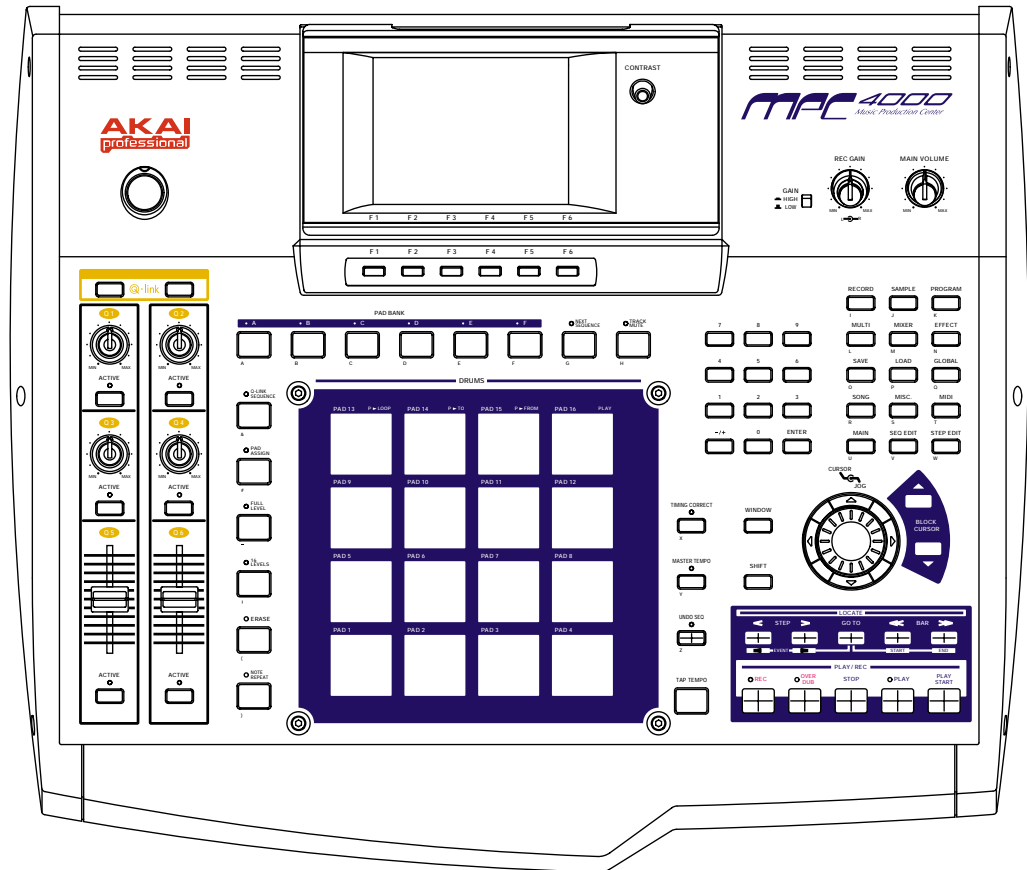


# AKAI professional

# SERVICE MANUAL

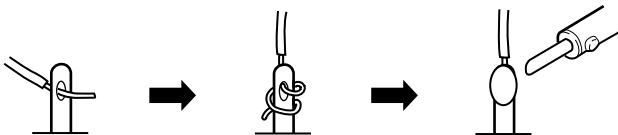
## MPC 4000

Music Production Center



Music production Center

1. Parts identified by the  $\triangle$  symbol are critical for safety. Replace them only with the parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with the specified replacements.  
Examples : Noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially :
  - 1) Wires covered with PVC tubing
  - 2) Double insulated wires
  - 3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially :
  - 1) Insulation Tape
  - 2) PVC tubing
  - 3) Spacers (insulating barriers)
  - 4) Insulation sheets for transistors
  - 5) Plastic screws for fixing micro switches
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap the ends of the wires securely around the terminals before soldering.



6. Make sure that wires do not contact heat producing parts (heat sinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Make sure that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

## SAFETY CHECK AFTER SERVICING

After servicing, make measurements of leakage-current or resistance in order to determine that exposed parts are acceptably insulated from the supply circuit. The leakage-current measurement should be done between accessible metal parts (such as chassis, ground terminal, microphone jacks, signal input/output connectors, etc.) and the earth ground through a resistor of 1500 ohms paralleled with a 0.15  $\mu$ F capacitor, under the unit's normal working conditions. The leakage-current should be less than 0.5 mA rms AC. The resistance measurement should be done between accessible exposed metal parts and power cord plug prongs with the power switch (if included) "ON". The resistance should be more than 2.2 M ohms.

## SYMBOLS FOR PRIMARY DESTINATION

Unit destinations are indicated with letters as shown below.

Symbols	Principal Destinations
A	U.S.A
B	England
E	Europe
J	Japan
V	Germany
X1	Japan
X4	Universal Area

## MAKE YOUR CONTRIBUTION TO PROTECT THE ENVIRONMENT

Used batteries with the ISO symbol for recycling as well as small accumulators (rechargeable batteries), mini-batteries (cells) and starter batteries should not be thrown into the garbage can. Please leave them at an appropriate depot.



## PRECAUTIONS FOR LITHIUM BATTERY

The lithium battery may explode when incorrectly replaced. [OBSERVE THE FOLLOWING WHEN REPLACING]

- Replace with the same make and type or equivalent recommended by manufacturer.
- Place battery in correct polarity.
- Do not short the terminals.
- Do not charge battery.
- Do not dispose of battery in fire.

# I. SPECIFICATIONS

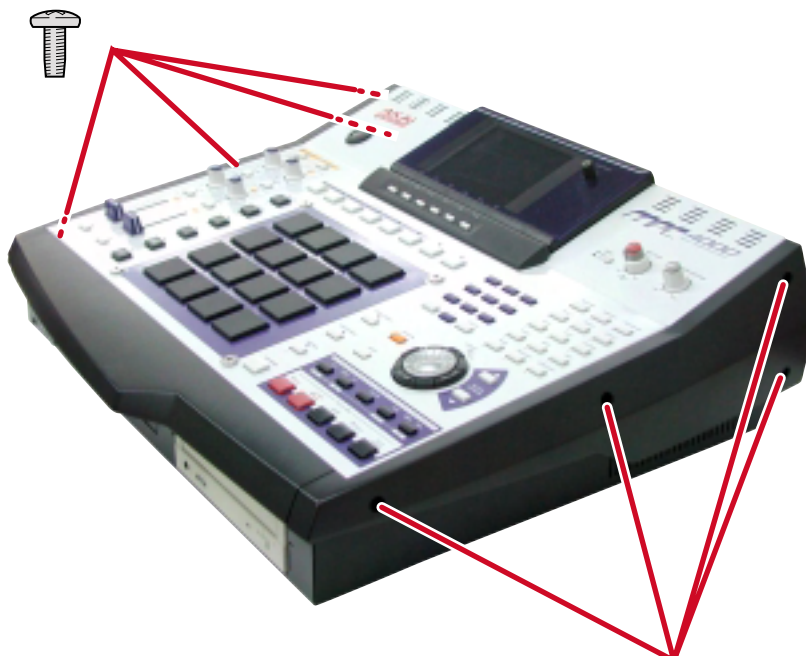
General	Power supply	100-240V AC 50/60Hz 70W (27W without options)
	Dimensions	526 (W) x 170 (H) x 453 (D) mm (with LCD tilted down)
	Weight	10.5kg (without options)
	Display	320 x 240 dots grey-scale graphical LCD w/back light
Sound Generator	Sampling rate	44.1kHz, 48kHz, 96kHz
	Data format	24/16 bit linear
	Sampling time (unexpanded memory)	180/120 (16/24 bit) seconds mono FS=44.1kHz
		166/110 (16/24 bit) seconds mono FS=48kHz
		82/53 (16/24 bit) seconds mono FS=96kHz
		90/60 (16/24 bit) seconds stereo FS=44.1kHz
		83/55 (16/24 bit) seconds stereo FS=48kHz
		40/26 (16/24 bit) seconds stereo FS=96kHz
	Memory	16MB standard, expandable to 512MB
		168-pin DIMM (PC133/PC100, CL2) slot x 2
	Polyphony	64 voices
Filter	2-pole x 3 with resonance	
Envelope generators	3 x Envelope generators (2 multi-stage)	
LFO	2 x Multi-wave	
Sequencer	Maximum events	300,000 notes (equivalent)
	Resolution	960 parts per 1/4-note (ppq)
	Sequences	128
	Tracks per sequence	128
	MIDI output channels	64 (16 channels x 4 output ports)
	Song mode	128 songs, 250 steps per song
	Drum pads	16 (velocity and pressure sensitive)
	Drum pads banks	6
	Sync modes	MTC, MIDI clock, SMPTE
	Inputs/Outputs	Rec In LINE/MIC L/R
Rec In PHONO L/R		RCA phono x 2 with RIAA EQ, -24dBu max. (1kHz)
Main Out L/R		1/4-inch stereo phone/XLR Combo jack, balanced, 1/4-inch phone, Imp. 1.7k $\Omega$ , 24dBu max./XLR, Imp. 200 $\Omega$ , 18dBu max.
Assignable Outs (IB-48P required)		1/4-inch stereo phone x 8, balanced, Imp. 1.7k $\Omega$ , 18dBu max.
Headphone		1/4-inch stereo phone, 60mW (32 $\Omega$ )
Digital Input (IB-4D required)		RCA phono x 1, SPDIF
Digital Main Output (IB-4D required)		RCA phono x 1, SPDIF
Word Clock Input (IB-4D required)		BNC x 1 (w/75 $\Omega$ terminator On/Off)
SMPTE In		1/4-inch stereo phone, balanced
SMPTE Out		1/4-inch stereo phone, balanced
Footswitch		1/4-inch phone x 2
MIDI Input		5-pin DIN x 2
MIDI Output		5-pin DIN x 4
SCSI		50-pin high-pitch SCSI connector x 1
USB		Host x 1, Slave x 1 (V1.1)
Options	IB-4D	Digital Audio (SPDIF) I/O board
	IB-4ADT	Adat Interface board (2-in/8-out)
	IB-48P	Assignable 8-channel Output Board
Standard accessory	Power Cable	x 1
	CD-ROM disc	x 1
	Drive Mounting Kit	x 1
	User Guide	x 1


\* The specifications are subject to change without the prior notice.


## II. DISASSEMBLY

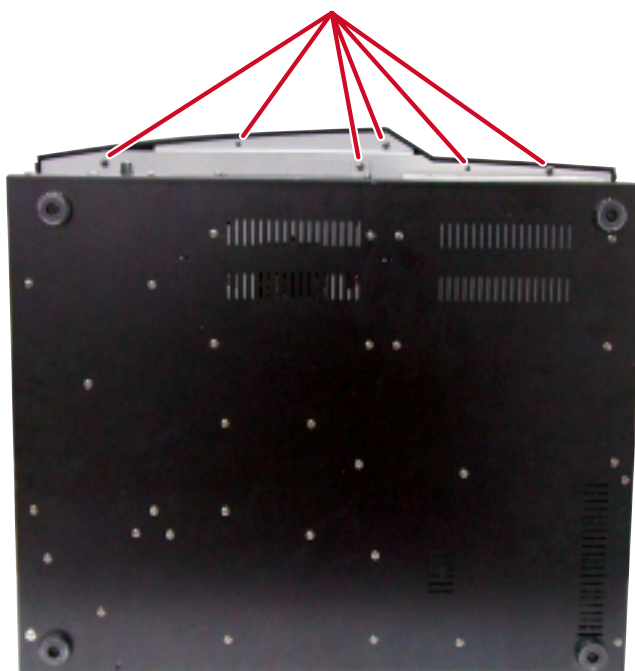
In case of trouble, etc., necessitating dismantling, please dismantle in the order shown in the illustrations. Reassemble in the reverse order.

### 1. Removal of the OPERATION BLOCK

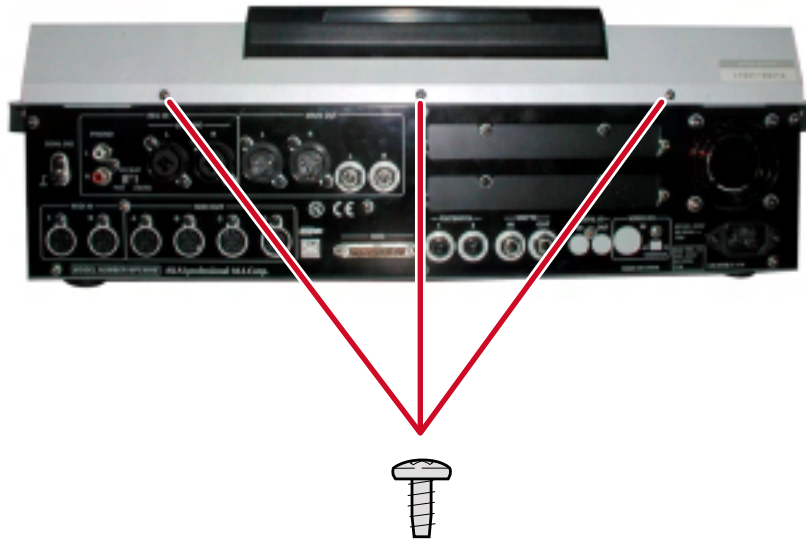
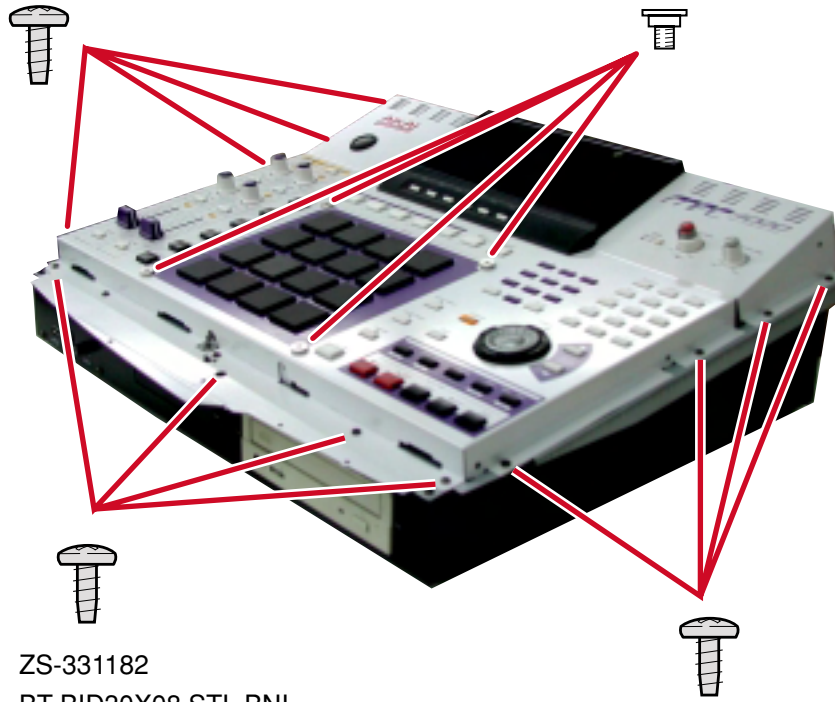


