento time X1 : Volume X1 : Sustain sw X1 : Portamento sw |
| Prog Change | x True # : XXXXXXXXXXXXXXXXXXXX | o 0 - 127 o 0 - 127 | if prgram change : sw is on. X3 |
| System Exclusive | o X4 | o X4 | |
| System Common | Song Pos : x Song Sel : x Tune : x | x x x | |
| System Real Time | Clock : x Commands : x | x x | |
| Aux Messages | Local ON/OFF : x All Notes OFF : x Active Sense : x Reset : x | x o (126,127) o x | |
| Notes: | X1 = receive if control change switch is on. X2 = receive if pitch bend switch is on. X3 = 11-64 (0-63) , C1-64 (64-127) for Performance. 11-64 , C1-64 , A1-64 , B1-64 (0-63) for Voice. X4 = Bulk dump & param. change of Voice, Perf, System, mtune, frac. | | |
| Mode 1 | OMNI ON, POLY | Mode 2 : OMNI ON, MONO | o : Yes |
| Mode 3 | OMNI OFF, POLY | Mode 4 : OMNI OFF, MONO | x : No |

LSI DATA TABLE (LSI端子機能表)

● HD63B03YP-N (XD245001) CPU

● HD63C03YP (XB529001) CPU

| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---------|-----------------|-----|------------------------|----------|-----------------|--------------------|---------------------------|
| 1 | V _{ss} | I | Ground | 33 | V _{cc} | | DC Supply (+5V) |
| 2 | XTAL | I | } Clock (8MHz) | 34 | V15 | O | } |
| 3 | EXTAL | I | | 35 | A14 | O | |
| 4 | MP0 | I | } Mode program | 36 | A13 | O | } Address bus |
| 5 | MP1 | I | | 37 | A12 | O | |
| 6 | RES | I | Reset | 38 | A11 | O | } Address bus |
| 7 | STBY | I | Stand-by mode signal | 39 | A10 | O | |
| 8 | NMi | I | Non-maskable interrupt | 40 | A9 | O | } Address bus |
| 9 | P20 | I/O | } | 41 | A8 | O | |
| 10 | P21 | I/O | | } Port 2 | 42 | V _{ss} | |
| 11 | P22 | I/O | 43 | | A7 | O | } Address bus |
| 12 | P23 | I/O | 44 | A6 | O | | |
| 13 | P24 | I/O | } | 45 | A5 | O | } Address bus |
| 14 | P25 | I/O | | 46 | A4 | O | |
| 15 | P26 | I/O | } | 47 | A3 | O | } Address bus |
| 16 | P27 | I/O | | 48 | A2 | O | |
| 17 | P50 | I/O | } | 49 | A1 | O | } Address bus |
| 18 | P51 | I/O | | 50 | A0 | O | |
| 19 | P52 | I/O | } Port 5 | 51 | D7 | I/O | } Data bus |
| 20 | P53 | I/O | | 52 | D6 | I/O | |
| 21 | P54 | I/O | 53 | D5 | I/O | } Data bus | |
| 22 | P55 | I/O | 54 | D4 | I/O | | |
| 23 | P56 | I/O | } | 55 | D5 | I/O | } Data bus |
| 24 | P57 | I/O | | 56 | D2 | I/O | |
| 25 | P60 | I/O | } | 57 | D1 | I/O | } Data bus |
| 26 | P61 | I/O | | 58 | D0 | I/O | |
| 27 | P62 | I/O | } Port 6 | 59 | BA | O | Bus available |
| 28 | P63 | I/O | | 60 | LIR | O | Load instruction resistor |
| 29 | P64 | I/O | 61 | R/W | O | Read/Write control | |
| 30 | P65 | I/O | 62 | WR | O | Write | |
| 31 | P66 | I/O | 63 | RD | O | Read | |
| 32 | P67 | I/O | 64 | E | O | Enable | |

● PCM54HP (XA566001) Digital Analog Converter

| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---------|------------------|-----|-------------|---------|------------------|-----|------------------|
| 1 | V _{pot} | | Not used | 15 | DA4 | | Bit 13 |
| 2 | DA16 | | Bit 1 (MSB) | 16 | DA3 | | Bit 14 |
| 3 | DA15 | | Bit 2 | 17 | DA2 | | Bit 15 |
| 4 | NC | | Not used | 18 | LSB | | Bit 16 |
| 5 | DA14 | | Bit 3 | 19 | V ₀ | | Voltage Output |
| 6 | DA13 | | Bit 4 | 20 | FBR | | Not used |
| 7 | DA12 | | Bit 5 | 21 | INV | | Summing Junction |
| 8 | DA11 | | Bit 6 | 22 | GND | | Common |
| 9 | DA10 | | Bit 7 | 23 | I ₀ | | Current Output |
| 10 | DA9 | | Bit 8 | 24 | NC | | Not Used |
| 11 | DA8 | | Bit 9 | 25 | OFF.S | | Not Used |
| 12 | DA7 | | Bit 10 | 26 | +V _{cc} | | +15V |
| 13 | DA6 | | Bit 11 | 27 | ADJ | | Not Used |
| 14 | DA5 | | Bit 12 | 28 | -V _{cc} | | -15V |

● YM2604 (XA489001) OPSII (Operator-S)

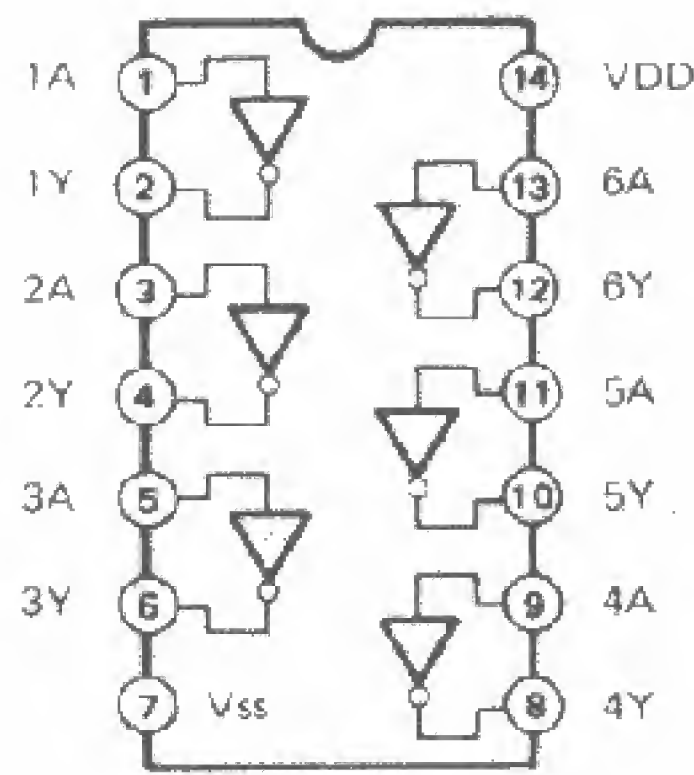
| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION | |
|---------|------|-----|-----------------------------------|-----------------------------|------|--------------------|-----------------------------------|----------------------------|
| 1 | Vss | I | DC supply (0V) | 33 | DA7 | O | } Digital code for analog convert | |
| 2 | D6 | I/O | } Data buses | 34 | DA8 | O | | |
| 3 | D7 | I/O | | 35 | DA9 | O | | |
| 4 | DS | I | | 36 | DA10 | O | | |
| 5 | WR | I | Read write control | 37 | DA11 | O | | |
| 6 | — | — | } Non connection | 38 | DA12 | O | | |
| 7 | — | — | | 39 | DA13 | O | | |
| 8 | — | — | | 40 | DA14 | O | | |
| 9 | SH1 | O | } Sample and hold data | 41 | DA15 | O | | |
| 10 | SH2 | O | | 42 | DA16 | O | | |
| 11 | SYNC | O | } Frequency data (from EGS) | 43 | E1 | I | | } Envelope data (from EGS) |
| 12 | F1 | I | | 44 | E2 | I | | |
| 13 | F2 | I | | 45 | E3 | I | | |
| 14 | F3 | I | | 46 | E4 | I | | |
| 15 | F4 | I | | 47 | E5 | I | | |
| 16 | F5 | I | | 48 | E6 | I | | |
| 17 | Vss | I | | DC supply (0V) | 49 | E7 | I | |
| 18 | F6 | I | | } Frequency data (from EGS) | 50 | E8 | I | |
| 19 | F7 | I | 51 | | E9 | I | | |
| 20 | F8 | I | 52 | | E10 | I | | |
| 21 | F9 | I | 53 | | E11 | I | | |
| 22 | F10 | I | 54 | | E12 | I | | |
| 23 | F11 | I | 55 | | KON | I | Key ON data | |
| 24 | F12 | I | } Digital code for analog convert | 56 | D0 | I/O | } Data buses | |
| 25 | F13 | I | | 57 | D1 | I/O | | |
| 26 | F14 | I | | 58 | D2 | I/O | | |
| 27 | DA2 | O | | 59 | D3 | I/O | | |
| 28 | DA3 | O | | 60 | D4 | I/O | | |
| 29 | DA4 | O | | 61 | D5 | I/O | | |
| 30 | DA5 | O | 62 | VDD | I | DC supply (+5V) | | |
| 31 | DA6 | O | 63 | φ1 | I | Master clock pulse | | |
| 32 | Vss | I | 64 | φ2 | I | | | |

● YM3609 (XA898001) Envelope Generator

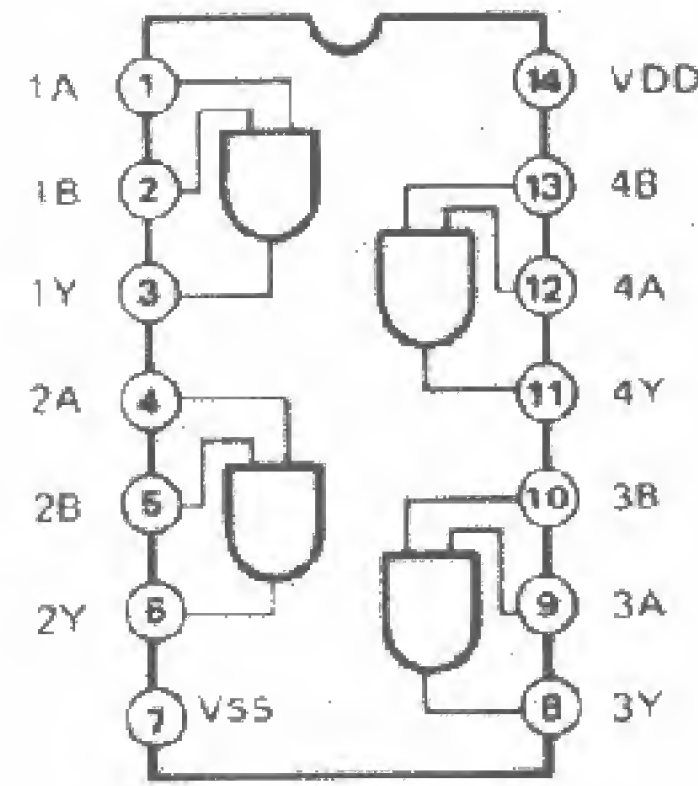
| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---------|------|-----|------------------|---------|------|-----------------|---------------|
| 1 | Vcc | | Power supply | 33 | Vss | | Ground |
| 2 | NC | | } Envelope data | 34 | φ2 | I | Clock IN |
| 3 | E6 | O | | 35 | TEST | I | Test pin |
| 4 | E7 | O | | 36 | D0 | I | } Data bus |
| 5 | E8 | O | | 37 | D1 | I | |
| 6 | E9 | O | | 38 | D2 | I | |
| 7 | E10 | O | | 39 | D3 | I | |
| 8 | E11 | O | | 40 | NC | | } Data bus |
| 9 | E12 | O | | 41 | NC | | |
| 10 | NC | | 42 | NC | | | |
| 11 | NC | | 43 | D4 | I | | |
| 12 | NC | | 44 | D5 | I | | |
| 13 | KON | O | 45 | D6 | I | | |
| 14 | F1 | O | 46 | D7 | I | | |
| 15 | F2 | O | 47 | NC | | } Address bus | |
| 16 | F3 | O | 48 | A0 | I | | |
| 17 | F4 | O | 49 | A1 | I | | |
| 18 | F5 | O | 50 | A2 | I | | |
| 19 | F6 | O | } Frequency data | 51 | A3 | I | |
| 20 | F7 | O | | 52 | A4 | I | |
| 21 | F8 | O | | 53 | NC | | |
| 22 | F9 | O | | 54 | NC | | |
| 23 | NC | | | 55 | CE1 | I | } Chip enable |
| 24 | NC | | | 56 | CE2 | I | |
| 25 | NC | | 57 | NC | | } Synchro pulse | |
| 26 | F10 | O | 58 | NC | | | |
| 27 | F11 | O | 59 | SYNC | I | | |
| 28 | F12 | O | } Envelope data | 60 | E1 | O | |
| 29 | F13 | O | | 61 | E2 | O | |
| 30 | F14 | O | | 62 | E3 | O | |
| 31 | IC | I | | 63 | E4 | O | |
| 32 | Vcc | | | 64 | E5 | O | |

IC BLOCK DIAGRAM (ICブロック図)

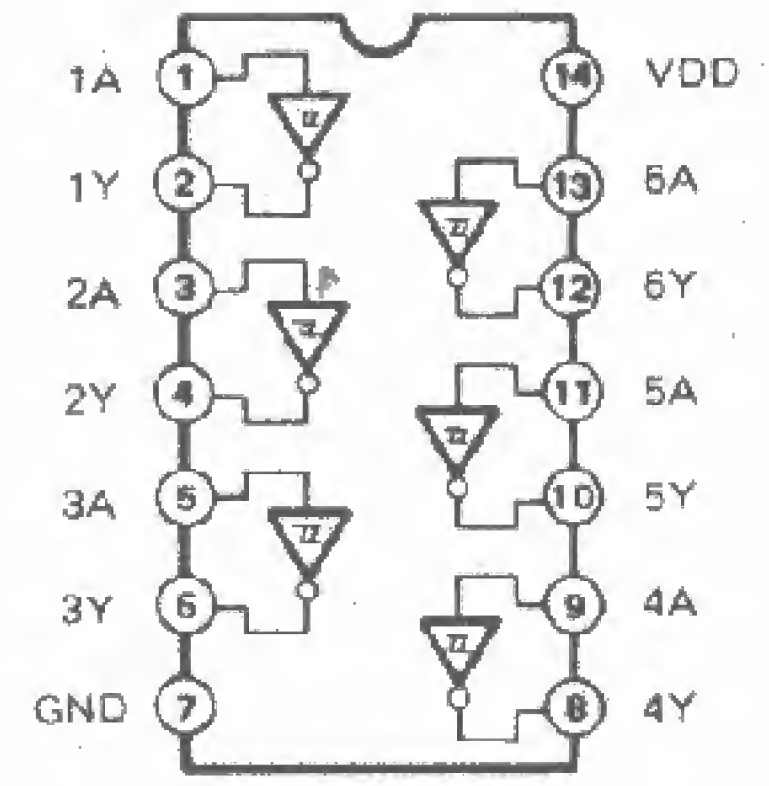
- HD74LS04P (IG027010)
- TC40H004P (IG051000)
- SN74HC04N (IR000450)
Hex Inverter