 ZS-322570  
ST BID40X08STL NI3

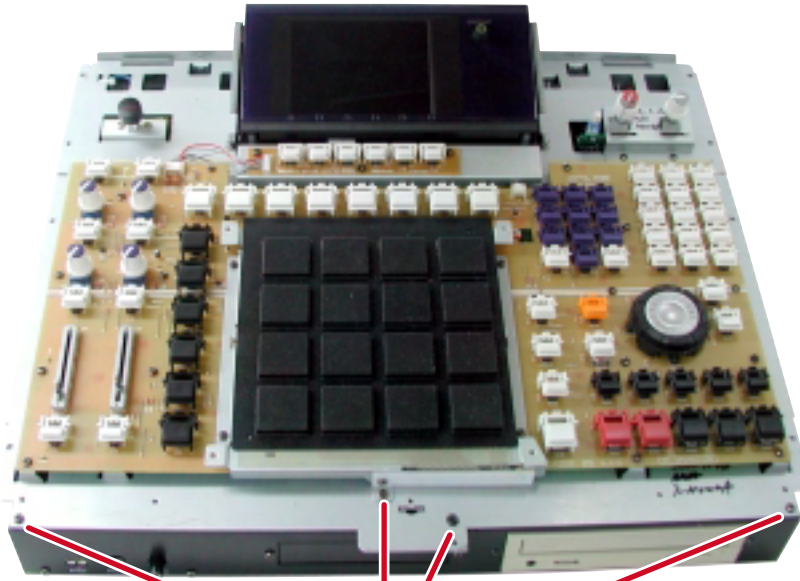
 ZS-331182  
BT BID30X08STL BNI



ZS-821548X SCREW TOP COVER NI

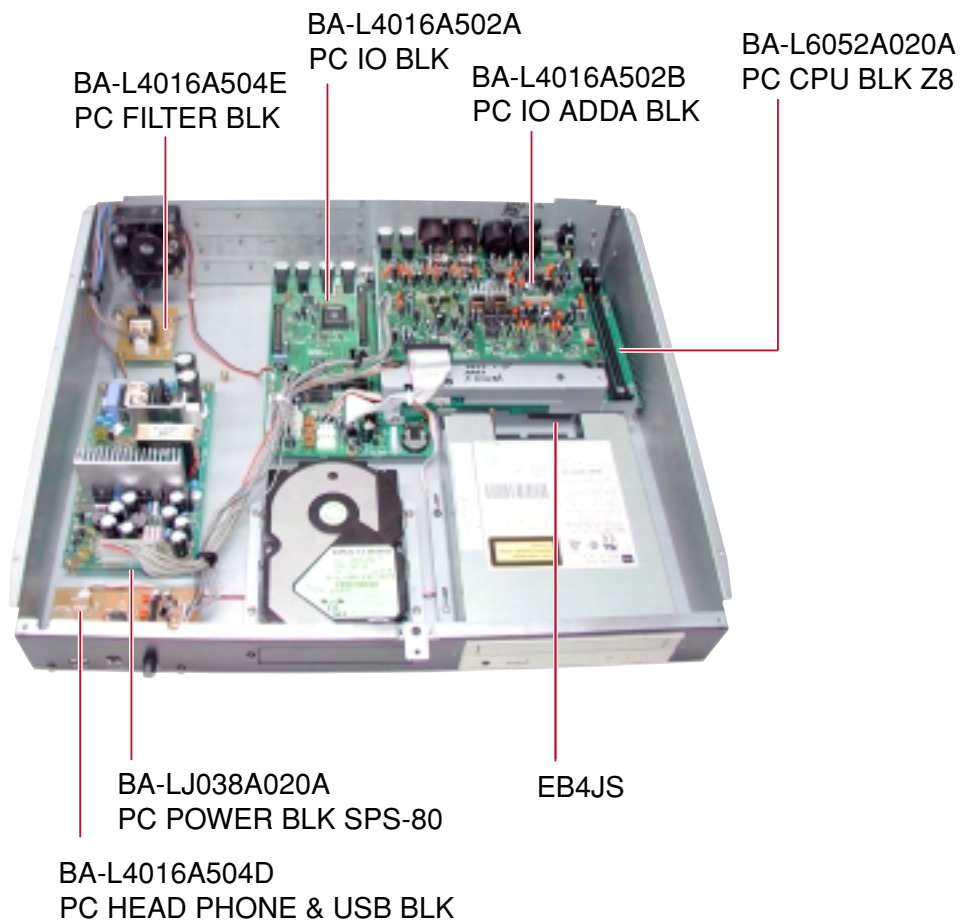
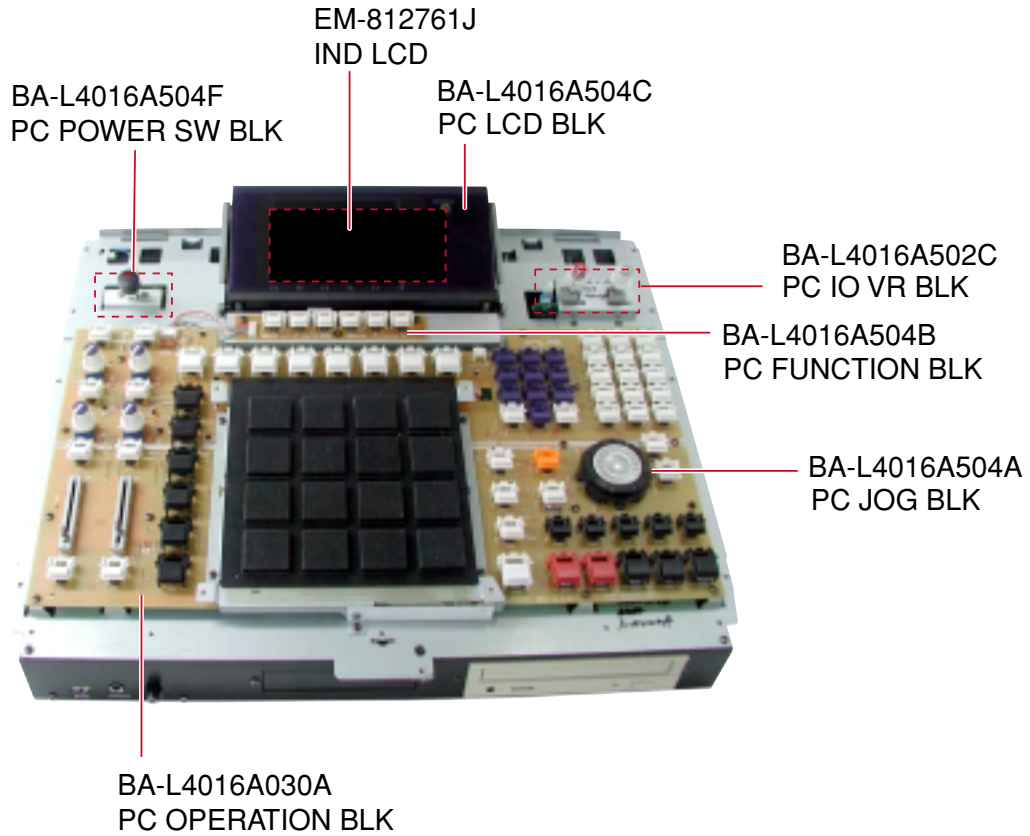


ZS-331182  
BT BID30X08 STL BNI



ZS-331182  
BT BID30X08 STL BNI

### III. PRINCIPAL PARTS LOCATION



# IV. OS Update Procedure

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## OS Update Procedure

[OS Update procedure from USB]

The OS update can be made from the PC via the USB port.

You must have the "OS loader software for MPC4000" besides the OS .bin file.

The OS loader software includes the OS Loader.exe file, USB driver.inf file, and USB Driver.sys file.

### 1. Install USB Driver to your PC

After all files are un-Zipped, place the USB Driver.inf and USB Driver.sys files into the same folder, e.g. Driver.

Boot up the PC and MPC4000 complete and then connect the sampler to the PC using the USB cable.

This prompts that the PC found the new device and the new driver is required.

Refer it to the Driver folder you just created.

The Driver software will be placed correctly and the MPC4000 is recognized properly.

### 2. OS update

Double click on the OS Loader.exe icon and specify the OS .bin file. It will send the OS to the MPC4000.

[Caution]

After the update, be sure to initialize the MPC4000 by pressing the GLOBAL key, and then [F6] (INITIAL) and [F5] (DO IT) keys, before turning it off.

[OS update procedure from CD-R]

To update the OS from the CD-ROM, it requires the OS version later than V1.02 software installed on the MPC4000. You can update the OS from the CD-ROM drive. Be sure to use the CD-ROM that contains the OS for the MPC 4000. You can create the OS disc by using your PC's CD-R/W function to write the "MPC4000.bin" file on to an ISO9660 CD-ROM disc.

1. Turn the MPC4000 on and insert the OS disc.

2. Press the LOAD key and select the MPC4000 OS file (.bin file).

3. Press the [F6] (DO IT) key and then the [F6] (INSTALL) key.

4. The OS Update progress appears, i.e. the messages "Please wait ??." and then "Upgrading of the Flash ROM was successful." appear accordingly.

5. Press the [F6] (Restart) key. Be sure to initialize the MPC4000 by pressing the GLOBAL key, and then the [F6] (INITIAL) and [F5] (DO IT) keys, before turning it off.

## Writing Panel OS Program

Change the position of the Short Pin P15 on the IO PCB to PROG side.

The OS is automatically written to the Panel CPU RAM when the MPC4000 is switched on.

Switch the unit off when the "Process completed!" prompt message appeared and then replace the Short Pin to the original position.



# V. TEST MODE

---

## Panel Test Mode

To enter the Panel Test Mode, press the GLOBAL key while holding down the SHIFT key in the GLOBAL page [F1] of the GLOBAL Mode.

- Moving the Q-link knobs changes the graphics accordingly.
- Tapping the PAD shows the amount of pressure applied on the bar graph.
- Switching the FOOT Pedal on/off changes the graphics accordingly.
- Turning the JOG wheel increases/decreases the value in the Data field.
- Pressing the key shows its name at the bottom of the screen. For those keys with the LED, the LED is turned on/off.
- Pressing the [F1] key stops the key test.
- After stopping the key test, pressing the mode key will abort the test mode.
- While the key test is stopped, pressing the SHIFT key and [F6] key shows the A/D converted value of the Q-link/ PAD.

## CPU Board Test Mode

The Test Mode of the MPC4000 CPU Board is performed while the CPU board is mounted on the Z4/Z8 Sampler. When the Z4/Z8 is switched on after the MPC4000 CPU Board is mounted on the Z4/Z8 Sampler, the sampler is turned on with the MPC4000 screen.

Install the Z4/Z8 OS using the "OS Loader" of "Boot Overwrite" type via the USB port.

Similarly, when the CPU Board is mounted back on the MPC4000 after the Z4/Z8 OS is installed for the test, it boots up with the Z4/Z8 screen. Reinstall the MPC4000 OS using the "OS Loader" of "Boot Overwrite" type. Refer to the Z4/Z8 Service Manual for the operation details of the Test Mode for the CPU Board.

# VI. PARTS LIST

## ATTENTION

1. When placing an order for parts, be sure to list the Part No., Model No. and the description of each part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List or Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

## HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs.
2. Parts not shown in the Parts List will not in principle be supplied.
3. How to read the Parts List.

### 1. PC MAIN BOARD BLK

Ref. No.	Part No.	Description
D5	ED-431276C	D SCHOT 1S30-J T05
D110	ED-431276C	D SCHOT 1S30-J T05
:		
:		
IC5	EI-811073J	ICTRC-6593
<u>IC10</u>	<u>EI-811068J</u>	IC HD74HC157FP

↑ Service parts classification

↑ These reference symbols correspond with component symbols in the Schematic Diagrams.

### 2. FINAL ASSEMBLY BLK

Ref. No.	Part No.	Description
1.	SA-349332	FOOT
2.	ZS-344754C	ST PAN30x06STL CMT
:		
:		
44.	SP-417333J	COVER TOP
45.	ZS-418385J	BT BID30X06STL BNI EATRH LOCK
46-A	△ EW-380905J	AC CORD 250S KP300 KS16A H B J [J]
46-B	△ EW-368420J1	AC CORD 200SKP30KS B AC [A]
<u>46-C</u>	△ EW-410608J	AC CORD 250 KP4819D KS31A B E [E,V]

↑ Symbols for primary destination  
[A] U.S.A. [J] Japan  
[B] England [V] Germany  
[E] Europe [x1] Japan  
[X4] Universal Area

↑ Safety critical component

↑ This number corresponds with the individual parts index number in the figure.

## WARNING

△ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

## AVERTISSEMENT

△ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

## PC BOARD BLK

The PC Board Block may contain several PC Boards. They appear under its block name with their individual part number.

### 1. P.C. BOARD BLOCK

Ref.No.	Part No.	Description
1	BA-L6052A020A	PC CPU BLK Z8
2	BA-L4016A020A	PC (#) IO BLK MPC4000
3	BA-L4016A030A	PC OPERATION BLK MPC4000
4	BA-L4016A040A	PC (#) OTHER BLK MPC4000

PC (#) IO BLK CONSISTS OF FOLLOWING P.C. BOARDS.

*	BA-L4016A502A	PC IO BLK
*	BA-L4016A502B	PC IO ADDA BLK
*	BA-L4016A502C	PC IO VR BLK

PC (#) OTHER BLK CONSISTS OF FOLLOWING P.C. BOARDS.