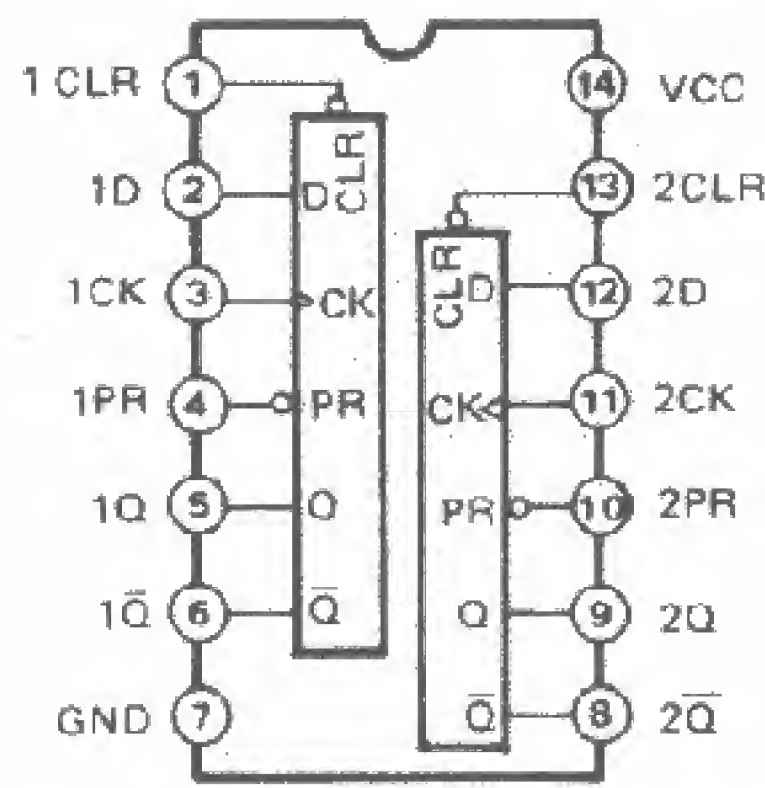
- SN74HC08N (IR000850)
Quad 2 Input AND



- SN74HC14N (IR001450)
Hex Inverter

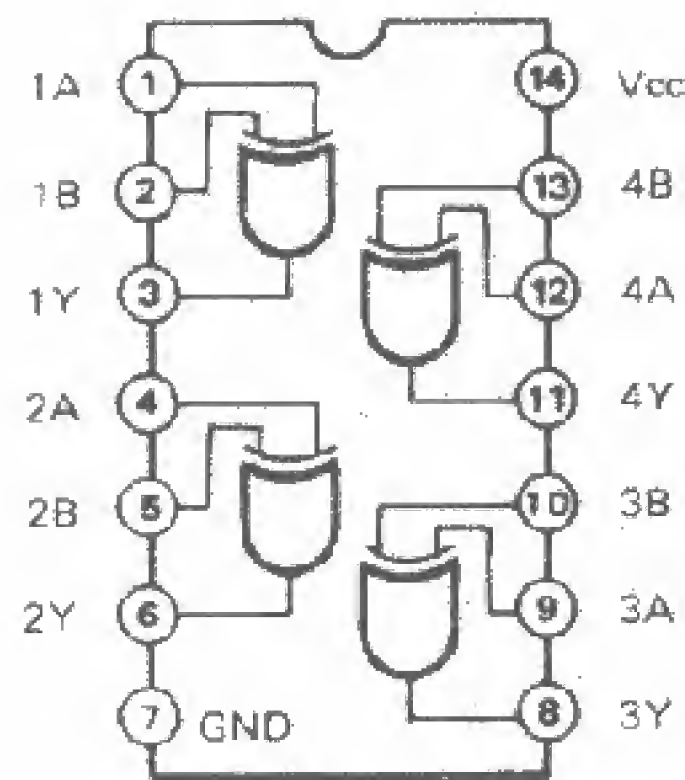


- TC40H074P (IG051100)
Dual D-Type Flip-Flop

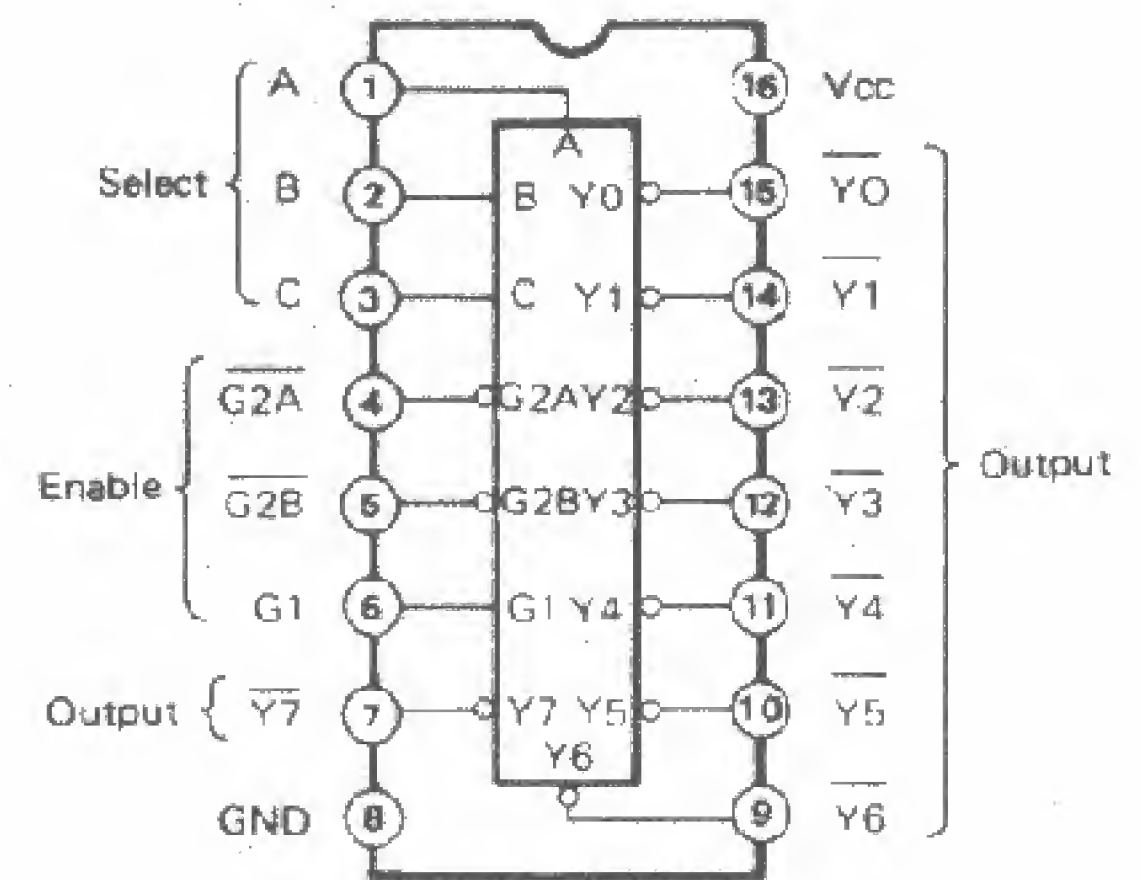


| INPUTS | | | | OUTPUTS | |
|--------|-----|-----|---|---------|-------------|
| PR | CLR | CLK | D | Q | \bar{Q} |
| L | H | X | X | H | L |
| H | L | X | X | L | H |
| L | L | X | X | H | H |
| H | H | f | H | H | L |
| H | H | f | L | L | H |
| H | H | L | X | Q_0 | \bar{Q}_0 |

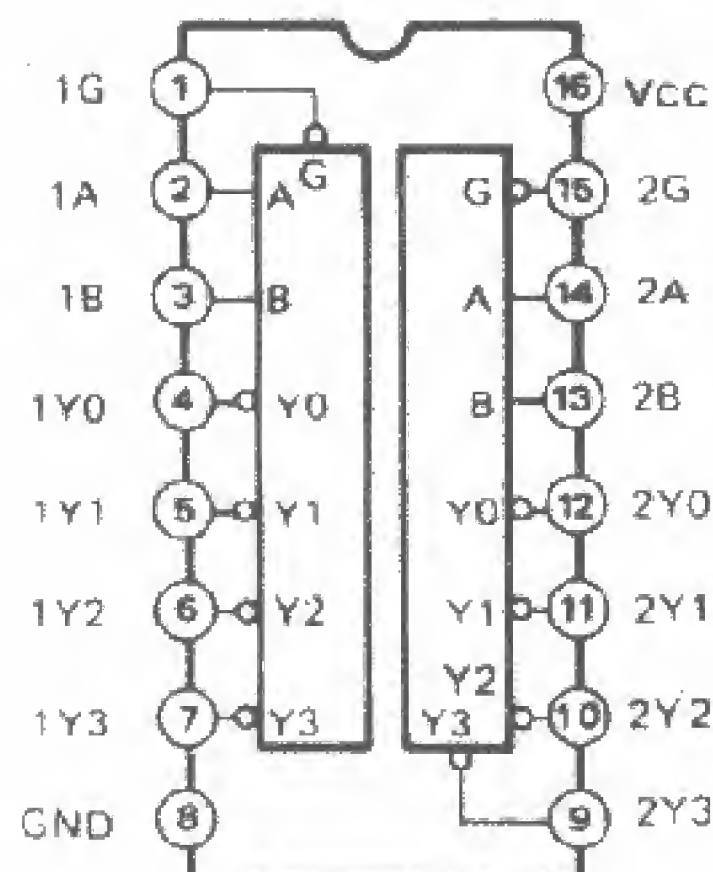
- TC74HC86 (IR008600)
Quad 2 Input EX-OR



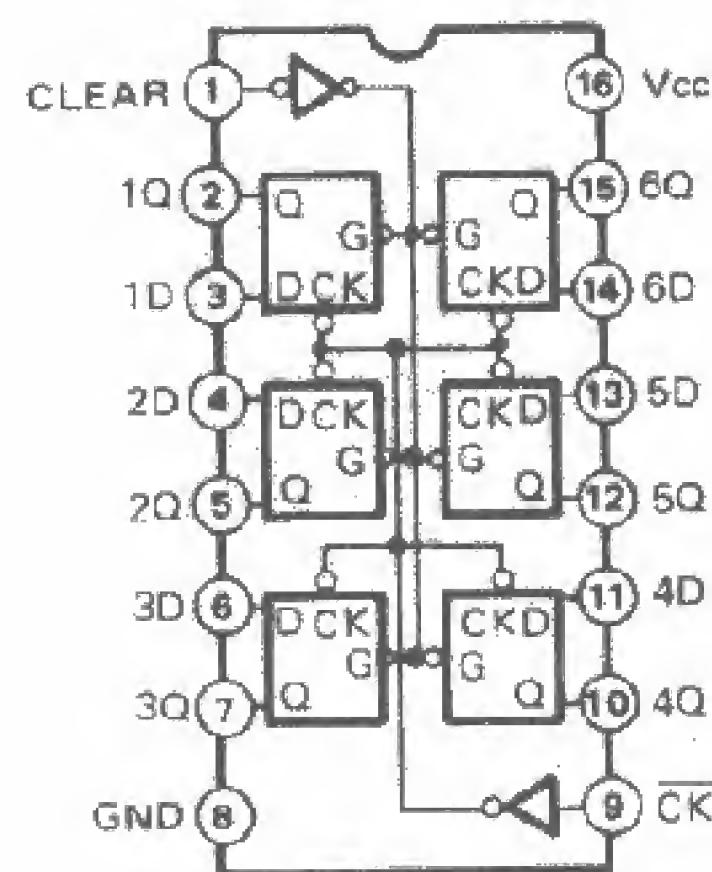
- TC40H138P (IG111900)
- SN74HC138N (IR013850)
3 to 8 Demultiplexer



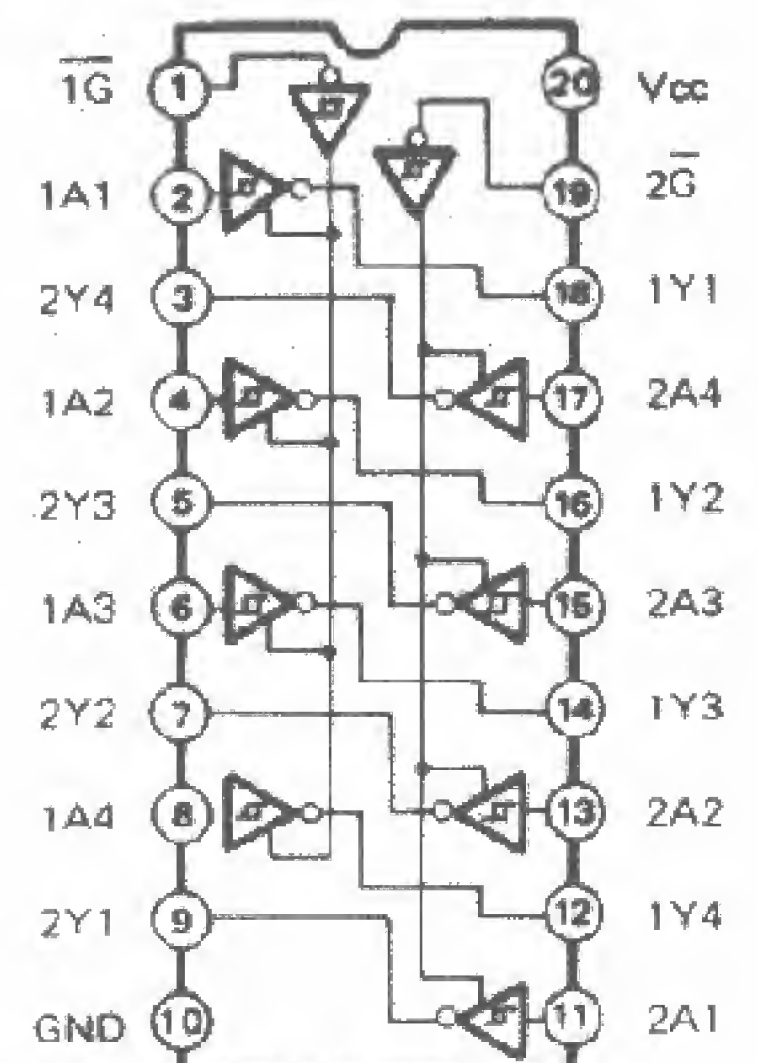
- SN74HC139N (IR013950)
Dual 2 to 4 Demultiplexer



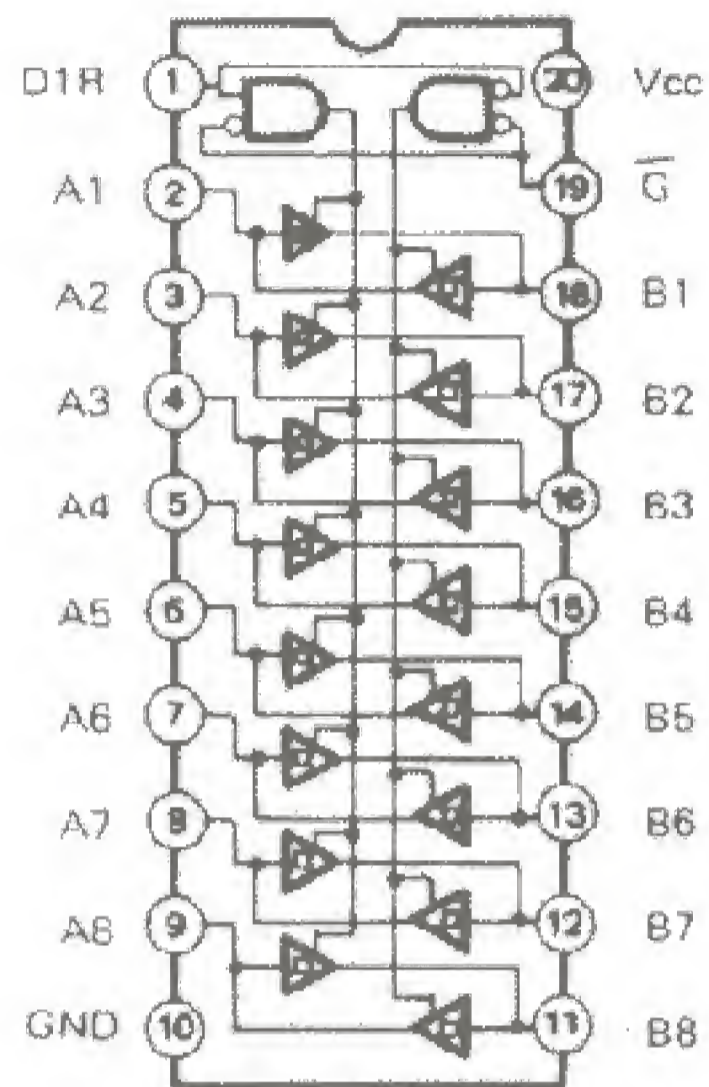
- SN74HC174N (IR017450)
Hex D-Type Flip-Flop



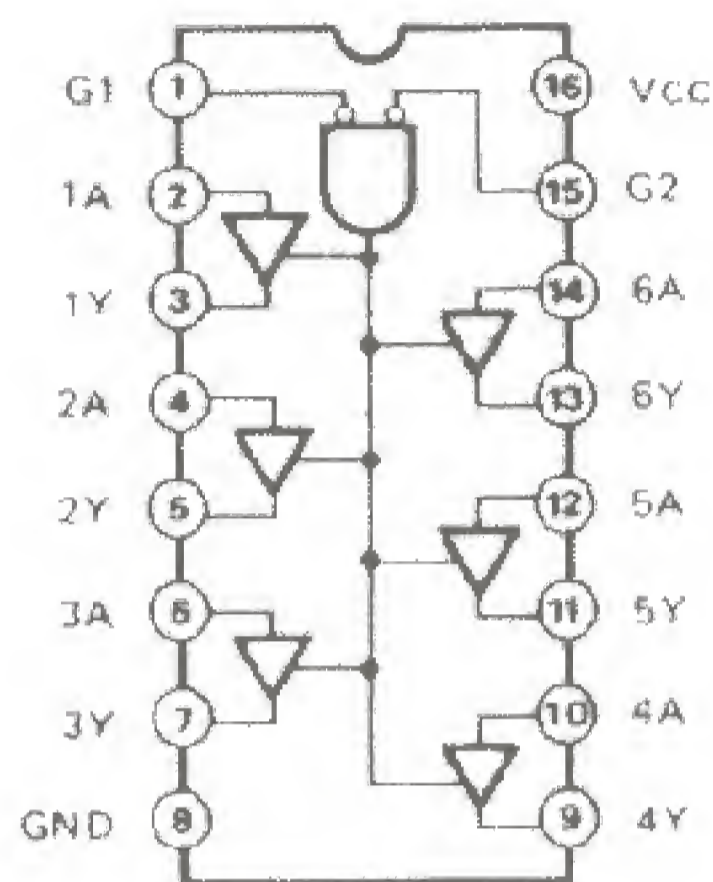
- TC40H240P (IG068100)
Octal Bus Inverter



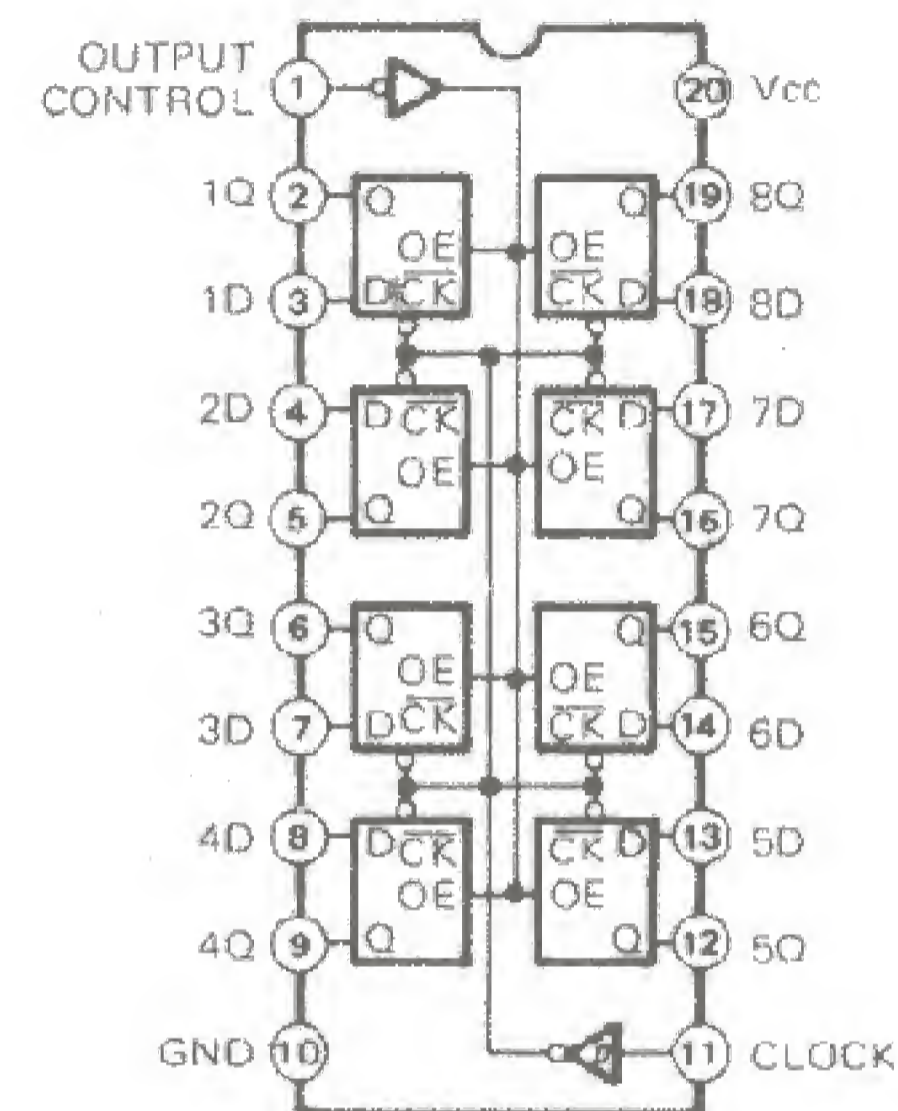
- **TC40H245P (IG130700)**
- **SN74HC245N (IR024550)**
Octal 3-State Bus Transceiver



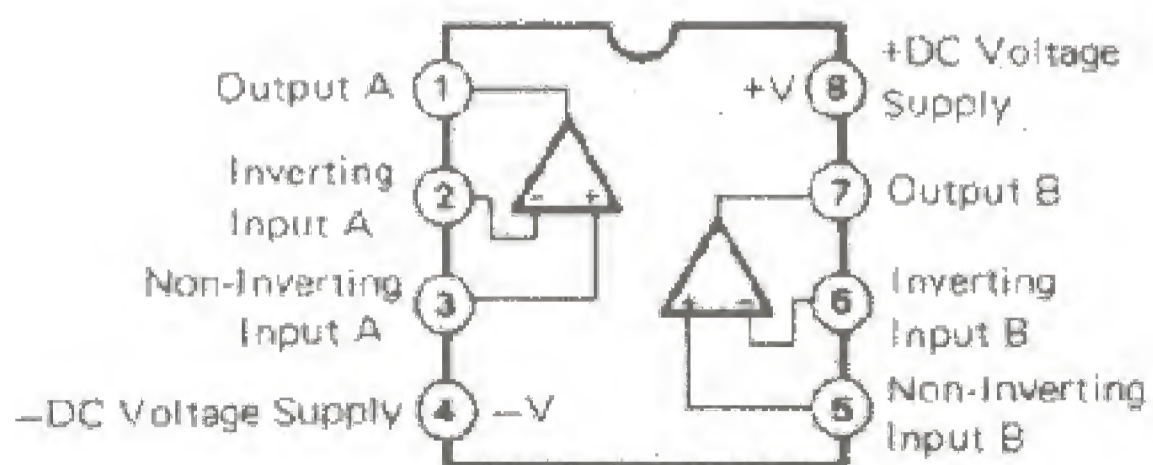
- **SN74HC365N (IR036550)**
Hex 3-State Bus Buffer