*	BA-L4016A504A	PC JOG BLK
*	BA-L4016A504B	PC FUNCTION KEYS BLK
*	BA-L4016A504C	PC LCD BLK
*	BA-L4016A504D	PC HEAD PHONE & USB BLK
*	BA-L4016A504E	PC FILTER BLK
*	BA-L4016A504F	PC POWER SW BLK

### 2. P.C. CPU BLOCK

Ref.No.	Part No.	Description
IC1	EI-820788X	IC GDS1110BD-206MHZ MBGA [ unavailable ]
IC2	EI-821551X	IC MB87L1852PFVS-G-BND JSL
IC3	EI-821594X	IC HM5264165FTT-75
IC4	EI-821594X	IC HM5264165FTT-75
IC5	EI-821424X	IC HY57V281620AT-7 FPTY
IC6	EI-821424X	IC HY57V281620AT-7 FPTY
IC7	EI-821211X	IC MBM29DL322TE90TN
IC8	EI-820962X	IC XC95144XL-7TQ100C
IC9	EI-820961X	IC XC2S100-5TQ144C
IC10	EI-820959X1	IC SL811HST V1.5
IC11	EI-812785J	IC FAS236U PQFP
IC12	EI-820949X	IC HD74ALVCH16245TEL
IC13	EI-820948X	IC HD74ALVCH16244TE
IC14	EI-820948X	IC HD74ALVCH16244TE
IC15	EI-820948X	IC HD74ALVCH16244TE
IC16	EI-820949X	IC HD74ALVCH16245TEL
IC17	EI-820951X	IC HD74LVC244AT FPELT16E
IC18	EI-820951X	IC HD74LVC244AT FPELT16E
IC19	EI-812979J	IC HD74LVC245ATELL FPELT16E
IC20	EI-810574J	IC M51957BFP FP73AT12
IC21	EI-820957X	IC NJM317DL1 FPTE1T16E
IC22	EI-820957X	IC NJM317DL1 FPTE1T16E
IC23	EI-820955X	IC NET2890
J1	EJ-820938X	SOCKET SMD XH4A-8035-A 80P
J2	EJ-820938X	SOCKET SMD XH4A-8035-A 80P
J3	EJ-820937X	SOCKET SMD XH4A-4035-A 40P
J4	EJ-820937X	SOCKET SMD XH4A-4035-A 40P
J5	EJ-820990X	SOCKET DMM-168F-111B1 168P
J6	EJ-820990X	SOCKET DMM-168F-111B1 168P
J7	EJ-419246J	SOCKET 128A-050S2A-S14A 50P
P2	EJ-810581J	PLUG SCP40GS3 40P
P2	EJ-810581J	PLUG SCP40GS3 40P
P4	EJ-432670J	PLUG C.S6B-PH-SM3-TB 6P T24E
P5	EJ-821159X	PLUG C.S5B-PH-SM3-TB 5P T24E
P6	EJ-820998X	PLUG C.S4B-PH-SM3-TB 4P T24E
TR1	ET-430868J	TR C.DTC114EKA T146T08E
TR2	ET-430868J	TR C.DTC114EKA T146T08E
TR3	ET-430868J	TR C.DTC114EKA T146T08E
UN1	EI-820944X	DC-DC CONVERTER HGS15-3R3

Ref.No.	Part No.	Description
X1	EI-820769X	OSC X'TAL C.SMD-49 3.6864MHZ
X2	EI-820994X	OSC X'TAL C.DS0751SV 18.4320MHZ
X3	EI-820993X	OSC X'TAL C.DS0751SV 16.9344MHZ
X4	EI-820991X	OSC X'TAL C.SMD-49 12.0000MHZ
X5	EI-820995X	OSC X'TAL C.DS0751SB 40.0000MHZ
X6	EI-820989X	OSC X'TAL C.DS0751SV 48.0000MHZ

### 3. P.C. IO BLOCK

Ref.No.	Part No.	Description
100	EZ-811066J	BATTERY LITHIUM CR2025
400	ES-429984J	SOCKET IC113-0444-004 44P
D1	ED-811455J	D SILICON H 1SS133T-77 T26
D2	ED-811455J	D SILICON H 1SS133T-77 T26
D3	ED-428162J	D SCHOTTKY 1S30-E T26
D4	ED-428162J	D SCHOTTKY 1S30-E T26
D5	ED-820774X	D SCHOT.H EK16 V0 T26 60/1.5A
D6	ED-811455J	D SILICON H 1SS133T-77 T26
D7	ED-811455J	D SILICON H 1SS133T-77 T26
D8	ED-811455J	D SILICON H 1SS133T-77 T26
D9	ED-811455J	D SILICON H 1SS133T-77 T26
D30	ED-811455J	D SILICON H 1SS133T-77 T26
D31	ED-811455J	D SILICON H 1SS133T-77 T26
D32	ED-811455J	D SILICON H 1SS133T-77 T26
D33	ED-811455J	D SILICON H 1SS133T-77 T26
FS1	△ EF-811786J	FUSE RUE110 30V 1.10A
IC1	EI-821048X	IC UPC29M33AT-E2 FPE2T16E
IC2	EI-811073J	IC RTC-6593
IC3	EI-396659J	IC NJM2360D
IC4	EI-820062J	IC HD74HCT541FP FPELT24
IC5	EI-821116X	IC HD74HCT04AFP FPELT16E
IC6	EI-810828J	IC MCCS142236DWR2 18B FPR2T24E
IC7	EI-812979J	IC HD74LVC245ATELL FPELT16E
IC8	EI-812979J	IC HD74LVC245ATELL FPELT16E
IC9	EI-812977J	IC HD74LVC08TELL FPELT16E
IC10	EI-431113J	IC M51953BFP-73A FP73AT12E
IC11	EI-821593X	IC ICS2008BV
IC12	EI-380145J	IC LF353
IC13	EI-821344X	IC TC74HCT32AF-EL FPELT16
IC14	EI-812980J	IC HD74LVC32TELL FPELT16E
IC15	EI-812979J	IC HD74LVC245ATELL FPELT16E
IC16	EI-812980J	IC HD74LVC32TELL FPELT16E
IP1	△ EF-373285	FUSE ICP-N25 105 50V 1.0A
J1	EJ-430956J	DIN J YKF51-5058 2X5P
J2	EJ-430956J	DIN J YKF51-5058 2X5P
J3	EJ-430956J	DIN J YKF51-5058 2X5P
J5	EJ-820493X	SOCKET BATTERY BH25TN
J6	EJ-820316X	SOCKET CONNECTER YKF45- 0001 4P
J8	EJ-820939X	SOCKET XH4A-8031-A 80P
J9	EJ-820939X	SOCKET XH4A-8031-A 80P
J10	EJ-821219X	PHONE J YKB22-5244 NUT 6.3
J11	EJ-821219X	PHONE J YKB22-5244 NUT 6.3
J12	EJ-812347J	SOCKET FCN-235D050-G/J 50P
J13	EJ-821386X	PHONE J YKB22-5264 NUT 6.3
J14	EJ-821386X	PHONE J YKB22-5264 NUT 6.3
L1	EO-812743J	COIL FIX 1 LHL10NB 821K
P14	EJ-810270J	PLUG SCP50GS3 50P
P2	EJ-810271J	PLUG SCP26GS3 26P
P3	EJ-810581J	PLUG SCP40GS3 40P
P3	EJ-810581J	PLUG SCP40GS3 40P
P4	EJ-810270J	PLUG SCP50GS3 50P
P9	EJ-810271J	PLUG SCP26GS3 26P
PH1	EJ-431258J	DETECTOR C.PC400T T12E
PH2	EJ-431258J	DETECTOR C.PC400T T12E

Ref.No.	Part No.	Description
R23	△ ER-812771J	R OMF V T05FS ERX12SE1/2W 1R0J
R77	△ ER-821483X	R OMF H S15 FS ERG2SH 2W 820J
TR1	ET-429896J	TR C.DTA144EKA T146T08E
TR2	ET-429897J	TR C.DTC144EKA T146T08E
TR3	ET-434246J	TR 2SB1326 Q,R T05
TR4	ET-362209	TR 2SC3330 S,T,U T05
TR5	ET-430868J	TR C.DTC114EKA T146T08E
TR6	ET-429898J	TR C.DTA114EKA T146T08E

#### P.C. IO ADD BLOCK

X1	EI-410263J	OSC X'TAL HC-49/U 14.318180MHZ
D10	ED-811455J	D SILICON H 1SS133T-77 T26
D11	ED-811455J	D SILICON H 1SS133T-77 T26
D12	ED-811455J	D SILICON H 1SS133T-77 T26
D13	ED-811455J	D SILICON H 1SS133T-77 T26
D14	ED-811455J	D SILICON H 1SS133T-77 T26
D15	ED-811455J	D SILICON H 1SS133T-77 T26
D16	ED-811455J	D SILICON H 1SS133T-77 T26
D17	ED-811455J	D SILICON H 1SS133T-77 T26
D18	ED-811455J	D SILICON H 1SS133T-77 T26
D19	ED-811455J	D SILICON H 1SS133T-77 T26
D20	ED-811455J	D SILICON H 1SS133T-77 T26
D21	ED-811455J	D SILICON H 1SS133T-77 T26
D22	ED-811455J	D SILICON H 1SS133T-77 T26
D23	ED-811455J	D SILICON H 1SS133T-77 T26
D24	ED-811455J	D SILICON H 1SS133T-77 T26
IC21	EI-348785	IC M5220L
IC22	EI-348785	IC M5220L
IC23	EI-348785	IC M5220L
IC24	EI-397407J	IC NJM7812FA
IC25	EI-348785	IC M5220L
IC26	EI-348785	IC M5220L
IC27	EI-810591J	IC NJM5532L
IC28	EI-348785	IC M5220L
IC29	EI-810591J	IC NJM5532L
IC30	EI-812781J	IC AK5383VS FPE2T24E
IC31	EI-820696X	IC ICS570A-01CS08 FP T12E
IC32	EI-821120X	IC HD74LVC02TELL FPELT12E
IC33	EI-810574J	IC M51957BFP FP73AT12
IC34	EI-336995	IC NJM78L05A
IC35	EI-810574J	IC M51957BFP FP73AT12
IC36	EI-821442X	IC PCM1730E FPT16E
IC37	EI-821226X	IC OPA2134UA FPT12E
IC38	EI-821226X	IC OPA2134UA FPT12E
IC39	EI-810591J	IC NJM5532L
IC40	EI-377191	IC NJM5532D-D
IC41	EI-377191	IC NJM5532D-D
IC42	EI-377191	IC NJM5532D-D
IC43	EI-377191	IC NJM5532D-D
IC44	EI-348785	IC M5220L
IC45	EI-410281J	IC NJM7912FA
IC46	EI-821118X	IC NJM78M08FA
IC47	EI-400856J	IC NJM78M05FA
IC48	EI-400856J	IC NJM78M05FA
IC49	EI-821118X	IC NJM78M08FA
IC50	EI-821048X	IC UPC29M33AT-E2 FPE2T16E
IC51	EI-812977J	IC HD74LVC08TELL FPELT16E
IC52	EI-820951X	IC HD74LVC244AT FPELT16E
IC53	EI-810588J	IC SSM-2404P
J21	EJ-820762X	SOCKET RECEPTACLE NCJ9FI-H-0
J22	EJ-820762X	SOCKET RECEPTACLE NCJ9FI-H-0
J23	EJ-821443X	PIN J YKC21-3079 P2P
J24	EJ-386340J	SOCKET RECEPTACLE XLB3-32PCVM1
J25	EJ-386340J	SOCKET RECEPTACLE XLB3-32PCVM1
J26	EJ-821386X	PHONE J YKB22-5264 NUT 6.3

Ref.No.	Part No.	Description
J27	EJ-821386X	PHONE J YKB22-5264 NUT 6.3
R361	△ ER-422512J	R OMF H S15 FS ERG2SH 2W 151J
RL1	EQ-348929	RELAY SIG G5A-237P 2TR 12V
RL2	EQ-348929	RELAY SIG G5A-237P 2TR 12V
SW1	ES-821121X	SW SLIDE SSSF142-S09N0 4-02N
TR10	ET-821232X	TR 2SC3329 GR,BL T05
TR11	ET-821232X	TR 2SC3329 GR,BL T05
TR12	ET-821232X	TR 2SC3329 GR,BL T05
TR13	ET-821232X	TR 2SC3329 GR,BL T05
TR14	ET-821232X	TR 2SC3329 GR,BL T05
TR15	ET-821232X	TR 2SC3329 GR,BL T05
TR16	ET-821232X	TR 2SC3329 GR,BL T05
TR17	ET-821232X	TR 2SC3329 GR,BL T05
TR19	ET-362847	TR 2SA1317 S,T,U T05
TR20	ET-430868J	TR C.DTC114EKA T146T08E
TR21	ET-410280J	TR 2SC3327 A T05
TR22	ET-410280J	TR 2SC3327 A T05
TR23	ET-410280J	TR 2SC3327 A T05
TR24	ET-410280J	TR 2SC3327 A T05

#### P.C. IO VR BLOCK

IC60	EI-810591J	IC NJM5532L
IC61	EI-812479J	IC NJM5532M FPT1T32P
IC62	EI-812479J	IC NJM5532M FPT1T32P
SW3	ES-821122X	SW PUSH SPUJ19B-2N-*W 2-02-02N
VR1	EV-821124X	VR ROTARY RK1612220 L25RD203X2
VR2	EV-821123X	VR ROTARY RK16312A0 L25 B103X2

#### 4. P.C. OPERATION BLOCK

Ref.No.	Part No.	Description
D100	ED-811455J	D SILICON H 1SS133T-77 T26
D101	ED-811455J	D SILICON H 1SS133T-77 T26
D102	ED-811455J	D SILICON H 1SS133T-77 T26
D103	ED-811455J	D SILICON H 1SS133T-77 T26
D104	ED-811455J	D SILICON H 1SS133T-77 T26
D105	ED-811455J	D SILICON H 1SS133T-77 T26
D106	ED-811455J	D SILICON H 1SS133T-77 T26
D107	ED-811455J	D SILICON H 1SS133T-77 T26
D108	ED-811455J	D SILICON H 1SS133T-77 T26
D109	ED-811455J	D SILICON H 1SS133T-77 T26
D110	ED-811455J	D SILICON H 1SS133T-77 T26
D111	ED-811455J	D SILICON H 1SS133T-77 T26
D112	ED-811455J	D SILICON H 1SS133T-77 T26
D113	ED-811455J	D SILICON H 1SS133T-77 T26
D114	ED-811455J	D SILICON H 1SS133T-77 T26
D115	ED-811455J	D SILICON H 1SS133T-77 T26
D116	ED-811455J	D SILICON H 1SS133T-77 T26
D117	ED-811455J	D SILICON H 1SS133T-77 T26
D118	ED-811455J	D SILICON H 1SS133T-77 T26
D119	ED-811455J	D SILICON H 1SS133T-77 T26
D120	ED-811455J	D SILICON H 1SS133T-77 T26
D121	ED-811455J	D SILICON H 1SS133T-77 T26
D122	ED-811455J	D SILICON H 1SS133T-77 T26
D123	ED-811455J	D SILICON H 1SS133T-77 T26
D124	ED-811455J	D SILICON H 1SS133T-77 T26
D125	ED-811455J	D SILICON H 1SS133T-77 T26
D126	ED-811455J	D SILICON H 1SS133T-77 T26
D127	ED-811455J	D SILICON H 1SS133T-77 T26
D128	ED-811455J	D SILICON H 1SS133T-77 T26
D129	ED-811455J	D SILICON H 1SS133T-77 T26
D130	ED-811455J	D SILICON H 1SS133T-77 T26
D131	ED-811455J	D SILICON H 1SS133T-77 T26
D132	ED-811455J	D SILICON H 1SS133T-77 T26
D133	ED-811455J	D SILICON H 1SS133T-77 T26
D134	ED-811455J	D SILICON H 1SS133T-77 T26

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
D135	ED-811455J	D SILICON H 1SS133T-77 T26	D305	ED-811455J	D SILICON H 1SS133T-77 T26
D136	ED-811455J	D SILICON H 1SS133T-77 T26	D310	ED-811455J	D SILICON H 1SS133T-77 T26
D137	ED-811455J	D SILICON H 1SS133T-77 T26	D311	ED-811455J	D SILICON H 1SS133T-77 T26
D138	ED-811455J	D SILICON H 1SS133T-77 T26	D312	ED-811455J	D SILICON H 1SS133T-77 T26
D139	ED-811455J	D SILICON H 1SS133T-77 T26	D313	ED-811455J	D SILICON H 1SS133T-77 T26
D140	ED-811455J	D SILICON H 1SS133T-77 T26	D314	ED-811455J	D SILICON H 1SS133T-77 T26
D141	ED-811455J	D SILICON H 1SS133T-77 T26	D315	ED-811455J	D SILICON H 1SS133T-77 T26
D142	ED-811455J	D SILICON H 1SS133T-77 T26	D320	ED-811455J	D SILICON H 1SS133T-77 T26
D143	ED-811455J	D SILICON H 1SS133T-77 T26	D321	ED-811455J	D SILICON H 1SS133T-77 T26
D144	ED-811455J	D SILICON H 1SS133T-77 T26	D322	ED-811455J	D SILICON H 1SS133T-77 T26
D145	ED-811455J	D SILICON H 1SS133T-77 T26	D323	ED-811455J	D SILICON H 1SS133T-77 T26
D146	ED-811455J	D SILICON H 1SS133T-77 T26	D324	ED-811455J	D SILICON H 1SS133T-77 T26
D147	ED-811455J	D SILICON H 1SS133T-77 T26	D325	ED-811455J	D SILICON H 1SS133T-77 T26
D148	ED-811455J	D SILICON H 1SS133T-77 T26	D330	ED-811455J	D SILICON H 1SS133T-77 T26
D149	ED-811455J	D SILICON H 1SS133T-77 T26	D331	ED-811455J	D SILICON H 1SS133T-77 T26
D150	ED-811455J	D SILICON H 1SS133T-77 T26	D332	ED-811455J	D SILICON H 1SS133T-77 T26
D151	ED-811455J	D SILICON H 1SS133T-77 T26	D333	ED-811455J	D SILICON H 1SS133T-77 T26
D152	ED-811455J	D SILICON H 1SS133T-77 T26	D334	ED-811455J	D SILICON H 1SS133T-77 T26
D153	ED-811455J	D SILICON H 1SS133T-77 T26	D335	ED-811455J	D SILICON H 1SS133T-77 T26
D154	ED-811455J	D SILICON H 1SS133T-77 T26	D350	ED-393487J	D ZENER H HZS7A1L T26
D155	ED-811455J	D SILICON H 1SS133T-77 T26	D351	ED-393487J	D ZENER H HZS7A1L T26
D156	ED-811455J	D SILICON H 1SS133T-77 T26	D352	ED-393487J	D ZENER H HZS7A1L T26
D157	ED-811455J	D SILICON H 1SS133T-77 T26	D353	ED-393487J	D ZENER H HZS7A1L T26
D158	ED-811455J	D SILICON H 1SS133T-77 T26	D354	ED-393487J	D ZENER H HZS7A1L T26
D159	ED-811455J	D SILICON H 1SS133T-77 T26	IC22	EI-820947X	IC HD64F2132RFA20
D160	ED-811455J	D SILICON H 1SS133T-77 T26	IC24	EI-375185	IC M51953BL
D161	ED-811455J	D SILICON H 1SS133T-77 T26	IC300	EI-362588J1	IC M5238AP
D162	ED-811455J	D SILICON H 1SS133T-77 T26	IC320	EI-362588J1	IC M5238AP
D163	ED-811455J	D SILICON H 1SS133T-77 T26	IC350	EI-387934J	IC HD74HC04P
D164	ED-811455J	D SILICON H 1SS133T-77 T26	P20	EJ-361777	PLUG S6B-PH-K WHT 6P
D165	ED-811455J	D SILICON H 1SS133T-77 T26	P30	EJ-367245	PLUG S4B-PH-K WHT 4P
D166	ED-811455J	D SILICON H 1SS133T-77 T26	P300	EJ-821080X	SOCKET 5229-20APB 20P
D167	ED-811455J	D SILICON H 1SS133T-77 T26	SW100	ES-415015J	SW TACT SKQEAD
D168	ED-811455J	D SILICON H 1SS133T-77 T26	SW101	ES-415015J	SW TACT SKQEAD
D169	ED-811455J	D SILICON H 1SS133T-77 T26	SW102	ES-415015J	SW TACT SKQEAD
D170	ED-811455J	D SILICON H 1SS133T-77 T26	SW103	ES-415015J	SW TACT SKQEAD
D200	ED-388539J	D LED GL-3HD43	SW104	ES-415015J	SW TACT SKQEAD
D201	ED-388539J	D LED GL-3HD43	SW105	ES-415015J	SW TACT SKQEAD
D202	ED-388539J	D LED GL-3HD43	SW106	ES-349474	SW TACT SKHHAM004A
D203	ED-812086J	D LED L-934SGD GREEN	SW107	ES-349474	SW TACT SKHHAM004A
D204	ED-812086J	D LED L-934SGD GREEN	SW108	ES-349474	SW TACT SKHHAM004A
D205	ED-810393J	D LED GL-3KG8	SW109	ES-349474	SW TACT SKHHAM004A
D206	ED-810393J	D LED GL-3KG8	SW110	ES-349474	SW TACT SKHHAM004A
D208	ED-812086J	D LED L-934SGD GREEN	SW111	ES-349474	SW TACT SKHHAM004A
D209	ED-812086J	D LED L-934SGD GREEN	SW112	ES-349474	SW TACT SKHHAM004A
D210	ED-810393J	D LED GL-3KG8	SW113	ES-415015J	SW TACT SKQEAD
D211	ED-810393J	D LED GL-3KG8	SW114	ES-349474	SW TACT SKHHAM004A
D212	ED-810393J	D LED GL-3KG8	SW115	ES-349474	SW TACT SKHHAM004A
D213	ED-810393J	D LED GL-3KG8	SW116	ES-349474	SW TACT SKHHAM004A
D214	ED-812086J	D LED L-934SGD GREEN	SW117	ES-349474	SW TACT SKHHAM004A
D215	ED-810393J	D LED GL-3KG8	SW118	ES-349474	SW TACT SKHHAM004A
D216	ED-810393J	D LED GL-3KG8	SW119	ES-349474	SW TACT SKHHAM004A
D217	ED-810393J	D LED GL-3KG8	SW120	ES-349474	SW TACT SKHHAM004A
D218	ED-810393J	D LED GL-3KG8	SW121	ES-349474	SW TACT SKHHAM004A
D219	ED-810393J	D LED GL-3KG8	SW122	ES-349474	SW TACT SKHHAM004A
D220	ED-812086J	D LED L-934SGD GREEN	SW123	ES-349474	SW TACT SKHHAM004A
D221	ED-810393J	D LED GL-3KG8	SW124	ES-349474	SW TACT SKHHAM004A
D222	ED-810393J	D LED GL-3KG8	SW125	ES-349474	SW TACT SKHHAM004A
D224	ED-810393J	D LED GL-3KG8	SW126	ES-349474	SW TACT SKHHAM004A
D225	ED-810393J	D LED GL-3KG8	SW127	ES-349474	SW TACT SKHHAM004A
D226	ED-810393J	D LED GL-3KG8	SW128	ES-349474	SW TACT SKHHAM004A
D227	ED-810393J	D LED GL-3KG8	SW129	ES-349474	SW TACT SKHHAM004A
D300	ED-811455J	D SILICON H 1SS133T-77 T26	SW130	ES-349474	SW TACT SKHHAM004A
D301	ED-811455J	D SILICON H 1SS133T-77 T26	SW131	ES-349474	SW TACT SKHHAM004A
D302	ED-811455J	D SILICON H 1SS133T-77 T26	SW132	ES-349474	SW TACT SKHHAM004A
D303	ED-811455J	D SILICON H 1SS133T-77 T26	SW133	ES-349474	SW TACT SKHHAM004A
D304	ED-811455J	D SILICON H 1SS133T-77 T26	SW134	ES-349474	SW TACT SKHHAM004A

Ref.No.	Part No.	Description
SW135	ES-349474	SW TACT SKHHAM004A
SW136	ES-349474	SW TACT SKHHAM004A
SW137	ES-349474	SW TACT SKHHAM004A
SW138	ES-349474	SW TACT SKHHAM004A
SW139	ES-349474	SW TACT SKHHAM004A
SW140	ES-349474	SW TACT SKHHAM004A
SW141	ES-349474	SW TACT SKHHAM004A
SW142	ES-349474	SW TACT SKHHAM004A
SW143	ES-349474	SW TACT SKHHAM004A
SW144	ES-349474	SW TACT SKHHAM004A
SW145	ES-349474	SW TACT SKHHAM004A
SW146	ES-349474	SW TACT SKHHAM004A
SW147	ES-349474	SW TACT SKHHAM004A
SW148	ES-349474	SW TACT SKHHAM004A
SW149	ES-337521	SW TACT SKHHAL
SW150	ES-337521	SW TACT SKHHAL
SW151	ES-337521	SW TACT SKHHAL
SW152	ES-337521	SW TACT SKHHAL
SW153	ES-337521	SW TACT SKHHAL
SW154	ES-337521	SW TACT SKHHAL
SW155	ES-337521	SW TACT SKHHAL
SW156	ES-337521	SW TACT SKHHAL
SW157	ES-337521	SW TACT SKHHAL
SW158	ES-337521	SW TACT SKHHAL
SW159	ES-337521	SW TACT SKHHAL
SW160	ES-337521	SW TACT SKHHAL
SW161	ES-337521	SW TACT SKHHAL
SW162	ES-337521	SW TACT SKHHAL
SW163	ES-349474	SW TACT SKHHAM004A
SW164	ES-349474	SW TACT SKHHAM004A
SW165	ES-349474	SW TACT SKHHAM004A
SW166	ES-349474	SW TACT SKHHAM004A
SW167	ES-349474	SW TACT SKHHAM004A
SW168	ES-349474	SW TACT SKHHAM004A
SW169	ES-349474	SW TACT SKHHAM004A
SW170	ES-349474	SW TACT SKHHAM004A
TR200	ET-364023	TR DTC114ES T05
TR201	ET-364023	TR DTC114ES T05
TR202	ET-364023	TR DTC114ES T05
TR203	ET-364023	TR DTC114ES T05
TR204	ET-364023	TR DTC114ES T05
TR205	ET-366753	TR DTA114ES T05
TR206	ET-366753	TR DTA114ES T05
TR207	ET-366753	TR DTA114ES T05
TR208	ET-366753	TR DTA114ES T05
TR209	ET-366753	TR DTA114ES T05
TR210	ET-366753	TR DTA114ES T05
VR200	EV-812350J	VR SLIDE RS45112 L15 B103X2 SP
VR202	EV-812350J	VR SLIDE RS45112 L15 B103X2 SP
VR204	EV-812348J	VR ROTARY RK14K124 L20 B103X2
VR206	EV-812348J	VR ROTARY RK14K124 L20 B103X2
VR208	EV-812348J	VR ROTARY RK14K124 L20 B103X2
VR210	EV-812348J	VR ROTARY RK14K124 L20 B103X2
X20	EI-820996X	OSC X'TAL C.SMD-49 14.7456MHZ

#### 5. P.C. FILTER BLOCK

Ref.No.	Part No.	Description
L1	EO-427223J	COIL LF HR-24-562
P1	EJ-397230J	PLUG B2P3VH BLACK P7.92 2P
P2	EJ-359621	PLUG B2P-3-VH P7.92 2P

#### P.C. FUNCTION KEYS BLOCK

Ref.No.	Part No.	Description
D171	ED-811455J	D SILICON H 1SS133T-77 T26
D172	ED-811455J	D SILICON H 1SS133T-77 T26
D173	ED-811455J	D SILICON H 1SS133T-77 T26
D174	ED-811455J	D SILICON H 1SS133T-77 T26

Ref.No.	Part No.	Description
D175	ED-811455J	D SILICON H 1SS133T-77 T26
D176	ED-811455J	D SILICON H 1SS133T-77 T26
SW171	ES-349474	SW TACT SKHHAM004A
SW172	ES-349474	SW TACT SKHHAM004A
SW173	ES-349474	SW TACT SKHHAM004A
SW174	ES-349474	SW TACT SKHHAM004A
SW175	ES-349474	SW TACT SKHHAM004A
SW176	ES-349474	SW TACT SKHHAM004A
W170	EW-821085X	WIRE ASSY L4016(3) JB-PH 6P

#### P.C. HEADPHONE & USB BLOCK

Ref.No.	Part No.	Description
IC200	EI-353227	IC M5216L
J200	EJ-821000X	PHONE J YKB26-5264 S.NUT 6.3
J250	EJ-820970X	SOCKET CONNECTER YKF45-0001 4P
PS200	△ EF-811786J	FUSE RUE110 30V 1.10A
R210	△ ER-430691J	R OMF H S12 FS 1W 101J
R211	△ ER-430691J	R OMF H S12 FS 1W 101J
TR200	ET-410280J	TR 2SC3327 A T05
TR201	ET-410280J	TR 2SC3327 A T05
TR202	ET-410280J	TR 2SC3327 A T05
TR203	ET-410280J	TR 2SC3327 A T05
VR200	EV-821235X	VR ROTARY RK0971220 L15 B103X2
W200	EW-821086X	WIRE ASSY L4016(4) JC-PH 8P
W250	EW-821088X	WIRE ASSY L4016(6) JB-PH 4P

#### P.C. JOG BLOCK

Ref.No.	Part No.	Description
RE300	ES-821084X	ROTARY ENCORDER REC16B25-201-C
W300	EW-821087X	WIRE ASSY L4016(5) JB-PH 4P

#### P.C. LCD BLOCK

Ref.No.	Part No.	Description
J400	EJ-812770J	SOCKET 14FE-ST-VK-N 14P
VR400	EV-820602X	VR ROTARY RK09K113AF25B14 B103
W400	EW-812756J	WIRE ASSY L3055 W12 JB-51021 5
W401	EW-812757J	WIRE ASSY L3055 W16 JB-EH 14P
W402	EW-813024J	WIRE AWG24 TCT BLK L=60

#### P.C. POWER SW BLOCK

Ref.No.	Part No.	Description
P3	EJ-359621	PLUG B2P-3-VH P7.92 2P
P4	EJ-375206	PLUG B2P3VH RED P7.92 2P
SW1	ES-430685J1	SW PUSH SDDF3A 02-1

#### 6. P.C. EFFECT BLOCK (Z8)

Ref.No.	Part No.	Description
IC1	EI-812794J	IC XCB56362PV100 TQFP
IC2	EI-820459X	IC GM71VS65163CLT-5
IC3	EI-820459X	IC GM71VS65163CLT-5
IC4	EI-812841J	IC HM62W16255HJP-15
IC5	EI-812841J	IC HM62W16255HJP-15
IC6	EI-812977J	IC HD74LVC08TELL FPELT16E
J1	EJ-820937X	SOCKET SMD XH4A-4035-A 40P
J2	EJ-820937X	SOCKET SMD XH4A-4035-A 40P

#### 7. IB-48P

Ref.No.	Part No.	Description
IC1	EI-397407J	IC NJM7812FA
IC2	EI-410281J	IC NJM7912FA
IC3	EI-812978J	IC HD74LVC541ATELL FPELT16E
IC4	EI-427221J	IC NJM7808FA
IC5	EI-400856J	IC NJM78M05FA
IC6	EI-821048X	IC UPC29M33AT-E2 FPE2T16E
IC7	EI-336995	IC NJM78L05A
IC8	EI-810574J	IC M51957BFP FP73AT12
IC9	EI-821442X	IC PCM1730E FPT16E
IC10	EI-821226X	IC OPA2134UA FPT12E