- **TC40H374P (IG078600)**
Octal 3-State D-Type Flip-Flop



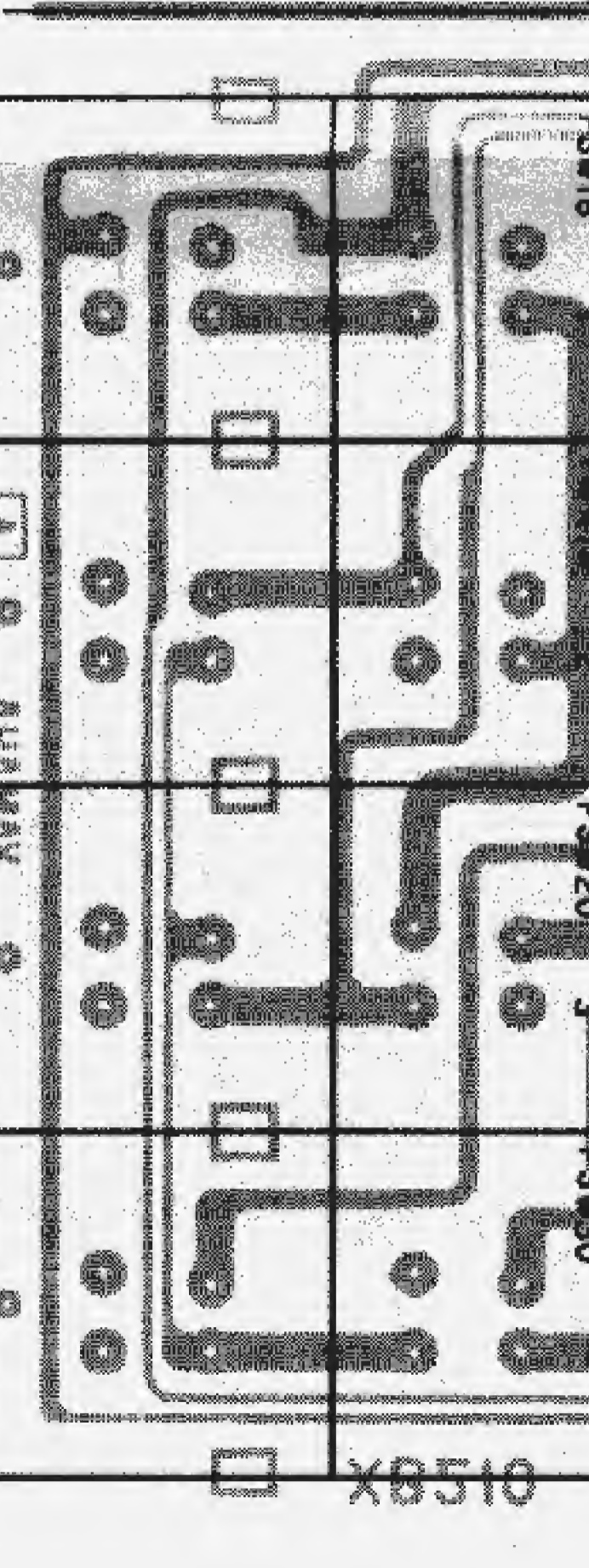
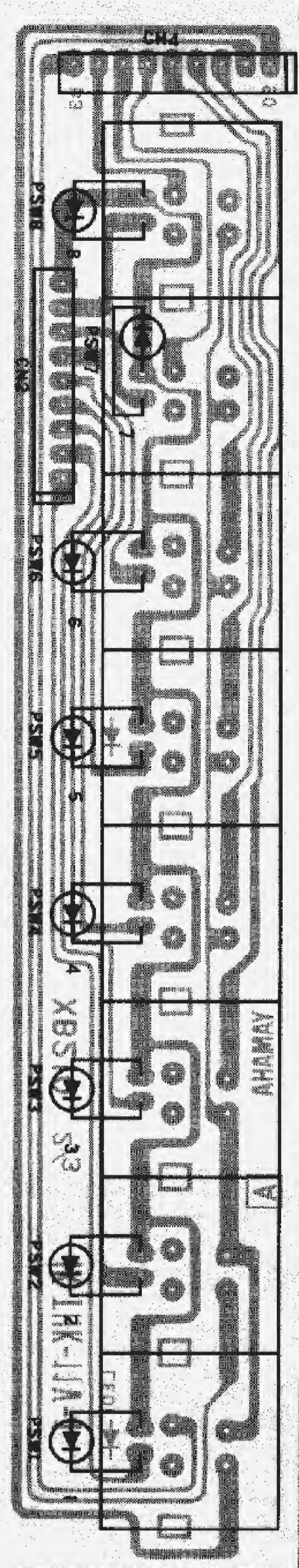
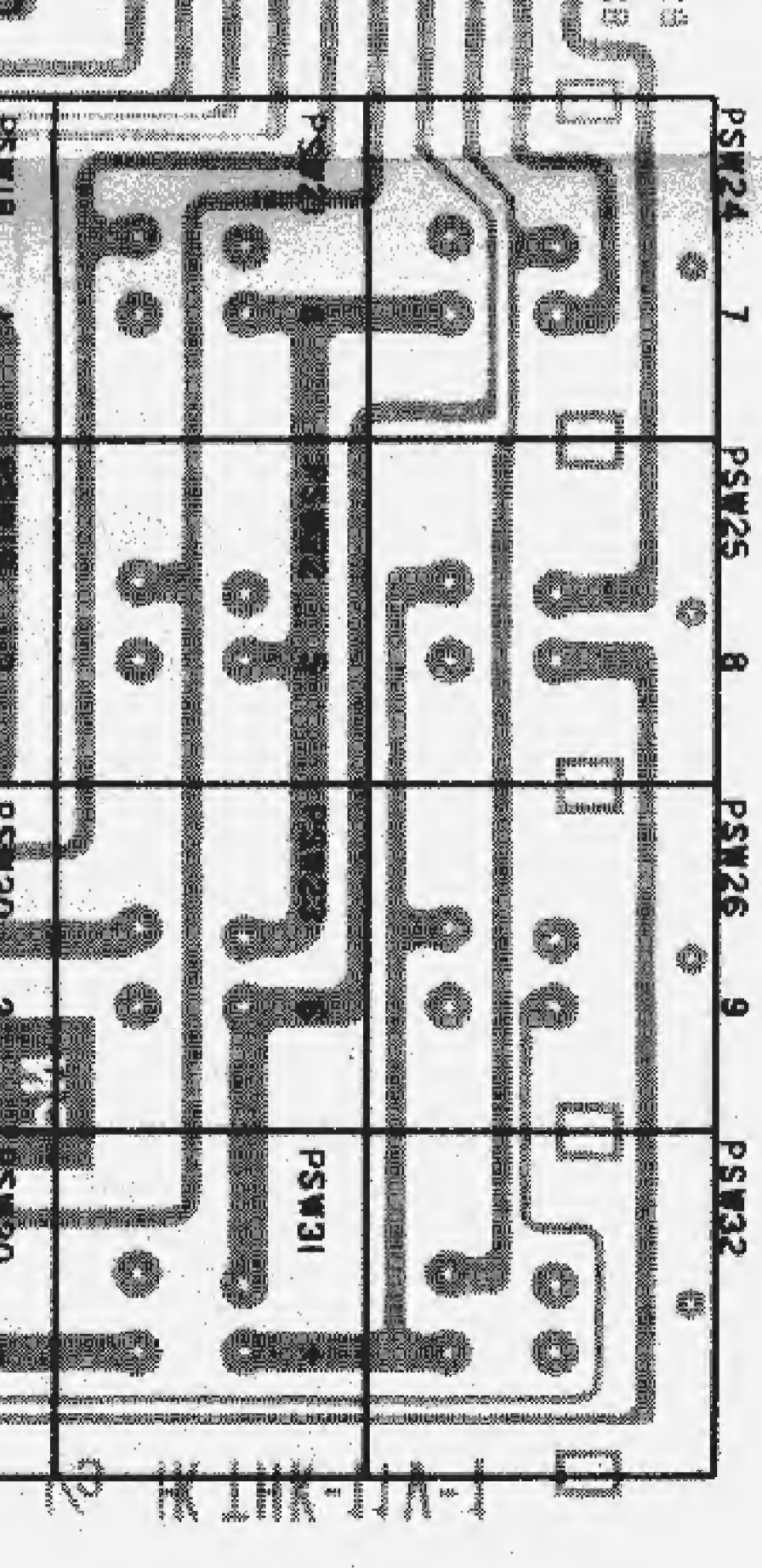
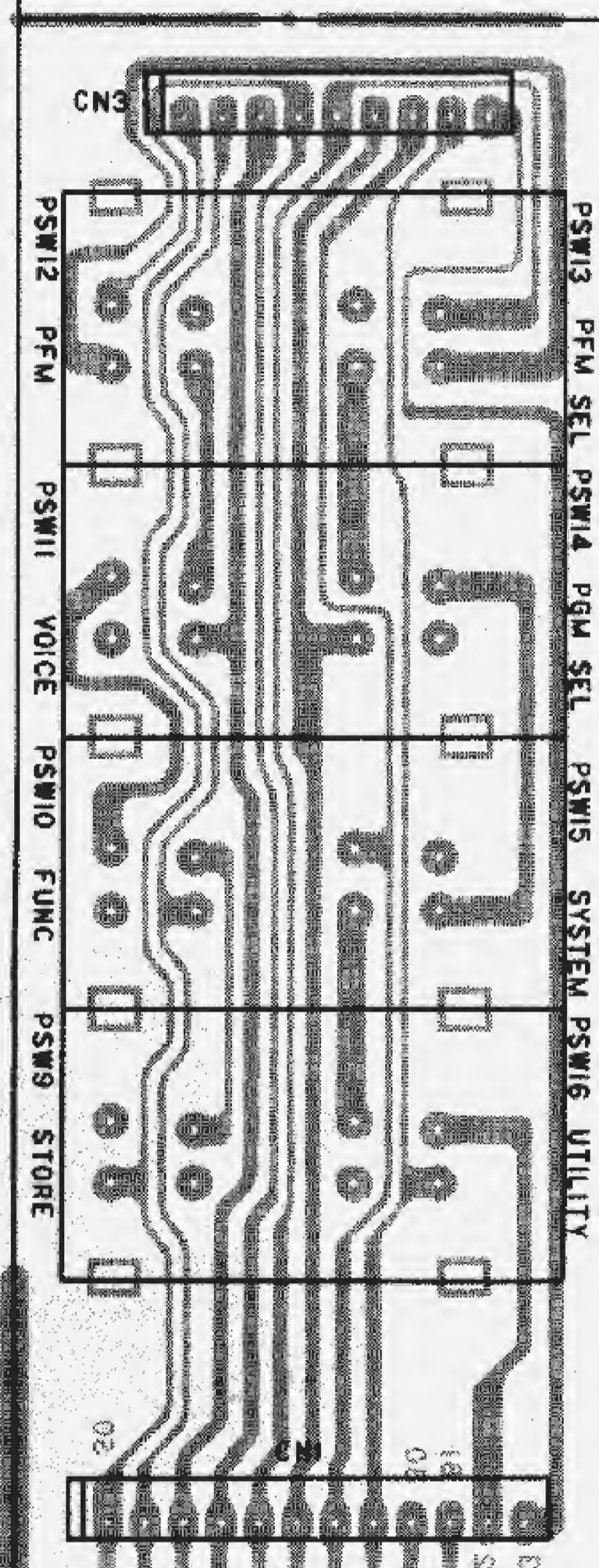
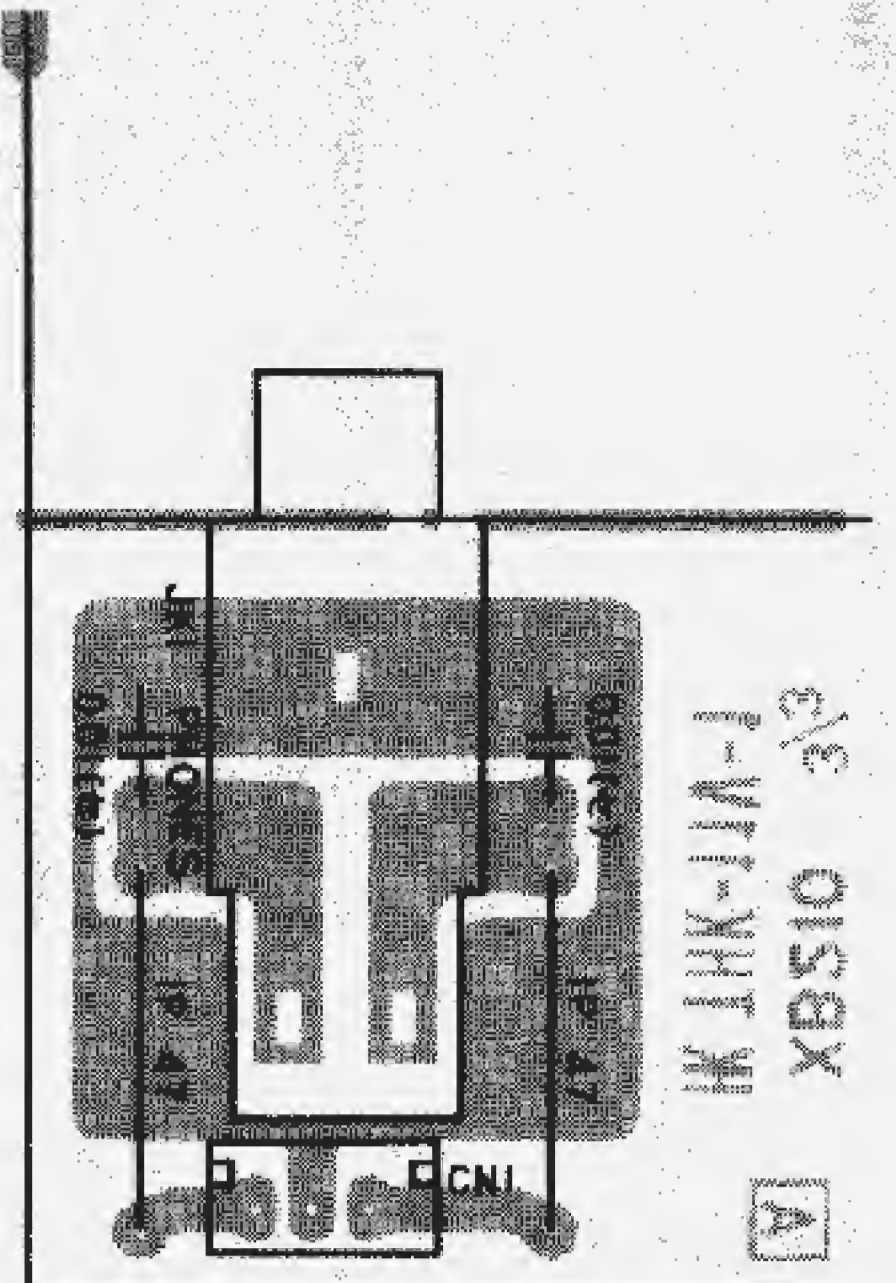
- **NJM4556 (IG042500)**
- **NJM072D (IG107000)**
- **NJM4558DV (IG001390)**
Dual Operation Amplifier



Notes)

DM. Circuit Board: XB209C

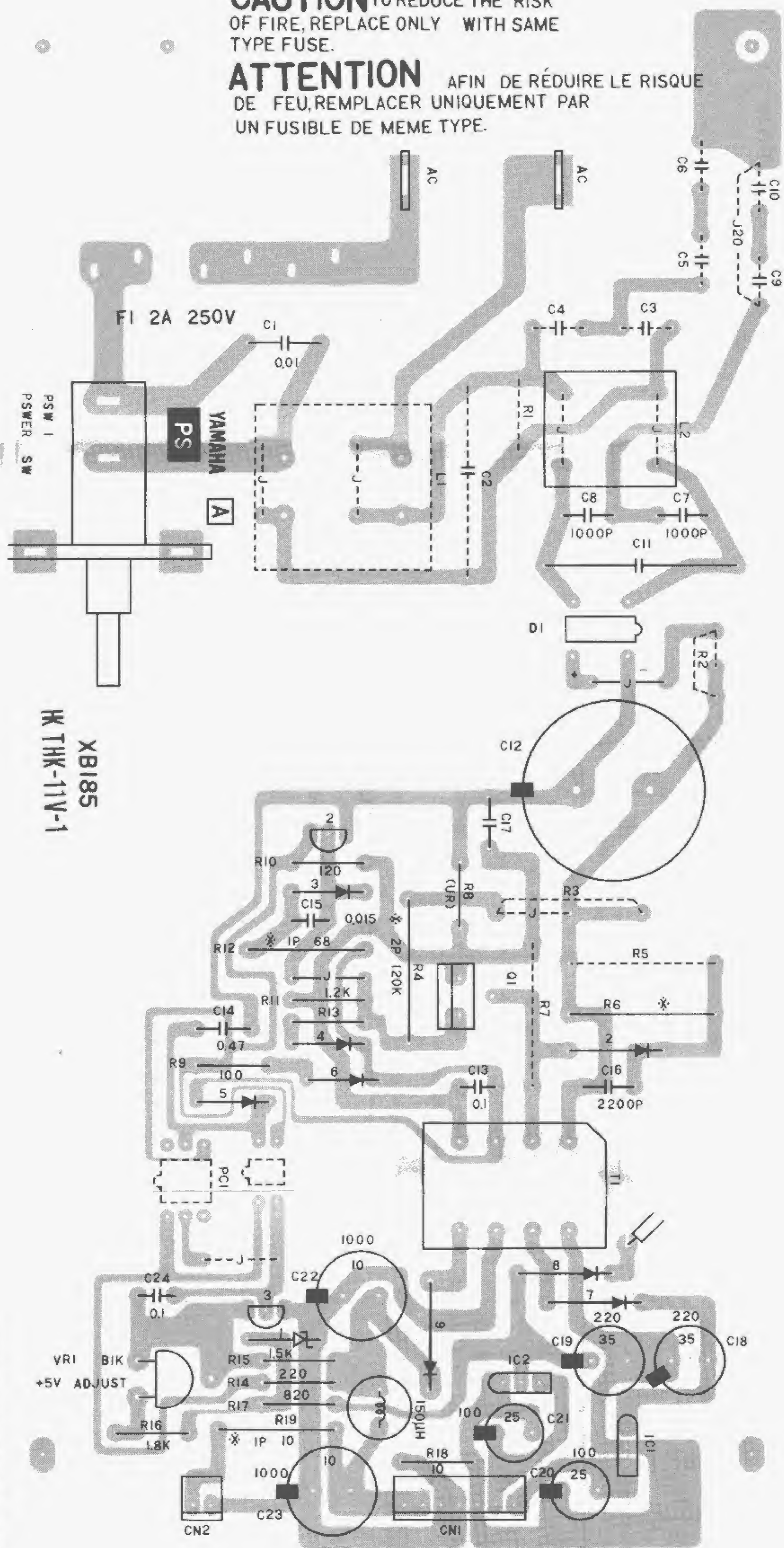
1. IC:
 - IC1: HD63B03YP-N (XD245001) CPU (Master)
 - 2: HD63C03YP (XB529001) CPU (Slave)
 - 3: YM3609 (XA898001) EGM
 - 4: YM2604 (XA489001) OPS2
 - 5: PCM54HP (XA566001) DAC
 - 6: 952AV100 (XB223002) (Main)
 - 7 ~ 9: TC5564PL-15 (XB013001) 8kX8 SRAM
 - 10: 952BV100 (XB224002) (Wave)
 - 11: 952CB100 (XB536002) (Slave)
 - 12: TC5565L-12, 15 (IG148500) 64K SRAM
 - 13: SN74HC14N (IR001450) INV
 - 14: SN74HC139N (IR013950) DECO2
 - 15: TC40H138P (IG111900) DEC DEMP
 - 16, 29, 30: SN74HC174N (IR017450) D.FF
 - 17, 28: SN74HC08N (IR000850) AND
 - 18: SN74HC245N (IR024550) Transceiver
 - 19 ~ 21: SN74HC365N (IR036550) BUS DRI
 - 22: HD74LS04P (IG027010) INV
 - 23: TC40H240P (IG068100) INV
 - 24: TC40H245P (IG130700) BUS BUFF
 - 25: SN74HC138N (IR013850) DECO3
 - 26: TC40H004P (IG51000) INV
 - 27: TC40H074P (IG051100) DFF
 - 31: SN74HC04N (IR000450) INV
 - 32, 33: MC74HC4051N (IR405170) ANALOG MP)
 - 34 ~ 41: NJM072D (IG107000) OP AMP.
 - 42 ~ 53,
58, 59: NJM4558DV (IG001390) OP AMP.
 - 54 ~ 57: NJU7301D (XB476001) ANALOG Switch
 - 60: NJM4556 (IG042500) OP AMP.
 - 61: PST518B-2 (IG116200) System Reset
 - 62: NJM78L05A (IG065510) 5V Regulator
 - 63: NJM79L05 (IG130500) -5V 0.1A
 - 64, 65: TC40H374P (IG078600) DFF
 - 66: TC74HC86 (IR008600) EX-OR
2. Photo Coupler:
 - PC1: TLP552
3. Transistor:
 - Q1: 2SC1815 Y, GR
 - 2: 2SA1015 O, Y
 - 3 ~ 5: 2SA933S Q, R
4. Diode:
 - D1 ~ 3: 1SS176
5. Resistor Array:
 - RA1 ~ 5: 4.7k Ω x 8 EX-F9E472J5
 - 6: RML12 4.7K
 - 7: RMLS8-102J
 - 8 ~ 11: 10k Ω x 8 EXB-F9E103J5
 - 12: EXB-F9E474J
6. Semiconductive Cera. Cap.
Marked (\pm): 0.1 μ 16V M
7. EMI Filter:
 - EMI1 ~ 4,7: LS MT Y223NB
 - 5, 6: DS310-55D-104M1
8. Resonator:
 - CR1: Quartz Crystal Unit
9.4265M AT-49
 - CL1: Ceramic Resonator
8M CSA8MT
9. Ferrite Bead:
 - FB1, 2: BL02RN1-R62T2
10. Lithium Battery:
 - B1: CR2032-P5-2