Ref.No.	Part No.	Description
IC11	EI-810591J	IC NJM5532L
IC12	EI-821226X	IC OPA2134UA FPT12E
IC13	EI-810591J	IC NJM5532L
IC14	EI-821442X	IC PCM1730E FPT16E
IC15	EI-821226X	IC OPA2134UA FPT12E
IC16	EI-810591J	IC NJM5532L
IC17	EI-821226X	IC OPA2134UA FPT12E
IC18	EI-810591J	IC NJM5532L
IC19	EI-821442X	IC PCM1730E FPT16E
IC20	EI-821226X	IC OPA2134UA FPT12E
IC21	EI-810591J	IC NJM5532L
IC22	EI-821226X	IC OPA2134UA FPT12E
IC23	EI-810591J	IC NJM5532L
IC24	EI-821442X	IC PCM1730E FPT16E
IC25	EI-821226X	IC OPA2134UA FPT12E
IC26	EI-810591J	IC NJM5532L
IC27	EI-821226X	IC OPA2134UA FPT12E
IC28	EI-810591J	IC NJM5532L
IC30	EI-812977J	IC HD74LVC08TELL FPELT16E
J1	EJ-413165J	PHONE J 3P YKB21-5009 NI 6.3
J2	EJ-821387X	PHONE J YKB21-5264 6.3
J3	EJ-821387X	PHONE J YKB21-5264 6.3
J4	EJ-413165J	PHONE J 3P YKB21-5009 NI 6.3
J5	EJ-821387X	PHONE J YKB21-5264 6.3
J6	EJ-821387X	PHONE J YKB21-5264 6.3
J7	EJ-413165J	PHONE J 3P YKB21-5009 NI 6.3
J8	EJ-821387X	PHONE J YKB21-5264 6.3
TR1	ET-410280J	TR 2SC3327 A T05
TR2	ET-410280J	TR 2SC3327 A T05
TR3	ET-410280J	TR 2SC3327 A T05
TR4	ET-410280J	TR 2SC3327 A T05
TR5	ET-410280J	TR 2SC3327 A T05
TR6	ET-410280J	TR 2SC3327 A T05
TR7	ET-410280J	TR 2SC3327 A T05
TR8	ET-410280J	TR 2SC3327 A T05
TR9	ET-410280J	TR 2SC3327 A T05
TR10	ET-410280J	TR 2SC3327 A T05
TR11	ET-410280J	TR 2SC3327 A T05
TR12	ET-410280J	TR 2SC3327 A T05
TR13	ET-410280J	TR 2SC3327 A T05
TR14	ET-410280J	TR 2SC3327 A T05
TR15	ET-410280J	TR 2SC3327 A T05
TR16	ET-410280J	TR 2SC3327 A T05
TR17	ET-364023	TR DTC114ES T05
TR18	ET-362847	TR 2SA1317 S,T,U T05
W1	EW-820969X	WIRE ASSY L5261(1) RA-RC 26P

#### 8. IB-4ADT

Ref.No.	Part No.	Description
IC1	EI-821412X	IC SM5849BF
IC2	EI-821412X	IC SM5849BF
IC3	EI-821412X	IC SM5849BF
IC4	EI-821412X	IC SM5849BF
IC5	EI-821412X	IC SM5849BF
IC6	EI-820941X	IC XC2S50-5TQ144C
IC7	EI-820957X	IC NJM317DL1 FPTE1T16E
IC8	EI-810887J	IC AV9173-01CS08 FP T12E
IC9	EI-810887J	IC AV9173-01CS08 FP T12E
IC10	EI-812977J	IC HD74LVC08TELL FPELT16E
IC11	EI-821160X	IC BA033FP E2 FPE2T16E
IC13	EI-812978J	IC HD74LVC541ATELL FPELT16E
IC14	EI-812978J	IC HD74LVC541ATELL FPELT16E
J1	EJ-394459J	SOCKET OPTICAL GP1F32R
J2	EJ-394490J	SOCKET OPTICAL GP1F32T
J3	EJ-820965X	WIRE ASSY L5263(1) RA-RC 50P
P1	EJ-364356	PLUG B8B-PH-K WHT 8P

Ref.No.	Part No.	Description
X1	EI-820992X	OSC X'TAL C.DS0751SV 25.0000MHZ

#### 9. IB-4D

Ref.No.	Part No.	Description
100	△ EZ-811066J	BATTERY LITHIUM CR2025
110	EJ-378916J	SOCKET JM-2W-96 2P
IC1	EI-813234J	IC CS8414-CS FPT1T24E
IC2	EI-813233J	IC CS8404A-CS FPT1T24E
IC3	EI-821412X	IC SM5849BF
IC4	EI-821412X	IC SM5849BF
IC5	EI-810887J	IC AV9173-01CS08 FP T12E
IC6	EI-810887J	IC AV9173-01CS08 FP T12E
IC7	EI-821022X	IC XC9572XL-7TQ100C
IC8	EI-811576J	IC DS34C86TM FP T16E
IC9	EI-811205J	IC MC74HCU04AF FPELT16E
IC10	EI-811125J	IC UPC2933T
J1	EJ-820754X	PIN J YKC21-3079 P2P
J2	EJ-820150J	SOCKET COAX. BNC-LNRD-BPAA
SW1	ES-428287J	SW SLIDE SSSF112-S06N1 1-02N
T1	BT-810651J	TRANS PULSE CIT0705S-35101TFP
TR1	ET-391712J	TR 2SA1317 S,T T05
W1	EW-821006X	WIRE ASSY L5262(1) RA-RC 40P
X1	EI-821023X	OSC X'TAL C.DS0751SV 6.144MHZ

#### 10. LCD BLOCK

Ref.No.	Part No.	Description
1	SP-812808X2	PANEL LCD
2	SP-821150X	WINDOW LCD
3	EM-812761J	IND LCD G321EV5R001
4	MB-820395X	SHIELD LCD 110
5	MB-820396X	SHIELD LCD 90
6	EM-812795J	INVERTER CXA-K0505-VJL
7	ZS-811805J	BT BID30X10STL BNI
8	EW-821444X	CORD FFC P1.25 L480 14P
9	ZS-331182	BT BID30X08STL BNI
10	MS-812805J	SHAFT (1)
11	ZW-270101	RING E 300SUP CMT
12	MS-812806J	SHAFT (2)
13	SP-812809J	BOTTOM LCD
14	SK-821433X	KNOB LCD (2)
14	EV-820602X	VR ROTARY RK09K113AF25B14 B103
15	BA-L4016A504C	PC LCD BLK
16	EL-820373X	FL UNIT 001

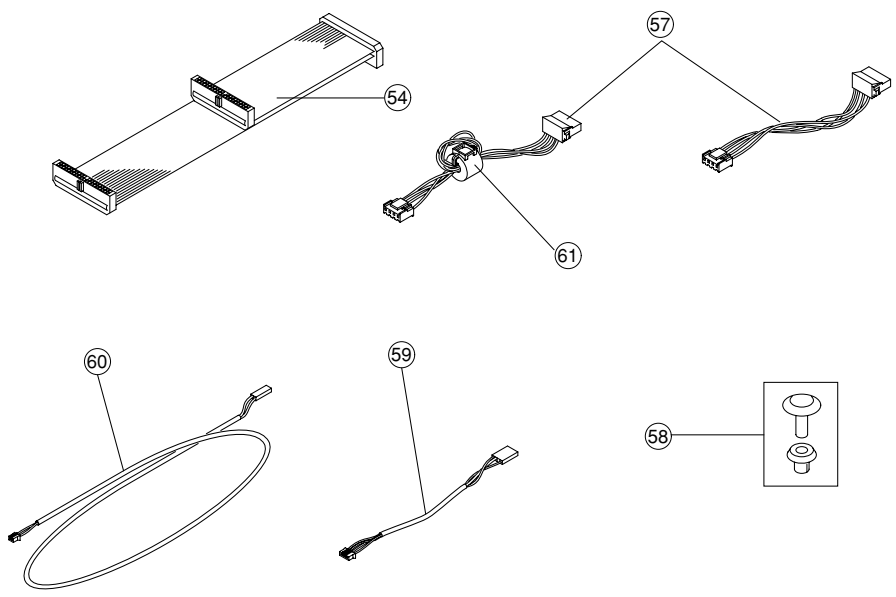
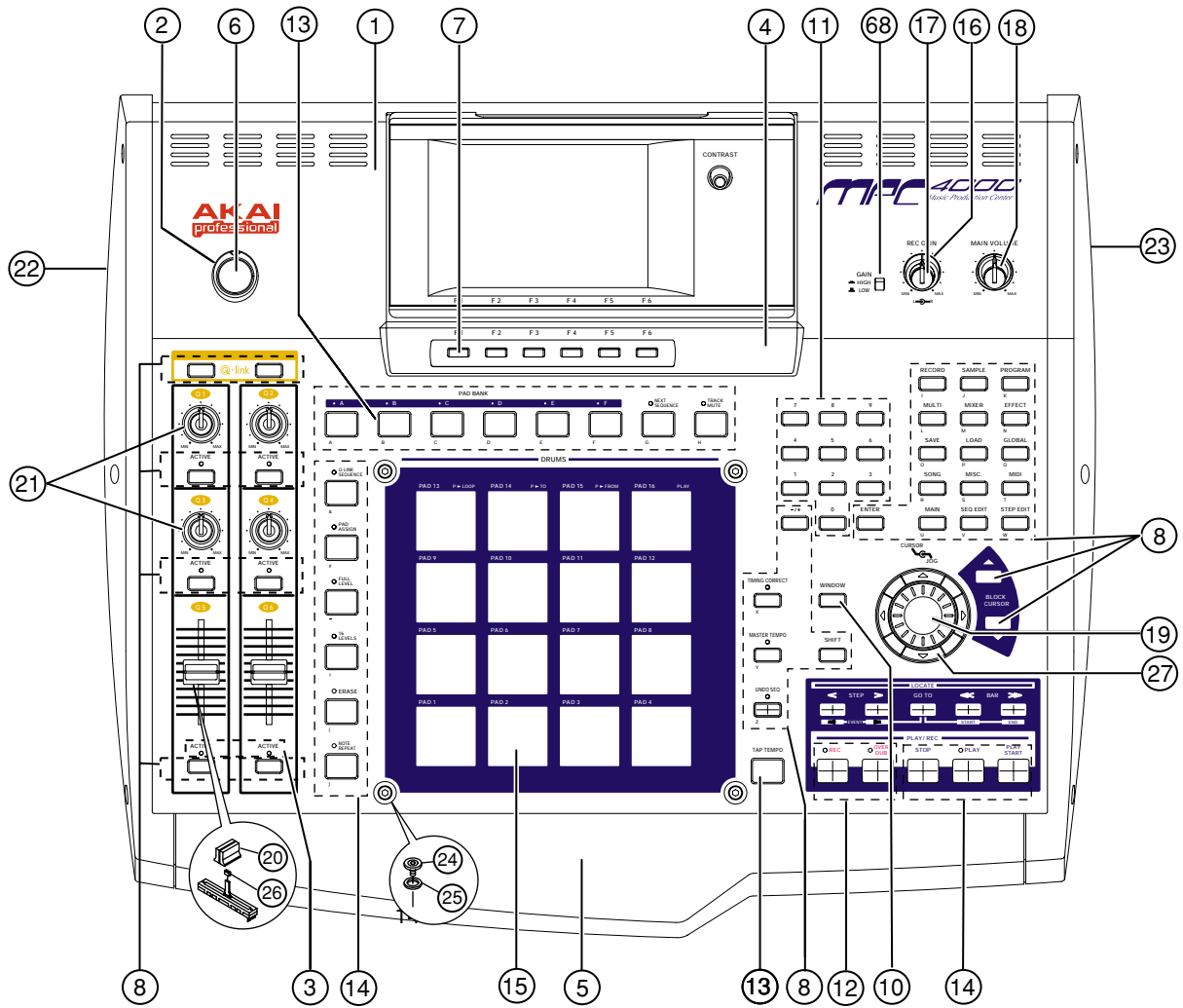
#### 11. FINAL ASSEMBLY BLOCK

Ref.No.	Part No.	Description
1	SP-821144X1	PANEL TOP
2	SE-820647X1	ESCUTCHEON POWER
3	SE-810353J	LENS LED
4	SE-821149X	ESCUTCHEON PANEL
5	SP-821147X	PANEL FRONT
6	BUTTON SB-820646X	BUTTON POWER [ Pow SW ]
6	SW ES-430685J1	SW PUSH SDDF3A 02-1
7	BUTTON SB-821492X	BUTTON PUSH (A) [ White ]
7	SW ES-349474	SW TACT SKHHAM004A
8	BUTTON SB-821549X	BUTTON PUSH C-7 [ White ]
8	SW ES-349474	SW TACT SKHHAM004A
9	BUTTON SB-430328J	BUTTON PUSH C [ Black ]
9	SW ES-349474	SW TACT SKHHAM004A
10	BUTTON SB-812379J	BUTTON PUSH C-4 [ Yellow ]
10	SW ES-349474	SW TACT SKHHAM004A
11	BUTTON SB-821429X	BUTTON PUSH C-6 [ Purple ]
11	SW ES-349474	SW TACT SKHHAM004A
12	BUTTON SB-430327J	BUTTON PUSH B(2) [ Red ]