Components side (部品側)

CAUTION TO REDUCE THE RISK OF FIRE, REPLACE ONLY WITH SAME TYPE FUSE.

ATTENTION AFIN DE RÉDUIRE LE RISQUE DE FEU, REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE.



XB185
HK THK-11V-1

Components side (部品側)

Notes)

PS Circuit Board: XB185B

1. IC:
 IC1: AN7815F (XB449001) +15V Regulator
 2: AN7915F (XB450001) -15V Regulator
2. Photo Coupler:
 PC1: PC817
3. Transistor:
 Q1: 2SC3310
 2: 2SC2655 O, Y
 3: 2SC2634 R, S, T
4. Diode:
 D1: S1WB (A) 40 1A 40 Diode Stack
 2: ERB44-06
 3: ERB43-02
 4 ~ 6: 1SS84
 7, 8: ERB44-02
 9: S2K-20
5. Zener Diode:
 ZD1: RD6.2EB2 6.2V
6. Wire Wound Resistor:
 R2: 10Ω 3W
 8: 2.2Ω 3W
7. Potentiometer:
 VR1: B1.0kΩ RVF
8. Coil:
 L2: 5mH NF01UA502
 3: 150μH
9. Push Switch:
 PSW1: ESB-8213A

PS Circuit Board


● Metal Oxide Resistor



| Model | R4 | R6 | R7 | R12 | R19 |
|----------------|----------|---------|---------|--------|--------|
| Japanese | 120kΩ 2W | 68kΩ 2W | 220Ω 2W | 68Ω 1W | 10Ω 1W |
| U.S. | ↓ | ↓ | ↓ | ↓ | ↓ |
| Canadian | ↓ | ↓ | ↓ | ↓ | ↓ |
| North European | ↓ | — | — | ↓ | ↓ |
| West German | ↓ | — | — | ↓ | ↓ |

● Ceramic Cap.

| Model | C1 | C2 | C3, 4, 7, 8 | C11 | C16 | C17 |
|----------------|-----------|-----------|-------------|-----------|------------|-----------|
| Japanese | 0.01 400V | 0.47 250V | 1000P 400V | 0.22 250V | 2200P 400V | 220P 400V |
| U.S. | ↓ | — | ↓ | ↓ | ↓ | ↓ |
| Canadian | ↓ | — | ↓ | ↓ | ↓ | ↓ |
| North European | ↓ | — | ↓ | ↓ | ↓ | — |
| West German | ↓ | 0.47 250V | ↓ | ↓ | ↓ | — |

● Fuse & Transformer

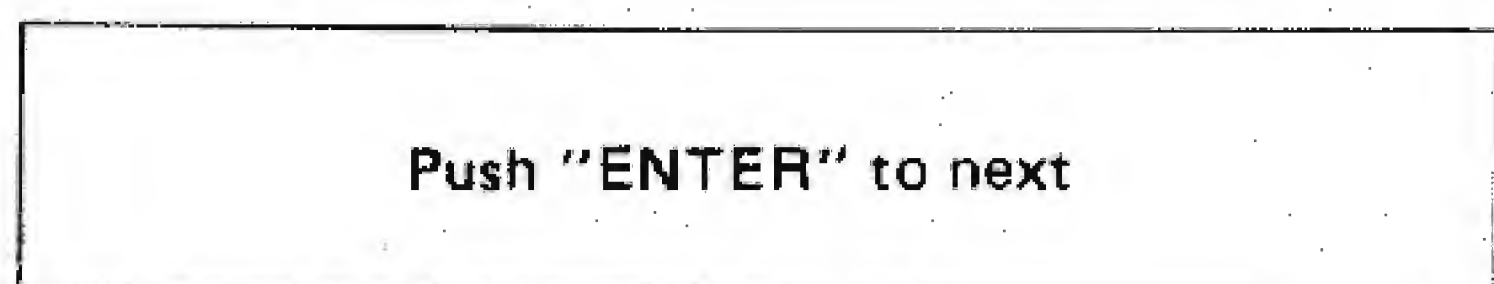
| Model | F1 | T1 |
|----------------|---|--------|
| Japanese |  2A 250V | TM205 |
| U.S. | ST-4 2A 250V | ↓ |
| Canadian | ↓ | TYA018 |
| North European | 500mA 250V | TYA020 |
| West German | ↓ | ↓ |

3NA-VB50220-72 : J, U, C
 3NA-VB50260-72 : H, D

TEST PROGRAM(テストプログラム)

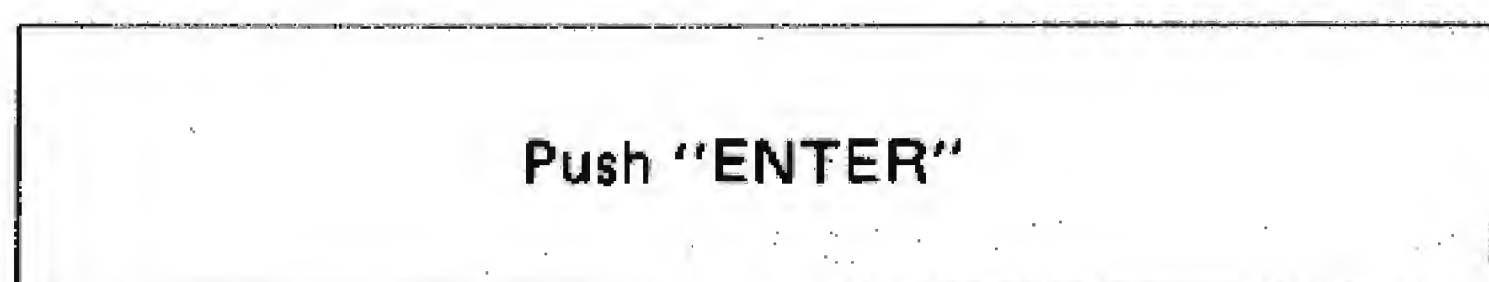
1. Preparation Instructions

- (1) Connect the MIDI IN jack to the MIDI OUT with a MIDI cable.
- (2) You can input a test program number with the +1 or -1 switch.
- (3) If the LCD display indicates the message as shown in the figure 1, pressing the ENTER switch will advance the Test Program to the next routine and activate that test.



(fig. 1)

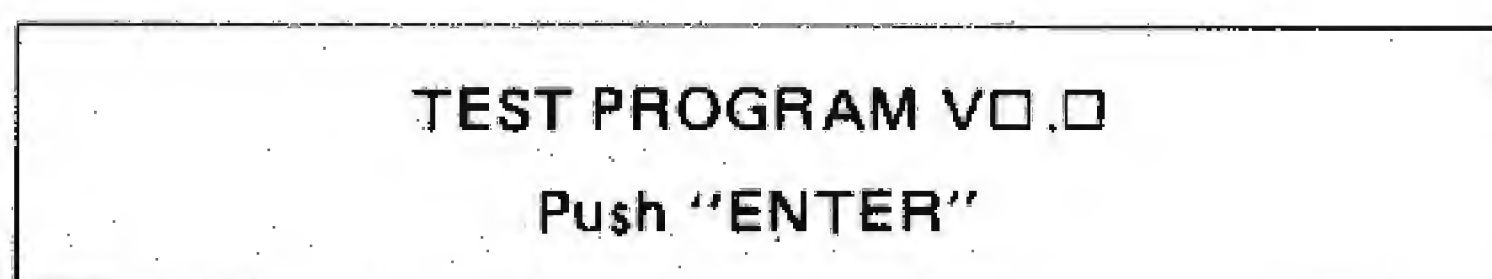
- (4) If the LCD display indicates the message as shown in the figure 2, pressing the ENTER switch will initiate the Test Program indicated on the LCD.



(fig. 2)

2. Test Program Entry

- (1) While pressing the 8 and 9 switches, turn the POWER switch on. The LCD display indicates the version number of the Test Program message as shown in the figure 3.

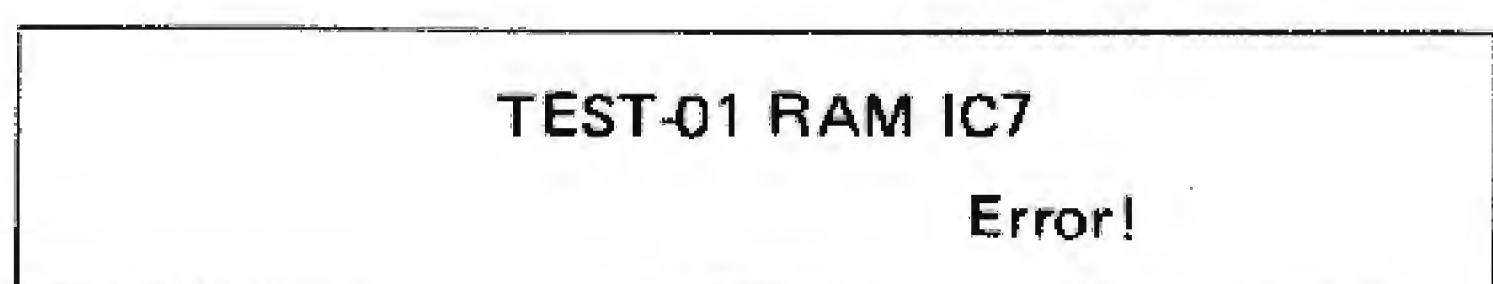


(fig. 3)

- (2) If the ENTER switch is pressed, the Test Program 1 will be initiated.
- (3) If the NO switch is pressed, the routine will reset the system to normal operating mode.

3. TEST 1 : RAM check

When this test is initiated, the RAM check is performed automatically. If the test is OK, the Program will proceed to the next routine. If the test is NG, the LCD display will indicate the error message as shown in the figure 4.



(fig. 4)

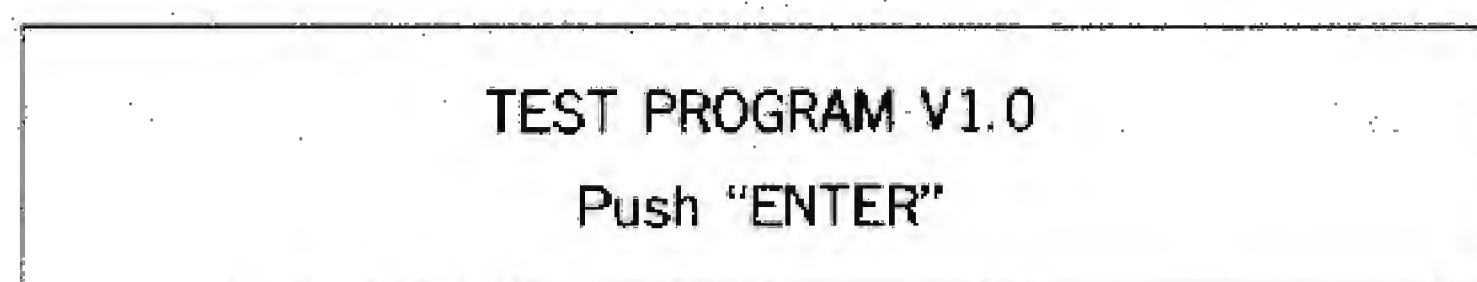
1 準備

MIDI OUT と MIDI IN を接続しておきます。

2 テストプログラム エントリー

- 1). テンキーの「8」、「9」を同時に押しながら、POWER ON します。
- 2). LCD にバージョン番号と、Push "ENTER" が表示されたら「8」、「9」を離します。

▼LCD 表示

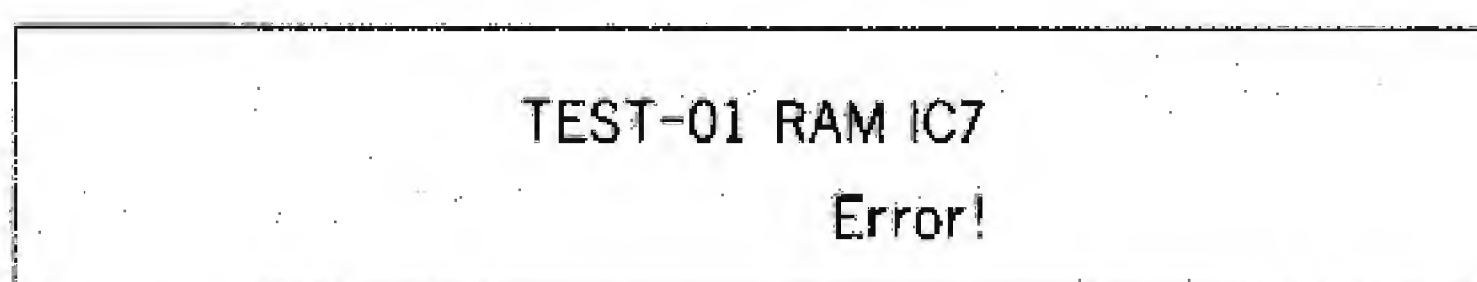


- 3). テストモードに入るためには「ENTER」キーを押します。「NO」を押したときは、通常の動作モードとなります。
- 4). 各々のテストにおいて下行に Push "ENTER" to next と表示される場合は、「ENTER」キーを押すことにより次のテストに移り、実行されます。Push "ENTER" と表示される場合は「ENTER」キーを押すことによりそのテストが実行されます。「+1」、「-1」キーはテスト番号の増減を行いますが、テストは実行されません。

3 RAM チェック(自動チェック)

テストモードに入ると自動的に RAM のチェックを行います。RAM に異常がある場合のみエラー表示され、正常なときは何も表示されずに次のテストに移ります。

▼LCD 表示(エラー時のみ)



(IC..... 7 - 9)

4 LCD チェック

LCD のドットがすべて同時に点滅するので、目視にてドットの欠け等がないことを確認します。

5 パネル LED チェック

TONE GENERATOR ON/OFF スイッチに付いている LED が、以下の動作を 2 巡行しますので、目視にて点灯不良が無いことを確認します。

- 1). 1 から 8 まで順次点灯。
- 2). 全 消 灯
- 3). 全 点 灯
- 4). 全 消 灯

◆1). - 4). を 2 巡行い、最後に全点灯。

4. TEST 2 : LCD check

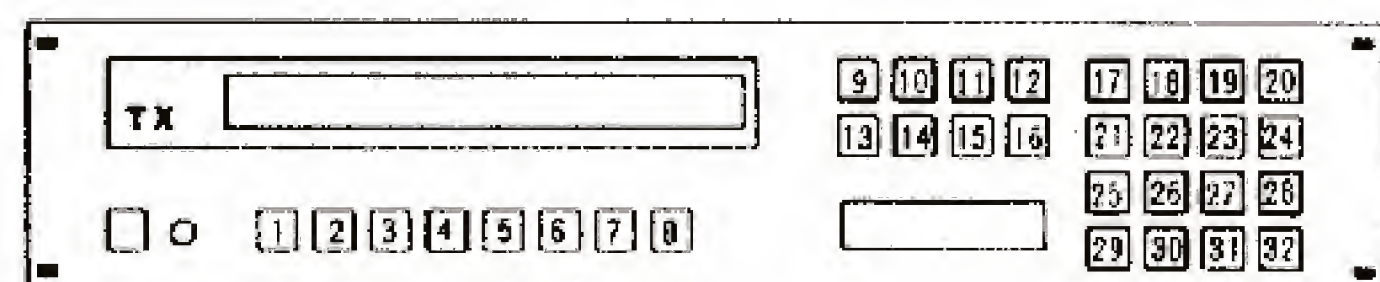
The entire LCD turns "ON and OFF" repeatedly, so that you can verify proper lighting of the LCD display.

5. TEST 3 : LED check

The LED indicators for the TONE GENERATOR ON/OFF will light one after another from left to right, then all of the LED indicators will light simultaneously. This operation occurs 2 times, so that you can verify proper lighting of the LED indicators.

6. TEST 4 – 35 : Panel switch check

When this test is initiated, Test 3 and switch number/name message will appear in the LCD display. Press the switch that is indicated by the LCD display. Pressing the correct switch will advance the Switch Test Program. If an incorrect switch is pressed, or the switch that is indicated by the LCD display is opened, the routine will not proceed to the next step. If the switch is bridged, the LCD display will indicate the switch error message.



(fig. 5)

7. TEST 36 : MIDI check

When this test is initiated, the MIDI check is performed automatically.

8. TEST 37 – 41 : Cartridge check

(1) TEST 37 – 39 : Cartridge type check

- 1 Insert a 64kbits RAM cartridge and press the ENTER switch.
- 2 Insert a 256kbits RAM cartridge and press the ENTER switch.
- 3 Insert a 1Mbits RAM cartridge and press the ENTER switch.

(2) TEST 40 : Protect switch check

Insert a 64kbits RAM cartridge and making sure the cartridge "Memory Protect Switch" is ON. Press the ENTER switch.

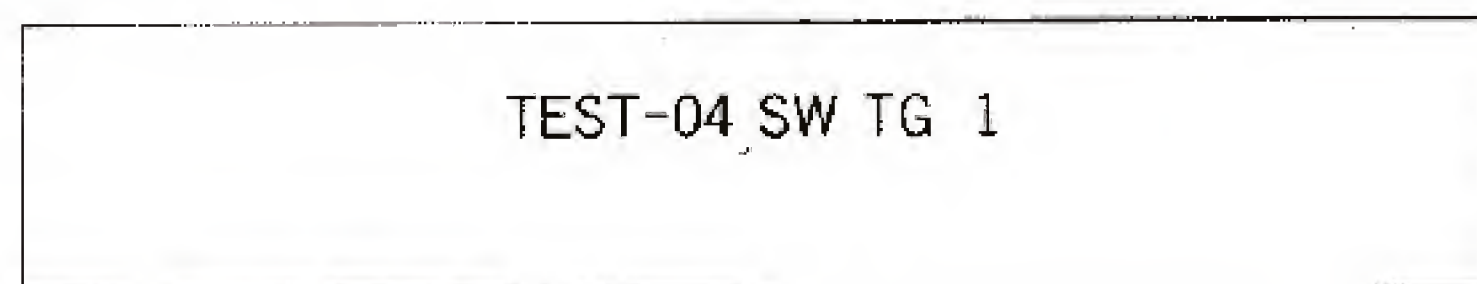
(3) TEST 41 : Read/write check

Turn the cartridge memory protect switch OFF. Press the ENTER switch.

6 パネルスイッチチェック

LCD に次に押すスイッチが表示されますので、そのスイッチを押します。正常であれば次のスイッチに進みますが、オープンまたはブリッジしているときは進みません。また、ブリッジしている時のみLCD にエラーが表示されます。

▼LCD 表示

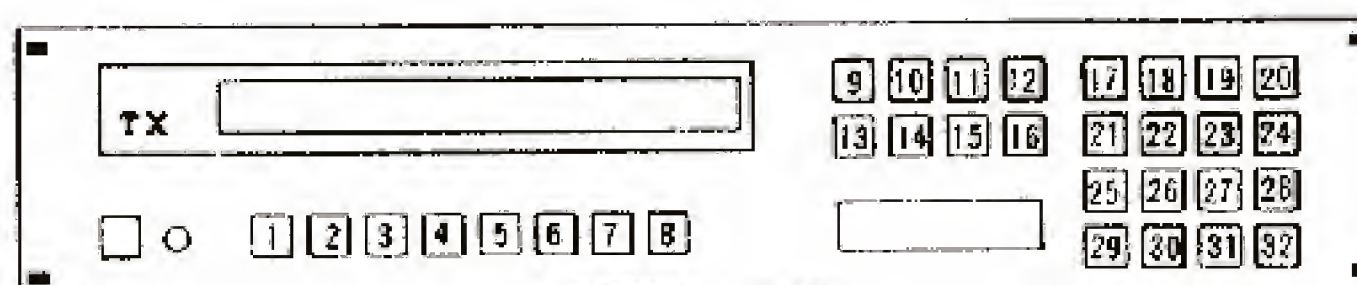


TEST-04,,,11 = (TG... 1 - 8)

TEST-12,,,19 = (MODE...PS,VS,SY,UT,PE,V1,V2,ST)

TEST-20,,,35 = (10key...0-9,<,>,EN,-1,+1,-)

パネルスイッチを押す順番は、以下の図のとうりです。



7 MIDI チェック(自動チェック)

MIDI の送受信チェックを行います。

MIDI OUT から "AA, FF, 00, 55" を送信し、それを MIDI IN で受信して自動判定を行います。

8 カートリッジ端子チェック

カートリッジのタイプ、プロテクト、読み出し/書込みの各チェックを行います。

タイプチェック……以下のカートリッジを挿入し、「ENTER」を押す。

type1 = 64Kbit (RAM4)

type2 = 256Kbit

type3 = 1Mbit

プロテクトチェック……

RAM カートリッジ (64K) のプロテクトスイッチを ON にし、「ENTER」を押す。

リード/ライトチェック……

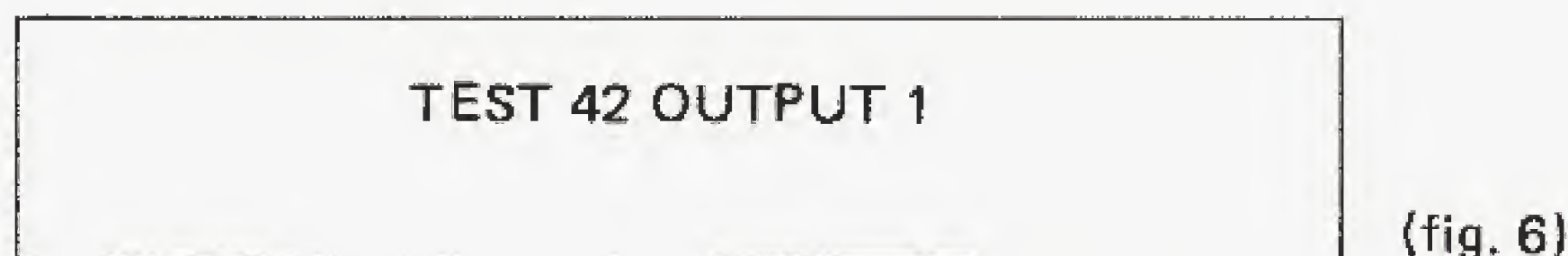
RAM カートリッジ (64K) のプロテクトスイッチを OFF にし、「ENTER」を押す。

● TEST-37,,,39 = (type1-3)

● TEST-40 , 41 = (protect, read/write)

9. TEST 42 – 51 : LINE OUT level check

When this test is initiated, the LCD display indicates Test 42 and OUTPUT message as shown in the figure 6.



(1) TEST 42 – 49 : INDIVIDUAL OUTPUT level check

- 1 Continuous sounds (-6.5 ± 3 dBm at 880 Hz) can be obtained from the 1-8 INDIVIDUAL OUTPUT connectors (RL: $10k\Omega$, Maximum noise level: -77.0 dBm).
- 2 Continuous sounds (-16.0 ± 3 dBm at 880 kHz) can be obtained from the MIXED OUTPUT I and II connectors (RL: $10k\Omega$, Maximum noise level: -80.0 dBm).

10. TEST 52 – 53 : Headphones output level check

When this test is initiated, continuous sounds (-15.0 ± 3 dBm at 880 kHz) can be obtained from the PHONES connector (RL: 47Ω , Maximum noise level: -64.0 dBm).

※ TEST 52, 53 = L, R

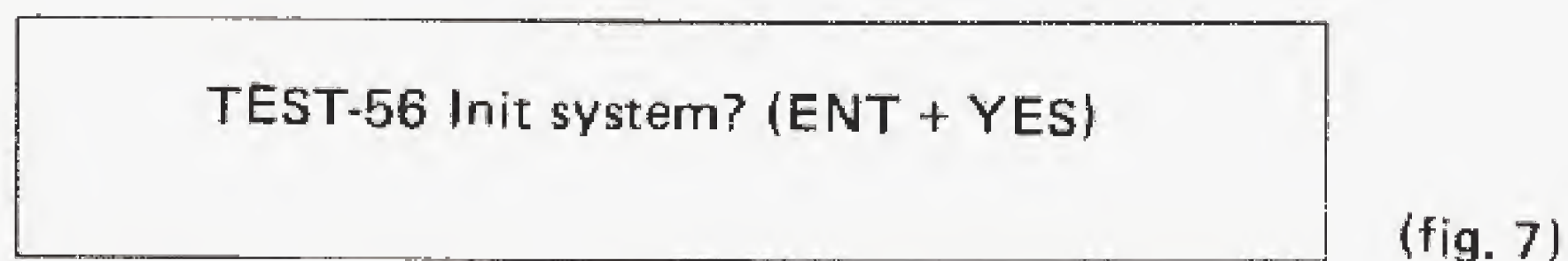
11. TEST 54 – 55 : Mix gates check

When this test is initiated, continuous sound can be obtained in the order of note C, D, D#, E,, B, C from the MIXED OUT I and II connectors or the PHONES connector.

※ TEST 54, 55 = I, II

12. TEST 56 : Memory Initialization

When this routine is initiated, the LCD display indicates the message as shown in the figure 7.



If the +1 switch is pressed while pressing the ENTER switch, the memory will be initialized. If the +1 switch is pressed without pressing the ENTER switch, the initialization will not be activated.