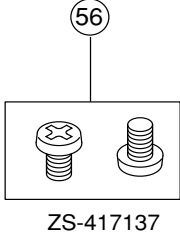
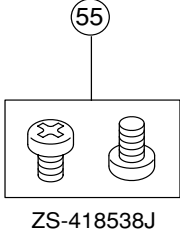
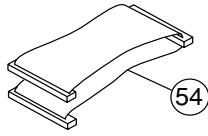
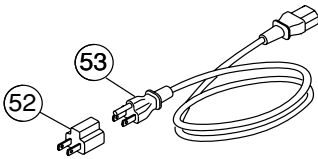
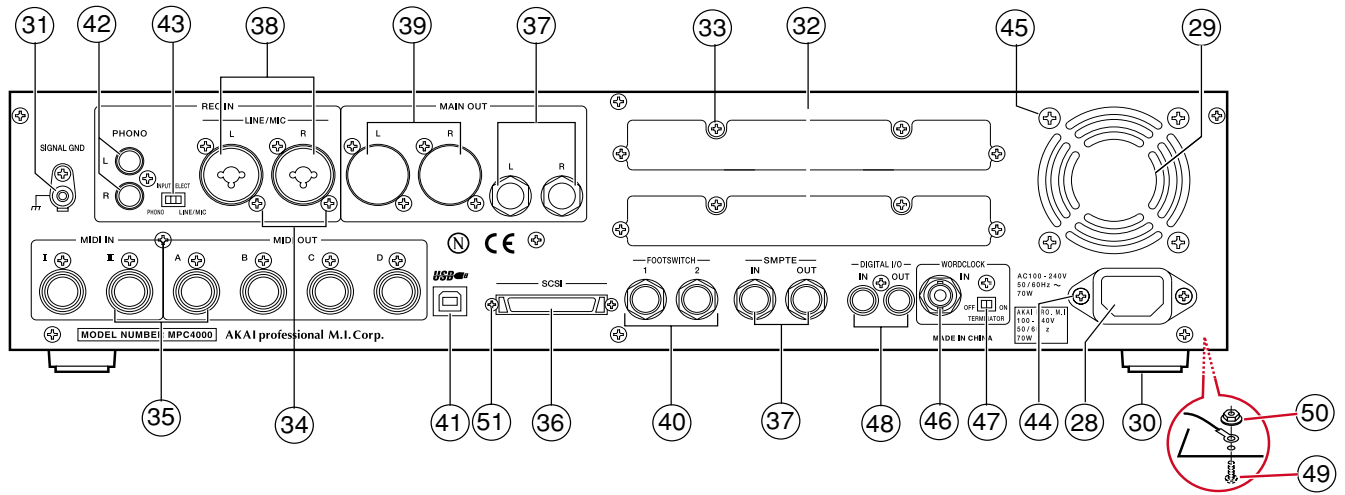
Ref.No.	Part No.	Description	Ref.No.	Part No.	Description	
12	SW	ES-415015J	SW TACT SKQEAD	47	ES-428287J	SW SLIDE SSSF112-S06N1 1-02N [ <b>Termineter</b> ]
13	BUTTON	SB-821550X	BUTTON PUSH B(5) [ <b>White</b> ]	48	EJ-820754X	PIN J YKC21-3079 P2P [ <b>DIGITAL I/O</b> ]
13	SW	ES-415015J	SW TACT SKQEAD [ <b>TAP TEMPO ONLY</b> ]	49	ZS-322570	ST BID40X08STL NI3
13	SW	ES-337521	SW TACT SKHHAL [ <b>PADBANK,NEXT,etc</b> ]	50	ZW-413267	N FRANGE 40STL CMT
14	BUTTON	SB-820334X	BUTTON PUSH B(4) [ <b>Black</b> ]	51	ZS-812613J	PAN25X06STL NI3 [ <b>SCSI JACK</b> ]
14	SW	ES-415015J	SW TACT SKQEAD [ <b>PLAY,STOP,PLAY ST.</b> ]	52	△ EJ-405424J	PLUG ADAPTOR KPR-25 J
14	SW	ES-337521	SW TACT SKHHAL [ <b>Q-LINK SEQ, PAD ASSING,etc</b> ]	53A	△ EW-380905J	AC CORD 250S KP300 KS16A H B J [ <b>J</b> ]
15	PAD	SE-820582X	PAD CH-SE3 [ <b>Black</b> ]	53B	△ EW-368420J1	AC CORD200SKP30KS16 B AC [ <b>A</b> ]
15	SENSOR	BA-379695J1	PC PAD SENSOR	53C	△ EW-403993J	AC CORD200SKP4819DKS31A B E [ <b>E</b> ]
16	KNOB	SK-821427X	KNOB VOL LOWER PART (2) [ <b>REC LOWER</b> ]	53D	△ EW-419170J	AC CORD200S KP610 KS31A B [ <b>B</b> ]
17	KNOB	SK-821426X	KNOB VOL UPPER PART (2) [ <b>REC UPPER</b> ]	54	EW-821111X	WIRE ASSY L4016(12) AMP 40P [ <b>ATA-40pin</b> ]
17	VOL	EV-821124X	VR ROTARY RK1612220 L25RD203X2	55	ZS-418538J	PAN N06-32UNCX5MM STL CMT [ <b>for HD</b> ]
18	KNOB	SK-821438X	KNOB VOL PART(12) [ <b>MAIN</b> ]	56	ZS-417137	BID30X04STL CMT [ <b>for ZIP</b> ]
18	VOL	EV-821123X	VR ROTARY RK16312A0 L25 B103X2	57	EW-821112X	WIRE ASSY L4016(13) AMP-AMP 4P [ <b>Power Cable</b> ]
19	KNOB	SK-821152X	KNOB JOG [ <b>JOG</b> ]	58	ZW-302909	RV NYL30X035 BL
19	VOL	ES-821084X	ROTARY ENCODER REC16B25- 201-C	59	EW-821537X	WIRE ASSY L4016(19) JST-MLX 2P [ <b>Digital Cable</b> ]
20	KNOB	SK-821430X	KNOB SLIDE (C) [ <b>Q-LINK</b> ]	60	EW-821536X	WIRE ASSY L4016(18) JST-MLX 4P [ <b>Analog Cable</b> ]
20	VOL	EV-812350J	VR SLIDE RS45112 L15 B103X2 SP	61	EH-821634X	FILTER EMI TFC-16-8-13F WO/OP [ <b>for HD Power Cable</b> ]
21	KNOB	SK-821439X	KNOB VOL PART(13) [ <b>Q-LINK</b> ]	62	BA-LJ038A020A	PC POWER BLK SPS-80 [ <b>Power BLK</b> ]
21	VOL	EV-812348J	VR ROTARY RK14K124 L20 B103X2	63 KNOB	SK-821432X	KNOB VOL(F) [ <b>Head Phone</b> ]
22		SP-821145X	PANEL SIDE(L)	63 VOL	EV-821235X	VR ROTARY RK0971220 L15 B103X2
23		SP-821146X	PANEL SIDE(R)	64	ZW-273914	SW40
24		ZS-821548X	SCREW TOP COVER NI	65	ZW-413188	N40STL CMT 1
25		ZS-821678X	WASHER TOP	66	EJ-821000X	PHONE J YKB26-5264 S.NUT 6.3
26		SK-821679X	SPACER SLIDE	67	EJ-820970X	SOCKET CONNECTER YKF45-0001 4P [ <b>USB-A</b> ]
27	BUTTON	SB-821151X	BUTTON CURSOR [ <b>CURSOR</b> ]	68	ES821122X	SW PUSH SPUJ19B-2N-*W 2-02- 02N [ <b>REC GAIN</b> ]
27	SW	ES-349474	SW TACT SKHHAM004A			
28		EJ-358632J2	SOCKET INLET SOT-16 3P [ <b>AC INLET</b> ]			
29		BM-821374X	MOTOR FAN 109R0612F402 L=230 [ <b>MOTOR FAN</b> ]			
30		SA-311742	FOOT ROUND SHAPED [ <b>FOOT</b> ]			
31		EJ-329610	TERMINAL W/SCREW UB-0067 L 1P [ <b>Signal GND</b> ]			
32		SP-821155X	PANEL REAR			
33		ZS-331182	BT BID30X08STL BNI			
34		ZS-396044	BID30X08STL BNI			
35		EJ-430956J	DIN J YKF51-5058 2X5P [ <b>MIDI I/O</b> ]			
36		EJ-812347J	SOCKET FCN-235D050-G/J 50P [ <b>SCSI I/O</b> ]			
37		EJ-821386X	PHONE J YKB22-5264 NUT 6.3 [ <b>MAIN OUT</b> ]			
38		EJ-820762X	SOCKET RECEPTACLE NCJ9FI-H-0 [ <b>XLR IN</b> ]			
39		EJ-386340J	SOCKET RECEPTACLE XLB3- 32PCVM1 [ <b>XLR OUT</b> ]			
40		EJ-821219X	PHONE J YKB22-5244 NUT 6.3 [ <b>FOOT SW</b> ]			
41		EJ-820316X	SOCKET CONNECTER YKF45-0001 4P [ <b>USB-B</b> ]			
42		EJ-821443X	PIN J YKC21-4042 P2P [ <b>PHONO IN</b> ]			
43		ES-821121X	SW SLIDE SSSF142-S09N0 4-02N [ <b>INPUT SEL</b> ]			
44		ZS-820481X	BT PAN30X08STL BZN C080 [ <b>AC INLET</b> ]			
45		ZS-388940J	BID40X35STL BNI			
46		EJ-820150J	SOCKET COAX. BNC-LNRD-BPAA [ <b>Word Clock</b> ]			



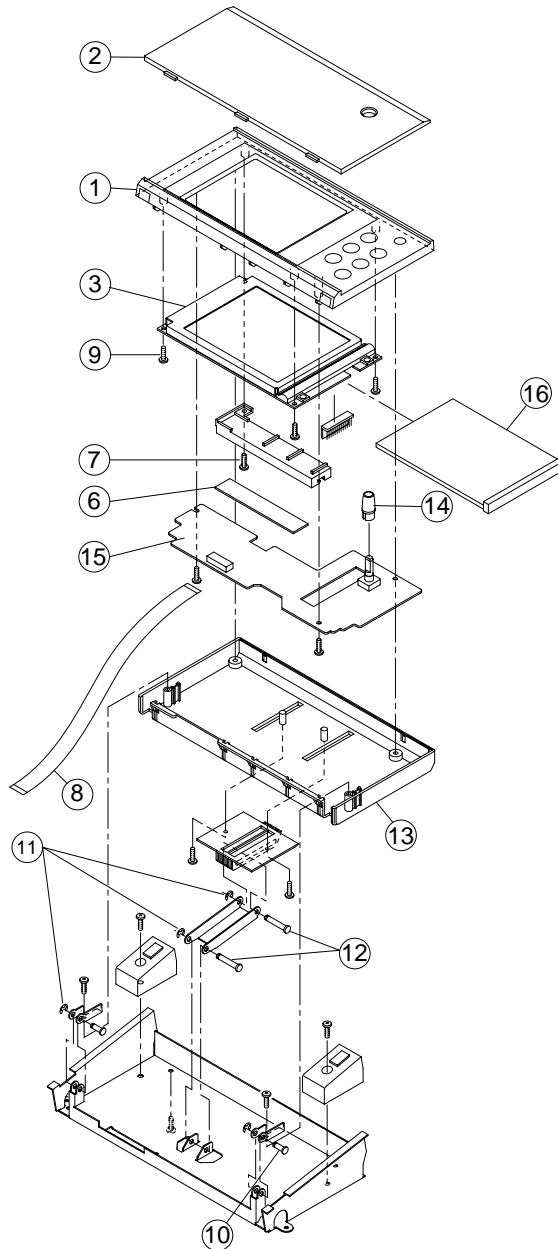
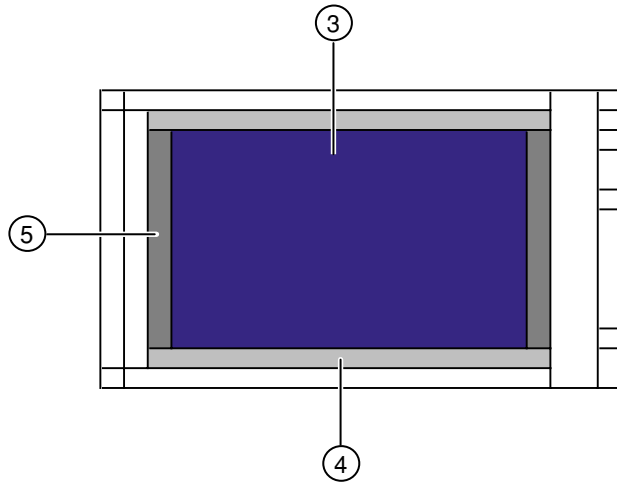
# FINAL ASSEMBLY BLOCK



**FINAL ASSEMBLY BLOCK**



LCD BLOCK



# VII. INFORMATION OF ICs

## 1. IC Explanation.

1-1 IC1 SA1110B (Intel CPU)

206MHz version chip.

CPU clock : 176.9MHz.

SDRAM (CPU work memory) : 88.45MHz (=176.9MHz/2)

### 1-1-2 Pin Descriptions

Signal name	Dir	Explanation
D[31:0]	i/o	Data-bus
A[25:0]	out	Address-bus
SDCKE1	out	SDRAM clock enable for CPU's work memory
SDCLK1	out	SDRAM clock for CPU's work memory.(88.45MHz)
SDCLK2	out	Not used though this is connected.(44.225MHz)
/SDRAS	out	SDRAM RAS for CPU's work memory
/SDCAS	out	SDRAM CAS for CPU's work memory
/SDCS0	out	SDRAM CS for CPU's work memory
DQM[3:0]	out	SDRAM data out mask enable for CPU's work memory
/OE	out	Output enable (/RD)
/WE	out	Write enable
/Cs[5:0]	out	Chip select
RDY	in	Data ready signal for /CS[5:3]
RD/nWR	out	Read/write direction control
/RESET	in	Hard reset. Active low.
PXTAL	in	Input for 3.686MHz crystal (non-CMOS threshold)
PEXTAL	out	Output for 3.686MHz crystal (non-CMOS level)
GP0	in	Interrupt from Voice-LSI
GP1	in	Interrupt from SCSI controller (FAS236U)
GP2	in	Interrupt from IDE
GP3	in	Interrupt from USB-host controller (SL811HST)
GP4	in	Interrupt from effect board
GP5	in	Interrupt from MIDI (Voice-LSI)
GP6	in	Interrupt from USB-function controller (NET2890)
GP7	in	Interrupt from SMPTE option (MPC only)
GP8	in	Interrupt from FPGA
GP9	in	Interrupt from Voice-LSI
GP11	out	Initialize FPGA. active high.
GP13	out	DIMM SPDA for reading information.
GP14	out	DIMM SPCL for reading information.
GP15	out	LCD DISP off. Active low.(MPC only)
GP16	in	SCSI jack board recognition. Low=connected.
GP17	out	Control /PROGRAM pin of FPGA during configuration
GP18	in	effect board recognition. Low=connected.
GP19	in	FPGA /INIT. used during configuration.
GP20	out	D/A converter CDTI (control data input)
GP21	in	FPGA done. used during configuration.
GP22	out	Used for ROM emulator.
GP23	out	CPLD TDI. used during configuration in factory.
GP24	out	CPLD TMS. used during configuration in factory.
GP25	out	CPLD TCK. used during configuration in factory.
GP26	in	8 Para board recognition. Low=connected.
GP27	in	CPLD TDO. used during configuration in factory.
RxD_1	in	DIO board recognition. Low=connected.
TxD_1	in	SMPTE board recognition. Low=connected.
RxD_2	in	RxD. from panel(remocon) 230.4kbps.
TxD_2	out	TxD. to panel(remocon). 230.4kbps.
RxD_3	in	ADAT board recognition. Low=connected.
TxD_3	in	for future. (Low When ADAT board is exist now)
RxD_C	in	CD analog recognition. Low=connected.(MPC only)

Signal name	Dir	Explanation
TxD_C	in	CD digital recognition. Low=connected.(MPC only)
SCLK_C	in	BM1. Machine recognition. Low=Z4/8. High=MPC.
SFRM_C	in	BM0. Connected GND now. for future.
LDD[7:0]	out	LCD controller display data.
L_BIAS	out	LCD ac bias drive.
L_PCLK	out	LCD pixel clock.
L_LCLK	out	LCD line clock.
L_FCLK	out	LCD frame clock.
XTAL	in	Not used.(Clock for CPU's real-time clock)
ROM_SEL	in	ROM bus width select. Low=16bits.
SMROM_EN	in	SMROM enable. Low= disable.
/PIOR,/PIOW	out	PCMCIA I/o read/write for ROM Emulator
/IOIS16	in	PCMCIA 16-bit I/O data transfers for ROM Emulator
TCK_BYP		
TESTCLK	in	Test pin
GP10,/PCE1		
/PWAIT		
BATT_FAULT		
VDD_FAULT	out	# Not used though this is connected #
VDD	-	Positive supply for the core. +1.75V
VDDX	-	Positive supply for the pins. +3.3V
VSS	-	Ground supply.
VSSX	-	Ground supply for the I/O pins.

### 1-3. IC3,4 HM5264165FTT (64Mbit SDRAM (4Mword x16bit))

Wave RAM for Voice LSI

The clock changes by the value of sampling frequency.

44.1kHz: 33.869MHz (= fsx768)

48kHz : 36.864MHz (= fsx768)

96kHz : 36.864MHz (= fsx384)

If there is no DIMM, SDRAM is placed in zero address.