9 ラインアウトレベルチェック

各ライン出力端子のレベルチェックを行います。自動的に A4 (880Hz) の音が出力されるので、以下のレベル範囲であるかどうかをチェックします。

出力レベル (負荷抵抗 10k オーム)

$$1 - 8 = -6.5 \pm 3 \text{ dbm}$$

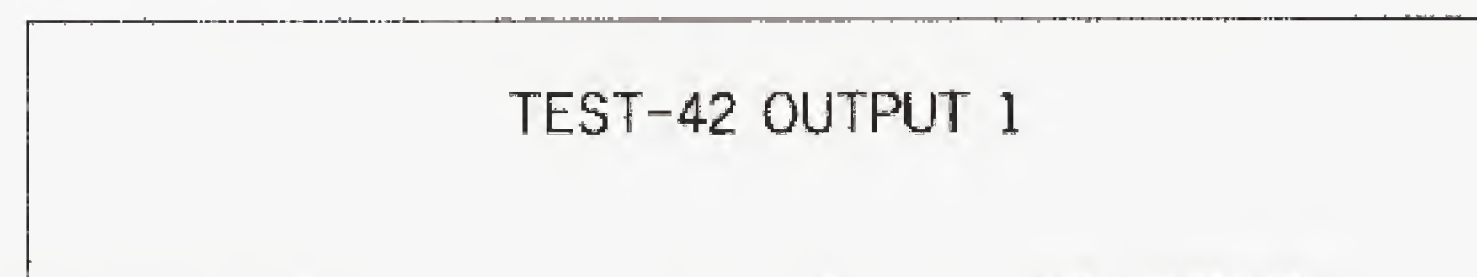
$$I, II = -16.0 \pm 3 \text{ dbm}$$

ノイズレベル

$$1 - 8 = -77.0 \text{ dbm 以下}$$

$$I, II = -80.0 \text{ dbm 以下}$$

▼LCD 表示



● TEST-42, . . . , 49 = (1 - 8)

● TEST-50, 51 = (I, II)

10 ヘッドフォンレベルチェック

ヘッドフォン端子のレベルチェックを行います。自動的に A4 (880Hz) の音が出力されるので、以下のレベル範囲であるかどうかをチェックします。

出力レベル (負荷抵抗 47 オーム)

$$L, R = -15.0 \pm 3 \text{ dbm}$$

ノイズレベル

$$L, R = -64.0 \text{ dbm 以下}$$

● TEST-52, 53 = (L, R)

11 ミックスゲートチェック

MIXOUT I, II から自動的にドレミファソラシドが出力されるので、耳で聞いて音抜けや複音同時発音が無いことを確認します。

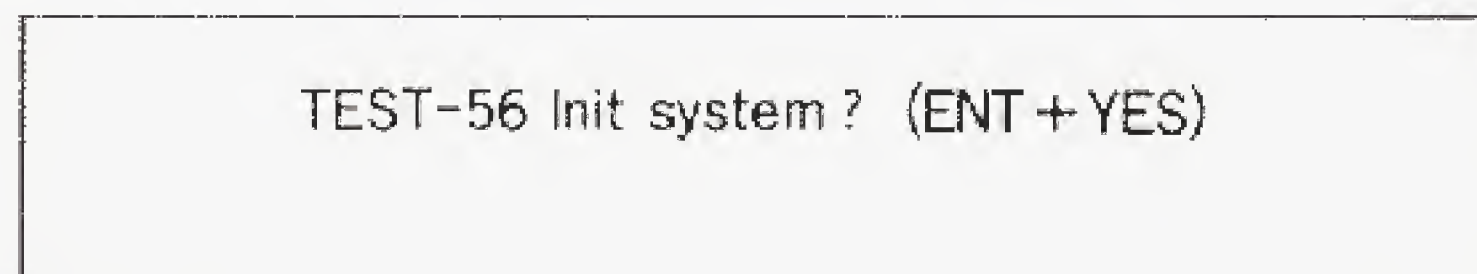
◆ヘッドフォンによる確認でも可。(I, II = L, R)

● TEST-54, 55 = (I, II)

12 システムイニシャライズ

TX802 のシステムメモリーを初期化します。初期化する場合は「ENTER」キーを押しながら「+1 (YES)」キーを、初期化しない場合は「+1 (YES)」キーのみを押します。

▼LCD 表示



13. TEST 57 : Store data

When this routine is initiated, the LCD display indicates the message as shown in the figure 8.



TEST-57 Load data (ENT + YES)

(fig. 8)

- (1) Insert a standard accessory ROM cartridge to the CARTRIDGE slot.
- (2) If the +1 switch is pressed while pressing the ENTER switch, VOICE and PERFORMANCE data will be stored in internal memory.
- (3) If the +1 switch is pressed without pressing the ENTER switch, data will not be stored.
- (4) If this routine is performed, normal operation will be restored.

13 出荷データロード

TX802 の内部メモリーに出荷用のボイス、パフォーマンスの各データをカートリッジからロードします。所定のカートリッジをカートリッジスロットに挿入し、「ENTER」キーを押しながら「+1(YES)」キーを押します。ロードしない場合は「+1(YES)」キーのみを押します。

▼LCD 表示



TEST-57 Load date? (ENT + YES)

◆このテストが終了すると、通常動作となります。

FM TONE GENERATOR

TX802

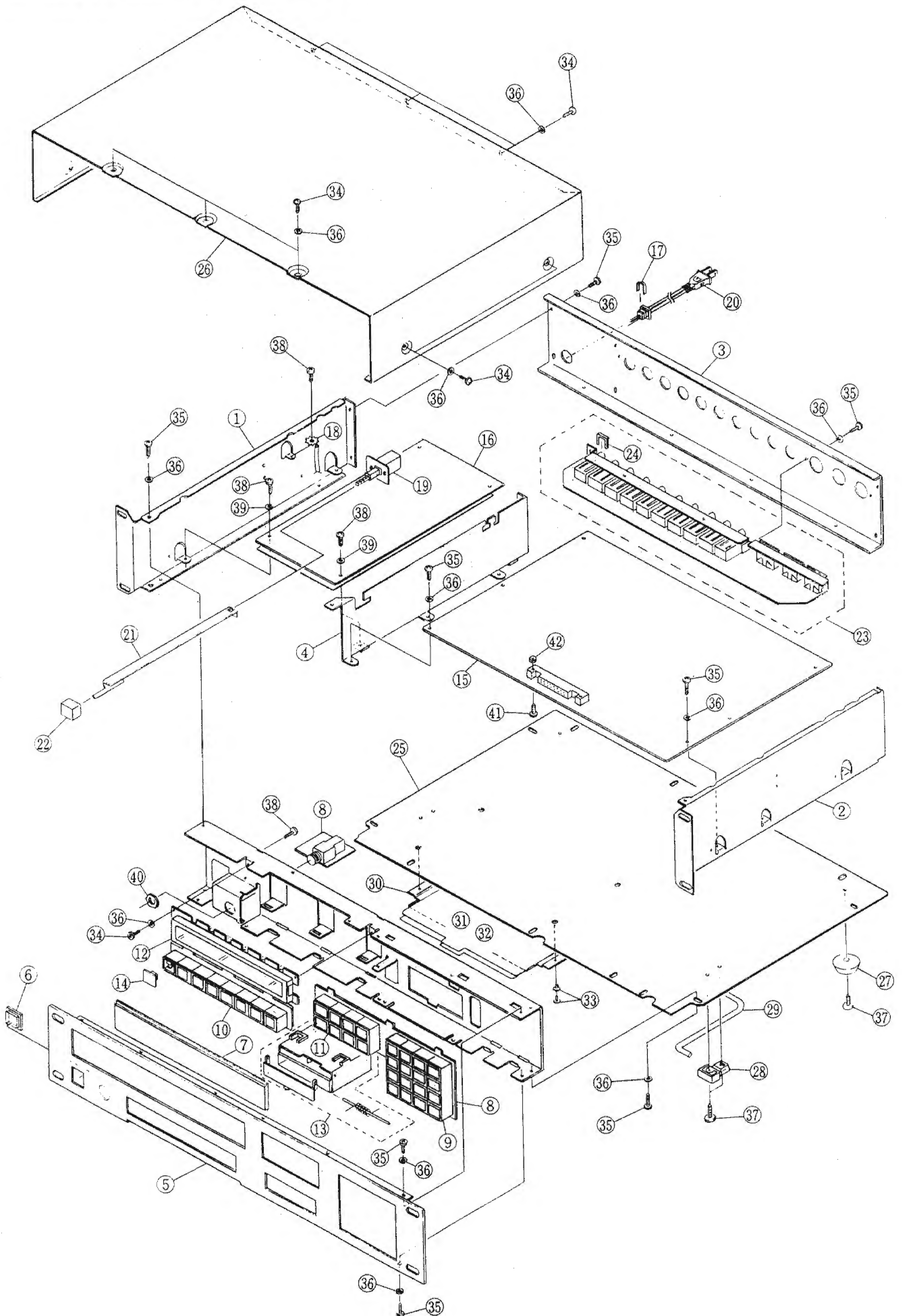
PARTS LIST

Notes

DESTINATION ABBREVIATIONS

| | | | |
|---|------------------------|---|-------------------------------|
| A | : Australian model | J | : Japanese model |
| B | : British model | M | : South African model |
| C | : Canadian model | Q | : South-east Asia model |
| D | : West German model | U | : U.S. model |
| E | : European model | V | : General export model (110V) |
| F | : French model | W | : General export model (220V) |
| G | : Belgian model | X | : General export model |
| H | : North European model | Y | : Export model |
| I | : Indonesian model | | |

OVERALL ASSEMBLY (総組立)



OVERALL ASSEMBLY (総組立)

| Ref. No. | Part No. | Description | | 部品名 | Remarks | ランク |
|----------|----------|------------------------|----------------|--------------|----------------|-----|
| 1 | VB667200 | Side Board | L | 側板 (L) | | 05 |
| 2 | VB667300 | Side Board | R | 側板 (R) | | 05 |
| 3 | VB667400 | Rear Panel | | リアパネル | J | |
| 3 | VB672700 | Rear Panel | | リアパネル | U | |
| 3 | VB672900 | Rear Panel | | リアパネル | C | |
| 3 | VB673000 | Rear Panel | | リアパネル | H | |
| 3 | VB671300 | Rear Panel | | リアパネル | D | |
| 4 | VB667500 | Stay | | ステー | | 04 |
| 5 | VB670300 | Front Panel | | フロントパネル | | 11 |
| 6 | VA029600 | Escutcheon | (L) | SWエスカッション | Power ON/OFF | 02 |
| 7 | VB670500 | Cover, Meter | | メーターカバー | | |
| 8 | VB501600 | Circuit Board | PN | PNシート | | 12 |
| 9 | VA001000 | Escutcheon | | SWエスカッション | 16 | 01 |
| 10 | VA314300 | Escutcheon | | SWエスカッション | 8 | 01 |
| 11 | VA314400 | Escutcheon | | SWエスカッション | MODE SELECT | 01 |
| 12 | VC006700 | LCD Assembly | 40X2 LED | LCD Ass'y | | 24 |
| 13 | VB671900 | Cartridge Assembly | | カートリッジ Ass'y | | 05 |
| 14 | VB248500 | Key Top | | トップキヤップ | 1 | 02 |
| 14 | VB248600 | Key Top | | トップキヤップ | 2 | 02 |
| 14 | VB248700 | Key Top | | トップキヤップ | 3 | 02 |
| 14 | VB248800 | Key Top | | トップキヤップ | 4 | 02 |
| 14 | VB248900 | Key Top | | トップキヤップ | 5 | 02 |
| 14 | VB249000 | Key Top | | トップキヤップ | 6 | 02 |
| 14 | VB249100 | Key Top | | トップキヤップ | 7 | 02 |
| 14 | VB249200 | Key Top | | トップキヤップ | 8 | 02 |
| 14 | VB676000 | Key Top | | トップキヤップ | PERFORM SELECT | 01 |
| 14 | VB676100 | Key Top | | トップキヤップ | PERFORM EDIT | 01 |
| 14 | VB676200 | Key Top | | トップキヤップ | VOICE SELECT | 01 |
| 14 | VB676300 | Key Top | | トップキヤップ | VOICE EDIT(I) | 01 |
| 14 | VB676400 | Key Top | | トップキヤップ | SYSTEM SETUP | 01 |
| 14 | VB676500 | Key Top | | トップキヤップ | VOICE EDIT(II) | 01 |
| 14 | VB676600 | Key Top | | トップキヤップ | UTILITY | 01 |
| 14 | VD781400 | Key Top | | トップキヤップ | STORE/COMPARE | 02 |
| 14 | VB676700 | Key Top | | トップキヤップ | ← INT | 01 |
| 14 | VB676800 | Key Top | | トップキヤップ | → CRT | 01 |
| 14 | VB676900 | Key Top | | トップキヤップ | -/. , | 01 |
| 14 | VB677000 | Key Top | | トップキヤップ | ENTER SPACE→ | 01 |
| 14 | VB677100 | Key Top | | トップキヤップ | ON/YES+1 UPPER | 01 |
| 14 | VB677200 | Key Top | | トップキヤップ | OFF/NO-1 LOWER | 01 |
| 14 | VC472500 | Key Top | | トップキヤップ | 0 ABC | 01 |
| 14 | VC472800 | Key Top | | トップキヤップ | 1 DEF | 01 |
| 14 | VC472900 | Key Top | | トップキヤップ | 2 GHI | 01 |
| 14 | VC473000 | Key Top | | トップキヤップ | 3 JKL | 01 |
| 14 | VC473200 | Key Top | | トップキヤップ | 4 MNO | 01 |
| 14 | VC473300 | Key Top | | トップキヤップ | 5 PQR | 01 |
| 14 | VC473400 | Key Top | | トップキヤップ | 6 STU | 01 |
| 14 | VC473500 | Key Top | | トップキヤップ | 7 VWX | 01 |
| 14 | VC473600 | Key Top | | トップキヤップ | 8 YZ! | 01 |
| 14 | VC473700 | Key Top | | トップキヤップ | 9 #&+ | 01 |
| 15 | VB498700 | Circuit Board | DM | DMシート | | 57 |
| 16 | VB502200 | Circuit Board | PS | PSシート | J | |
| 16 | VB502300 | Circuit Board | PS | PSシート | U | |
| 16 | VB502500 | Circuit Board | PS | PSシート | C | |
| 16 | VB502600 | Circuit Board | PS | PSシート | H | |
| 16 | VB970900 | Circuit Board | PS | PSシート | D | |
| 17 | CB811230 | Cord Strain Relief | SR-6N-4 | コードストッパー | U | 02 |
| 17 | CB806850 | Cord Strain Relief | SR-6N3-4 | コードストッパー | C | 02 |
| 17 | CB072750 | Cord Strain Relief | SR-4N-4 | コードストッパー | H | 01 |
| 17 | CB032840 | Cord Strain Relief | SR-5N-4 | コードストッパー | D | 01 |
| 18 | LA003690 | Lug Terminal | | ラグ端子 | C, D | 01 |
| 19 | VA803700 | Switch Panel | | スイッチパネル | | 02 |
| 20 | MG001820 | AC Cord | 7A 3.0M | 電源コード | J | 05 |
| 20 | MG000100 | AC Cord | 10A 12FT | 電源コード | U | 08 |
| 20 | MG000270 | AC Cord | 10A 3.3M | 電源コード | C | 09 |
| 20 | VC309900 | AC Cord | 2.5A 3.3M | 電源コード | H | 06 |
| 20 | MG000450 | AC Cord | 6A 3.5M | 電源コード | D | |
| 21 | VB667600 | Rod | | ロッド | | 02 |
| 22 | CB812380 | Push Button | | プッシュボタン | | 01 |
| 23 | VB671800 | Circuit Board Assembly | JK | JKシート Ass'y | | 12 |
| 24 | LB301910 | Angle Bracket | HLJ0999-01-480 | U字金具 | | 01 |
| 25 | VB248100 | Bottom Cover | | ボトムカバー | | 07 |
| 26 | VB248000 | Top Cover | | トップカバー | | 09 |
| 27 | CB801270 | Foot | BL | ゴム足 | | 01 |
| 28 | CB834960 | Holder | | スタンドホルダー | | 02 |
| 29 | VC048700 | Tilt Stand | | チルトスタンド | | 11 |
| 30 | VC075400 | OP Guide Holder | | OPガイドホルダー | | 04 |
| 31 | VC104100 | OP Guide Sheet A | | OPガイドシート A | | 09 |
| 32 | VC104200 | OP Guide Sheet B | | OPガイドシート B | | 09 |
| 33 | VC089400 | Nylon Rivet | NRP-232 | ナイロンリベット | | |

| Ref. No. | Part No. | Description | | 部 品 名 | Remarks | ランク |
|----------|----------|---------------------|---------------|---------------------|---------|-----|
| 34 | ED330066 | Bind Head Screw | 3.0X6 FCM3BL | バ イ ン ド 小 ネ ジ | | 01 |
| 35 | ED330086 | Bind Head Screw | 3.0X8 FCM3BL | バ イ ン ド 小 ネ ジ | | 01 |
| 36 | EV413036 | Toothed Lock Washer | A3.0 FCM3BL | 歯 付 座 金 | | 01 |
| 37 | ED340126 | Bind Head Screw | 4.0X12 FCM3BL | バ イ ン ド 小 ネ ジ | | 01 |
| 38 | ED340066 | Bind Head Screw | 4.0X6 FCM3BL | バ イ ン ド 小 ネ ジ | | 01 |
| 39 | EV403046 | Toothed Lock Washer | A4.0 FCM3BL | 歯 付 座 金 | | 01 |
| 40 | EV103126 | Hexagonal Nut | 12 BL | 特 殊 六 角 ナ ッ ト | | 01 |
| 41 | EA330146 | Pan Head Screw | 3X14 FCM3BL | ナ ベ 小 ネ ジ | | 01 |
| 42 | EV108030 | Hexagonal Nut | 3.0 ZMC2Y | フ ラ ン ジ 付 六 角 ナ ッ ト | | 01 |
| | | | | | | |

ELECTRICAL PARTS (電気部品)

| Ref. No. | Part No. | Description | | 部品名 | Remarks | ランク |
|----------|----------|---------------------------|-----------------|-------------|---------------|-----|
| | VB498700 | Circuit Board | DM | DMシート | | 57 |
| | VB671800 | Circuit Board Assembly | JK | JKシート Ass'y | | 12 |
| | VB501600 | Circuit Board | PN | PNシート | | 12 |
| | VB502200 | Circuit Board | PS | PSシート | J | |
| | VB502300 | Circuit Board | PS | PSシート | U | |
| | VB502500 | Circuit Board | PS | PSシート | C | |
| | VB502600 | Circuit Board | PS | PSシート | H | |
| | VB970900 | Circuit Board | PS | PSシート | D | |
| | VB498700 | Circuit Board | DM | DMシート | | 57 |
| | IG001390 | IC | NJM4558DV | IC | OP AMP. | 03 |
| | IG042500 | IC | NJM4556 | IC | OP AMP. | 04 |
| | IG107000 | IC | NJM072D | IC | OP AMP. | 04 |
| | IG065510 | IC | NJM78L05A | IC | 5V Regulator | 03 |
| | IG130500 | IC | NJM79L05 | IC | -5V 0.1A | 03 |
| | IG116200 | IC | PST518B-2 | IC | System Reset | 04 |
| | XB476001 | IC | NJU7301D | IC | ANALOG Switch | 06 |
| | IG027010 | IC | HD74LS04P | IC | INV | 04 |
| | IG051000 | IC | TC40H004P | IC | INV | 03 |
| | IG051100 | IC | TC40H074P | IC | DFP | 04 |
| | IR008600 | IC | TC74HC86 | IC | EX-OR | |
| | IG068100 | IC | TC40H240P | IC | INV | 07 |
| | IG078600 | IC | TC40H374P | IC | DFP | 07 |
| | IG111900 | IC | TC40H138P | IC | DEC DEMP | 04 |
| | IG130700 | IC | TC40H245P | IC | BUS BUFF | 06 |
| | IR036550 | IC | SN74HC365N | IC | BUS DRI | 03 |
| | IR000450 | IC | SN74HC04N | IC | INV | 03 |
| | IR000850 | IC | SN74HC08N | IC | AND | 03 |
| | IR001450 | IC | SN74HC14N | IC | INV | 05 |
| | IR013850 | IC | SN74HC138N | IC | DECO3 | 05 |
| | IR013950 | IC | SN74HC139N | IC | DECO2 | 05 |
| | IR017450 | IC | SN74HC174N | IC | D.FF | 05 |
| | IR024550 | IC | SN74HC245N | IC | Transceiver | 06 |
| | IR405170 | IC | MC74HC4051N | IC | ANALOG MPX | 04 |
| | XB529001 | IC | HD63C03YP | IC | CPU (Slave) | 13 |
| | XA898001 | IC | YM3609 | IC | EGM | 15 |
| | XD245001 | IC | HD63B03YP-N | IC | CPU (Master) | |
| | IG148500 | IC | TC5565L-12,15 | IC | 64K SRAM | 21 |
| | XB013001 | IC | TC5564PL-15 | IC | 8Kx8 SRAM | 20 |
| | XB223002 | IC | 952AV100 | IC | ROM(Main) | |
| | XB224002 | IC | 952BV100 | IC | ROM(Wave) | |
| | XB536002 | IC | 952CV100 | IC | ROM(Slave) | |
| | XA489001 | IC | YM2604 | IC | OPS2 | 14 |
| | XA566001 | IC | PCM54HP | IC | DAC | 12 |
| | IK000470 | Photo Coupler | TLP552 | フォトカブラ | | 06 |
| | IA101570 | Transistor | 2SA1015 O.Y | トランジスタ | | 03 |
| | IC181580 | Transistor | 2SC1815 Y.GR | トランジスタ | | 03 |
| | IA093370 | Transistor | 2SA933S O.R | トランジスタ | | 01 |
| | IX000760 | Diode | 1SS176 | ダイオード | | 01 |
| | VB187300 | Resistor Array | 4.7kΩ × 8 | 抵抗アレイ | EX-F9E472J5 | 01 |
| | VB187500 | Resistor Array | 10kΩ × 8 | 抵抗アレイ | EXB-F9E103J5 | 01 |
| | HZ004700 | Resistor Array | RML12 4.7K | 抵抗アレイ | | 01 |
| | VB350600 | Resistor Array | RMLS8-102J | 抵抗アレイ | | 01 |
| | VC005700 | Resistor Array | EXB-F9E474J | 抵抗アレイ | | 01 |
| | FZ004110 | Semiconductive Cera. Cap. | 0.1μ 16V M | 半導体セラコン | | 01 |
| | FZ006970 | EMI Filter | LS MT Y223NB | LCフィルター EMI | | 02 |
| | VB576900 | EMI Filter | DS310-55D-104M1 | LCフィルター EMI | | 01 |
| | VD065600 | Quartz Crystal Unit | 9.4265M AT-49 | 水晶振動子 | | |
| | VB817500 | Ceramic Resonator | 8M CSA8MT | セラミック振動子 | | 03 |
| | GE300610 | Ferrite Bead | BL02RN1-R62T2 | フェライトビーズ | | 01 |
| | VB436900 | Lithium Battery | CR2032-P5-2 | リチウム電池 | | 05 |
| | VB671800 | Circuit Board Assembly | JK | JKシート Ass'y | | 12 |
| | IC287800 | Transistor | 2SC2878 A,B | トランジスタ | | 03 |
| | VA928000 | Filter | D-03C | ノイズフィルタ DIP | | 07 |
| | VC017500 | Phone Jack | HLJ4306 | ホンジャック | Monaural | 02 |
| | LB500520 | DIN Jack | 5P TCS4650 | DINジャック | | 03 |
| | VB501600 | Circuit Board | PN | PNシート | | 12 |
| | VA262300 | LED | LN242RP RE | LED | | 01 |
| | HL314470 | Metal Oxide Resistor | 47Ω 1W | 酸化金属被膜抵抗 | | 01 |
| | KA906530 | Push Switch | EVO-Q8R13K | プッシュSW | | 02 |
| | LB203090 | Phone Jack | HLJ0521 | ホンジャック | Stereo | 02 |
| | VB971100 | Coil | 20μH | コイル | | 01 |
| | VB502200 | Circuit Board | PS | PSシート | J | |
| | VB502300 | Circuit Board | PS | PSシート | U | |
| | VB502500 | Circuit Board | PS | PSシート | C | |
| | VB502600 | Circuit Board | PS | PSシート | H | |

| Ref. No. | Part No. | Description | | 部 品 名 | Remarks | ランク |
|----------|----------|------------------------|-----------------|-----------------|----------------|-----|
| | VB970900 | Circuit Board | PS | P S シート | D | |
| | XB449001 | IC | AN7815F | I C | +15V Regulator | 04 |
| | XB450001 | IC | AN7915F | I C | -15V Regulator | 04 |
| | IK000480 | Photo Coupler | PC817 | フォトカブラ | J,U,C | 03 |
| | VB642500 | Photo Coupler | PC111 | フォトカブラ | H,D | |
| | IC263400 | Transistor | 2SC2634 R,S,T | トランジスタ | | 03 |
| | IC265500 | Transistor | 2SC2655 O,Y | トランジスタ | | 03 |
| | IX554350 | Transistor | 2SC3310 | トランジスタ | J,U,C | 03 |
| | IX553890 | Transistor | 2SC3559 | トランジスタ | H,D | 07 |
| | IF001380 | Diode | 1SS84 | ダイオード | | 01 |
| | IF008590 | Diode | ERB44-02 | ダイオード | | 01 |
| | IX800880 | Diode | S2K-20 | ダイオード | | |
| | IH001740 | Diode | ERB44-06 | ダイオード | | 01 |
| | IH001750 | Diode | ERB43-02 | ダイオード | | 01 |
| | VB845200 | Diode Stack | S1WB(A)40 1A 40 | ダイオード スタック | J,U,C | 02 |
| | IX553900 | Diode Stack | S1WB(A)60 | ダイオード スタック | H,D | 04 |
| | IF001470 | Zener Diode | RD6.2EB2 6.2V | ツェナーダイオード | | 01 |
| | HL314100 | Metal Oxide Resistor | 10Ω 1W | 酸化金属被膜抵抗 | J,U,C,H,D | 01 |
| | HL314680 | Metal Oxide Resistor | 68Ω 1W | 酸化金属被膜抵抗 | J,U,C,H,D | 01 |
| | HL325220 | Metal Oxide Resistor | 220Ω 2W | 酸化金属被膜抵抗 | J,U,C | 01 |
| | HL327680 | Metal Oxide Resistor | 68KΩ 2W | 酸化金属被膜抵抗 | J,U,C | 01 |
| | HL328120 | Metal Oxide Resistor | 120KΩ 2W | 酸化金属被膜抵抗 | J,U,C,H,D | 01 |
| | HZ004840 | Thermo Fusing Resistor | 10Ω 2W | 抵抗温度ヒューズ | C | |
| | HZ004850 | Wire Wound Resistor | 10Ω 3W | セメント抵抗 | J,U | 01 |
| | HZ004870 | Wire Wound Resistor | 2.2Ω 3W | セメント抵抗 | J,U,C | 01 |
| | HZ004880 | Wire Wound Resistor | 4.7Ω 3W | セメント抵抗 | H,D | |
| | HZ004860 | Wire Wound Resistor | 22Ω 3W | セメント抵抗 | H,D | |
| | HT570540 | Trimmer Potentiometer | R1.0KΩ RVF | 半固定VR | | 02 |
| | VA879300 | Ceramic Cap. | 220P 400V | 規格認定コン | J,U,C | |
| | VA879600 | Ceramic Cap. | 1000P 400V | 規格認定コン | J,U,C,H,D | |
| | VA879900 | Ceramic Cap. | 2200P 400V | 規格認定コン | J,U,C,H,D | 01 |
| | FI494100 | Ceramic Cap. | 0.01 400V | 規格認定コン | J,U,C,H,D | 01 |
| | FR203220 | Ceramic Cap. | 0.22 250V | 規格認定コン | J,U,C,H | |
| | VC097300 | Ceramic Cap. | 0.47 250V | 規格認定コン | J,D | |
| | FJ129100 | Electrolytic Cap. | 1000μ 10V | ケミコン | | 02 |
| | GE300820 | Coil | 150μ H | コイル | | 02 |
| | VB638000 | Coil | NF01UA502 | コイル | | 04 |
| | KA803610 | Push Switch | FSB-8213A | プッシュ SW | | 03 |
| | KB000350 | Fuse | T250V 2A | ヒューズ | J | 01 |
| | KB001240 | Fuse | T250V 2A | ヒューズ | U,C | 03 |
| | KB000710 | Fuse | T250V 500mA | ヒューズ | H,D | 02 |
| | LB201530 | Fuse Holder | PC-FH1 | ヒューズホルダー | | 01 |
| | VC006700 | LCD Assembly | 40X2 LED | L C D A s s ' y | | 24 |
| | GA839100 | Power Transformer | | 電源トランス | J,U | 12 |
| | GA841400 | Power Transformer | | 電源トランス | C | |
| | GA839510 | Power Transformer | | 電源トランス | H,D | |
| | MG001820 | AC Cord | 7A 3.0M | 電源コード | J | 05 |
| | MG000100 | AC Cord | 10A 12FT | 電源コード | U | 08 |
| | MG000270 | AC Cord | 10A 3.3M | 電源コード | C | 09 |
| | VC309900 | AC Cord | 2.5A 3.3M | 電源コード | H | 06 |
| | MG000450 | AC Cord | 6A 3.5M | 電源コード | D | |