If there is DIMM(s), SDRAM is placed in last address.

### 1-4. IC5,6 HY57V281620AT-P (128Mbit SDRAM (8Mword x16bit))

CPU work RAM

This clock is set to half of CPU core clock by software.

("88.45MHz" When CPU clock is 176.9MHz.)

### 1-5. IC7 MBM29DL322TE90TN (32Mbit Flash ROM (2M word x16bits))

CPU Boot ROM

(If ROM-card is inserted in J7, system boot up from ROM card.)

**1-6. IC8 XC95144XL-7TQ100C** (Complex programmable logic (CPLD).

Address decoder.  
Expansion port by using data-latch.  
Communication logic for RTC.  
Selector.

1-6-2. Pin Descriptions

Signal name	Dir	Explanation
D[7:0]	i/o	Connected with CPU data bus for communication.
A[24:21]	in	Connected with CPU address bus for communication.
/CS[5:0]	in	Chip select for other device.
/RD	in	Data output enable of CPU data bus.
/WR	in	Data strobe of CPU data bus.
/RESET	in	For initializing logic. Active low.
/GWR,/FWR	out	buffered /WR. (= /WR)
/GDB	out	Gate of buffer for logic on CPU board.
/GDB2	out	Gate of buffer for logic except for CPU board.
ROMCARD	in	ROM card. L: not inserted (normal), H: inserted.
/FLASH_CS	out	Chip select for Flash-ROM. /CS0 OR (A24 XOR ROMCARD).
/ROM_CS	out	Chip select for ROM-card. /CS0 OR (/A24 XOR ROMCARD).
/SCSI_CS	out	Chip select for SCSI controller. /CS5 OR A24.
/USBF_CS	out	Chip select for USB host controller. /CS5 OR /A24.
FPCCLK	out	FPGA configuration clock on CPU PCB.
/EB_CS	out	Chip select for DSP on effect PCB.
FP2_CCLK	out	FPGA configuration clock on ADAT PCB.
/ADAT_CS	out	Chip select for FPGA on ADAT PCB.
/SMPTE_CS	out	Chip select for controller on SMPTE PCB.
/DIO_CS	out	Chip select for CPLD on DIO PIB.
/LSI_RESET	out	Reset Voice-LSI. Active low.
/VO_PLLRST	out	Reset PLL of Voice-LSI. Active low.
/IDE_RESET	out	Reset IDE.
/ADAT_INIT	out	Initialize FPGA and IC on ADAT PCB. Active low.
/EB_RESET	out	Reset DSP on effect PCB. Active low.
VO_SIN[1:0]	out	Audio serial data to Voice-LSI's SIN[1:0]
AD_DATA	in	Analog-in audio data from CODEC (A/D at MPC).
DIO_RCVD	in	Digital-in audio data from DIO PCB.
ADAT_RCVD	in	ADAT-in audio data from ADAT PCB.
EB_RTN[3:2]	out	Effect return.
/SCSI_TERM	out	SCSI termination. H:off, L:on.
/ADA_CS	out	Chip select for CODEC (A/D conv. at MPC).
/ADA_PD	out	/PD of CODEC and A/D on MPC.
AD_DFS	out	DFS of a/d converter on MPC.
DA_CCLK	out	Control clock for CODEC (D/A conv. at MPC).
/DA_CS	out	Chip select for dD/A converter at MPC.
/DA_PD	out	/PD of D/a converter's on MPC and DIO.
/AD_CDSEL	out	Select analog-out of CD player at MPC.
MUTE	out	For mute circuit. H: mute on, L: mute off.
LSI_MCLK	in	MCLK of Voice-LSI. Make synchronous reset for Voice LSI.
RTC_D[7:0]	i/o	RTC data bus.
RTC_AS	out	Control for RTC
RTC_DS		
RTC_RW		
/RTC_SEL		
/RTC_XALM		
WCKE[1:0]	out	Clock enable of wave SDRAM and DIMM.
SEL_XTAL0	out	X2 output enable. H: enable, L: disable.
SEL_XTAL1	out	X3 output enable. H: enable, L: disable.
MOTOR_ON	out	Control fan on MPC.

Signal name	Dir	Explanation
/FP2_PROG	out	For configuration to FPGA on ADAT PCB.
PLD2_TMS PLD2_TDI	out	For configuration to CPLD on DIO.
PLD2_TDO	in	For configuration to CPLD on DIO.
TCK,TMS,TDI	in	For configuration.(TCK is also used for CPLD on DIO)
TDO	out	For configuration.
VCCINT	-	Positive supply for internal logic. +3.3V
VccIO	-	Positive supply for output driver. +3.3V
GND	-	Ground supply.

### 1-7. IC9 XC2S100-5TQ144C (Field Programmable Gate Arrays (FPGA))

IDE controller.

DMA controller between Voice-LSI and IDE/SCSI.

MIDI interface.

#### 1-7-2. Pin Descriptions

Signal name	Dir	Explanation
CD[15:0]	i/o	Connected with CPU bus for communication.
A[5:0]	in	Connected with CPU address bus for communication.
/IDE_CS	in	Chip select for this FPGA.
/CPU_RD	in	Data output enable of CPU bus.
/CPU_WR	in	Data strobe of CPU bus.
RESET	in	Initialize FPGA logic. Active high.
LSI_D[15:0]	i/o	Connected with DMA data bus of Voice-LSI.
IDE_D[15:0]	i/o	Connected with data bus of IDE.
IDE_DA[2:0]	out	Connected with DA[2:0] of IDE I/F
/IDE_CS1,0	out	Connected with CS[1:0] of IDE I/F.
/IDE_IORD	Out	Connected with /DIOR_HD of IDE I/F.
/IDE_DIOW	Out	Connected with /DIOW_STOP of IDE I/F.
IORDY	in	Connected with IORDY of IDE I/F.
/IDE_DMACK	out	Connected with /DMACK of IDE I/F.
IDE_DMARQ	in	Connected with DMARQ of IDE I/F.
CPU_RDY	out	Connected with CPU RDY.
SCSI_DMAREQ	in	Connected with SCSI controller. DMA control.
/SCSI_DMACK	out	Connected with SCSI controller. DMA control.
LSI_DMAREQ	out	Connected with Voice-LSI. DMA control.
/LSI_DMAACK	in	Connected with Voice-LSI. DMA control.
/LSI_DMARD	in	Connected with Voice-LSI. DMA control.
/LSI_DMAWR	in	Connected with Voice-LSI. DMA control.
/INT_DMA	out	Interrupt request output of DMA to CPU. Active low.
LRCK	in	Word clock of system. Connected with Voice-LSI.
SFrame	out	Pin No.133. Frequency= Fs/256. duty cycle= 255:1.
MIDI_IN1,2	in	MIDI 2 input.
MIDI_OUT1-4	out	MIDI 4 output.
/INT_MIDI	out	Interrupt request output of Midi to CPU. Active low.
MCLK	in	Master clock of FPGA logic.
CCLK	in	Configuration clock I/O pin.
/INIT	i/o	For configuration. Active Low.
/PROGRAM	in	Initiates a configuration sequence when asserted Low.
DONE	i/o	Indicates that configuration is complete. open drain.
M0,M1,M2	in	configuration mode pin.
TCK,TMS,TDI	in	# Not used though this is connected #
VCCINT	-	Power supply for internal core logic. +2.5V
VccO	-	Power supply for output driver. +3.3V
GND	-	Ground supply.

## 1-8. IC10 SL811HST (USB Host/Slave Controllers).

### 1-8-2. Pin Descriptions

Pin No.	Signal name	Dir	Explanation
3	/WR	in	Write Strobe. Active low.
4	/CS	in	Chip select. Active low.
5	CM	in	Clock mode. H: at 12MHz. L: at 48MHz clock source.
6	USBVDD	-	Power for USB Transceivers.
7	DATA+	i/o	USB Differential Data Signal High Side.
8	DATA-	i/o	USB Differential Data Signal Low Side.
9	USBGND	-	Ground Connection for USB.
16	CLK/X1	in	Clock or External Crystal X1 connection.
17	X2	out	External Crystal X2 connection.
18	/RST	in	SL811HST Device reset. Active low.
19	INTRQ	out	Interrupt Request output. Active high.
21,39	D[7:0]	i/o	Connected with CPU bus for communication.
27-29			
31-33			
40	M/S	in	Master/Slave Mode select. H: Slave. L: Master.
42	A0	in	L:Addr.Pointer.Register. H:Data Buffer or Register.
43	/DACK	in	DMA Acknowledge. Active low.
44	/DRQ	Out	DMA Request. Active low.
45	/RD	in	Read Strobe Input. Active low.
15,41	VDD	-	Device VDD Power.
9,20	GND	-	Device Ground.
30			



## 1-9. IC11 FAS236U (SCSI Controller)

### 1-9-2. Pin Descriptions

Pin No.	Signal name	Dir	Explanation
100	DREQ	out	DMA request. H: ready to transfer data.
1	/DACK	in	DMA acknowledge.
2	/DBWR	in	Data-bus write control.
4	IGS	out	Indicates that chip is acting in initiator mode.
5	DIFFSENS	in	H: differential mode.
6	TGS	out	Indicates that chip is acting in target mode.
7	EDIFFS	in	H: Enable "DIFFSENS" function.
8-15 19-26	DB[15:0]	i/o	DMA data-bus.
16,27	DBP[1:0]	i/o	DMA data-bus parity.
29-36	/SDI[7:0]	in	SCSI data bus.
37	/SDIP	in	SCSI data parity.
42-45 48-51	/SDO[7:0]	out	SCSI data bus.
52	/SDOP	out	SCSI data parity.
56	/SELO	out	SCSI bus select.
57	/BSYO	out	SCSI bus busy.
58	/REQO	out	SCSI bus request.
59	/ACKO	out	SCSI bus acknowledge.
62	/MSG	i/o	SCSI bus message phase.
63	/CD	i/o	SCSI bus control and data phase.
64	/IO	i/o	SCSI bus I/O phase.
65	/ATN	i/o	SCSI bus attention.
66	/RSTO	out	SCSI bus reset.
69	/SELI	in	SCSI bus select.
70	/BSYI	in	SCSI bus busy.
71	/REQI	in	SCSI bus request.
72	/ACKI	in	SCSI bus acknowledge.
73	/RSTI	in	SCSI bus reset.
74,75	MODE[1:0]	in	Bus configuration mode select.
76	/INT	out	Interrupt output.
77	RESET	in	Power reset.
79	/WR	in	Write control.
80	/RD	in	Read control.
81	/CS	in	Chip select.
82-85	A[3:0]	in	Address bus.
86	CLK	in	Internal chip timing clock.
87	/DIFFM	in	H: single-endes mode. L: differential mode.
90-93 96-99	PAD[7:0]	i/o	PAD bus. Connected with CPU for communication.
38,88	VDD	-	+5V DC power input.
17,18,40 41,46,47 54,55,60 61,67,68 94,95	Vss	-	GROUND. 0V DC power return.

- 1-10 IC12, 16 ALVCH16245 (16 bit Bus bidirectional transceivers)
- 1-11 IC13-15 ALVCH16244 (16 bit Bus Buffers)
- 1-12 IC17, 18 LVC244 (8 bit Bus Buffers)
- 1-13 IC19 LVC245 (8 bit Bus bidirectional transceivers)  
In particular, this is used for changing 5V into 3.3V.
- 1-14 IC20 M51957B (System Reset IC. Delay time is about 0.34 sec)
- 1-15 IC21, 22 NJM317 (Regulator IC)  
IC21: regulate +2.5V for FPGA.  
IC22: regulate +1.75V for CPU.

#### 1-16. IC23 NET2890 (USB function controllers)

1-16-2. Pin Descriptions (PU:pull-up, PD:pull-down)

Pin No.	Signal name	Dir	Explanation
2	/SOF	out	Start of Frame. Active low.
3,4	DP,DM	i/o	USB data port. differential data.
5-11	D[7:0]	i/o	bi-directional 8-bit data bus. Connected with CPU for communication.
14			
15	/CS	in	Chip select. Active low. (PU)
16	LCLK	out	buffered clock output.
17	/IOR	in	I/O read strobe. Active low. (PU)
18	/IOW	in	I/O write strobe. Active low. (PU)
19	DRQ	out	DMA request.
20	/DACK	in	DMA acknowledge. Active low. (PU)
21	/EOT	in	End of transfer. Active low. (PU)
22	/BUSPWR	in	Indicates that external logic is powered by USB bus. Alternatively general input.
23	/PWRGOOD	in	Indicates that external power supply used for self-powered mode is operational. Alternatively general input.
26	/IRQ	out	Interrupt Request. Active low.
27	/USBOE	i/o	USB port output enable. Active low. (PU)
28	/DEVCFG	out	Device config. Alternatively general output. (PD)
30	TEST	in	Test. Connect this pin to ground. (PD)
32	/LRESET	out	Local reset. Active low. (PU)
33	/SUSP	out	Device suspended. Active low. (PU)
34	/WAKEUP	in	USB remote wakeup. Active low. (PU)
35	/RESET	in	External reset. (PU)
38-42	A[4:0]	in	Address bus.
44	CLKIN	in	48 MHz Oscillator input.
45	CLKOUT	out	48 MHz Oscillator output.
47	TESTOUT	out	Test output. Used for manufacturing test.
31	VDD_LOCAL	-	+3.3V or +5V DC power input for CPU I/F.
1,13,25 37,43	VDD	-	+3.3V DC power input for the core and USB I/F.
12,24,36 46,48	Vss	-	GROUND. 0V DC power return.

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## Appendix: Installing storage devices (for service engineers)

This appendix explains how to install storage devices (ATA hard disk, CD-ROM drive, Zip drive, etc.) in the MPC4000.

### Check the included items

The following items are included with the MPC4000 for use when installing storage devices. Check to make sure that no items are missing.

#### ■ Cables

- Flat cable for ATA drive
- Power cable for drive (without ferrite core)
- Power cable for drive (with ferrite core)
- Analog audio cable for CD-ROM
- Digital audio cable for CD-ROM
- Drive Mount Bracket (S)
- Drive Mount Bracket (L)

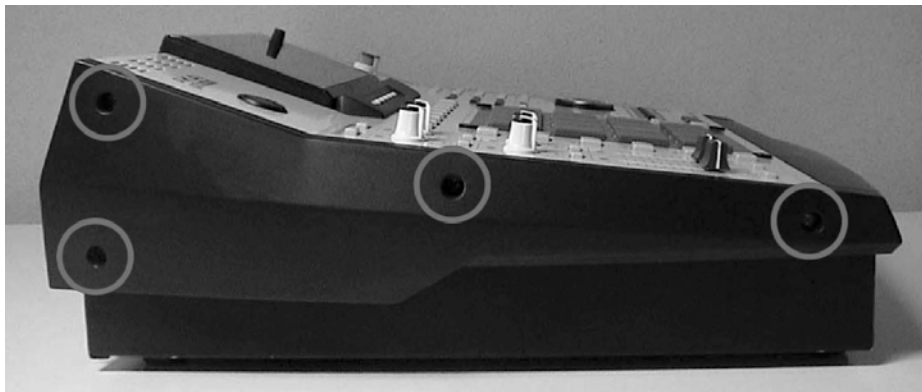
#### ■ Other items

- Screws (inch) for attaching hard disk (4 pcs.)
- Screws (metric) for attaching hard disk (4 pcs.)
- Screw hole plugs (4 pcs.)
- Screws (metric) for attaching Drive Mount Bracket (8 pcs.)

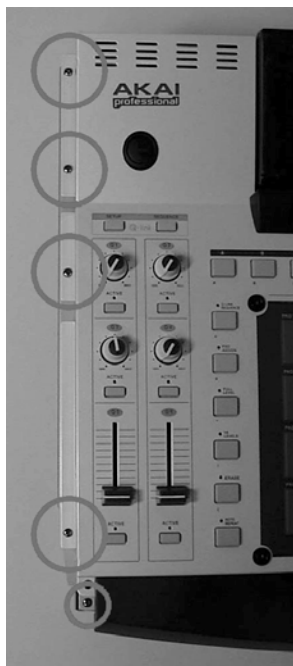
### Opening the top panel

When installing a storage device, use the following procedure to open the top panel of the MPC4000.

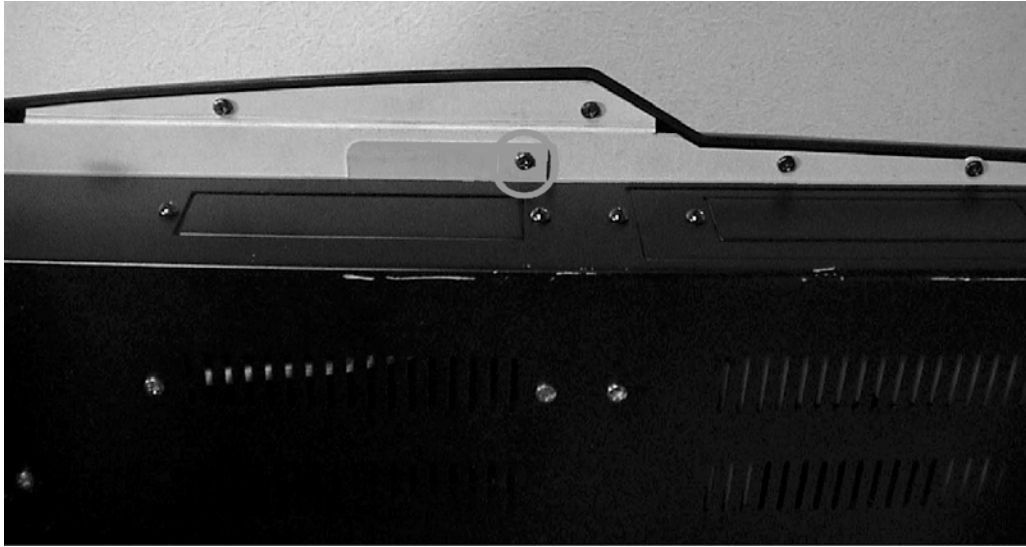
1. Loosen the screws that fasten the side panels (four on each side, left and right), and remove the side panels.



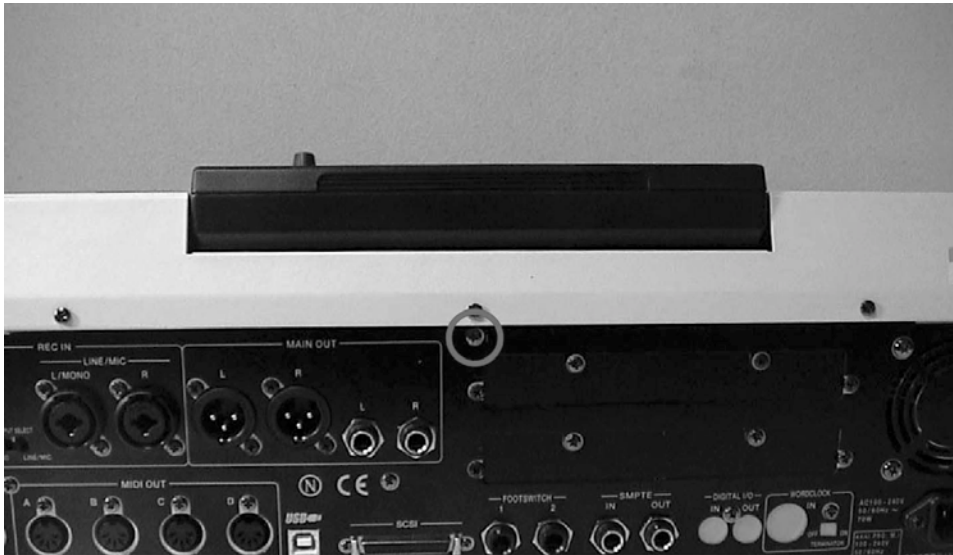
2. Remove the screws (five on each side, left and right) that fasten each side of the top panel to the chassis.



3. Remove the screw (located in the center of the front panel) that fastens the top panel from the lower front side.



4. Remove the screw (located in the center of rear panel) that fastens the top panel from the rear side.



5. Use both hands to lift the protrusion on the front of the top panel, and open the top panel.



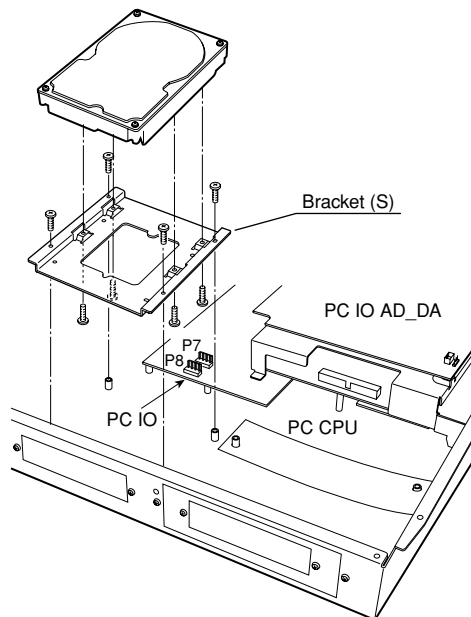
6. Use a metal rod or similar object as a prop inside the chassis to hold up the top panel. The side panels and screws you removed must be kept in a safe place. To close the top panel, re-tighten the screws in the opposite order to which they were removed.



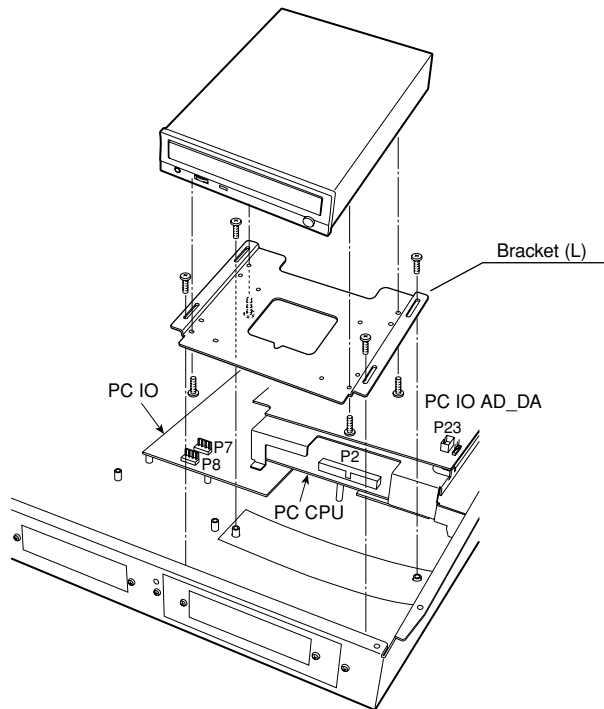
### Installing a drive

1. If you are installing a removable-media drive such as a CD-ROM drive or Zip drive, remove the blank panel from the front panel.
2. Use the hard disk attachment screws (included with the MPC4000) to attach the drive to the bracket, and attach the bracket to the bottom panel of the chassis. Use the bracket in the correct direction (as illustrated or on reverse side) according to the drive mounted.

When installing a drive in the 3.5 inch bay



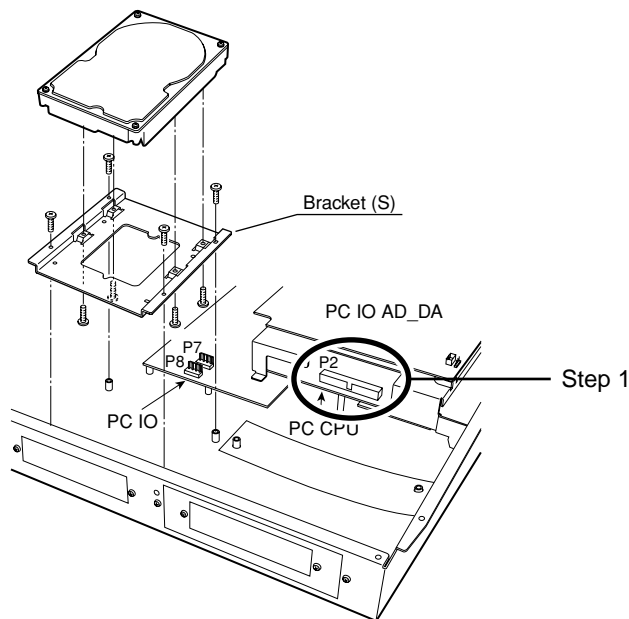
When installing a drive in the 5 inch bay



## Cable connections

### Connecting the flat cable

1. Remove two screws from the cover that conceals the PC CPU board.  
When you remove the cover, you will see the P2 connector for the ATA drive.



2. Insert the blue connector of the included flat cable into the P2 connector of the PC CPU board.
3. Reattach the cover that you removed.
4. Connect the other end of the flat cable to the drive.

---

### Connecting the power cable

1. Insert the connector of the included power cable into the P7 connector or P8 connector of the PC I/O board.  
Use the power cable with the ferrite core if you are installing a hard disk. Use the power cable without a ferrite core if you are installing a Zip drive or CD-ROM drive.
2. Connect the other end of the power cable to the drive.

### Connecting the CD-ROM analog audio cable

If the CD-ROM drive has an analog audio output connector, connect it to the MPC4000's circuit board as follows.

1. Insert the connector of the included CD-ROM analog audio cable into the P23 connector of the PC I/O ADDA board.
2. Insert the other end of the CD-ROM analog audio cable into the analog audio output connector of the CD-ROM drive.  
Make connections so that the red cable goes to R (right channel) and the white cable to L (left channel).
3. On the PC I/O ADDA board, plug in the P22 jumper (located in front of P23) at the "SET" position.

### Connecting the CD-ROM digital audio cable

If the IB-4D digital I/O option is installed in the MPC4000, connect the digital audio output connector of the CD-ROM drive to the IB-4D as follows.

1. Insert the connector of the included CD-ROM digital audio cable into the digital audio output connector of the CD-ROM drive.  
Make connections so that the black cable is the ground.
2. Insert the other end of the CD-ROM digital audio cable into the P1 connector of the IB-4D digital I/O option.
3. On the IB-4D circuit board, plug in the JP1 jumper in the 1-2 (SHORT) position.  
\* If you connect the analog/digital audio cable and make the correct jumper setting, you will be able to select the CD-ROM playback as the recording source in RECORD mode.

### Master/slave settings for ATA drives

If you install two drives, you must set one as the master and the other as the slave. (If a hard disk is installed, set the hard disk as the master.)

For details on how to make master/slave settings, refer to the manual that came with your drive.

## Installing Memory Board

The memory slots are on the CPU board and their 2 long DIMM sockets are located on the right-hand side of the unit towards the rear.

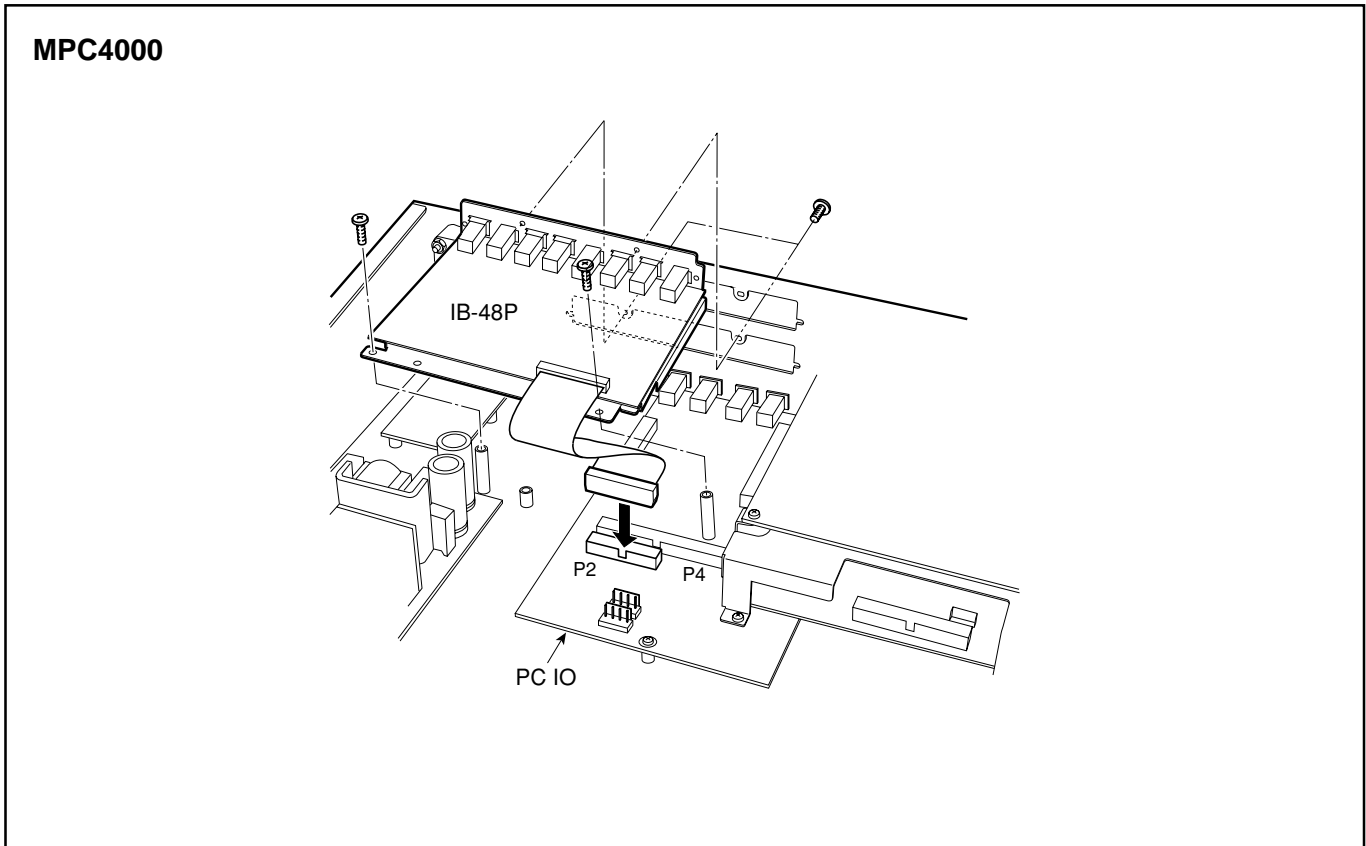
Insert the memory board securely in the correct direction. When only one memory board is installed, it can be installed on either slot.

The required memory board is 168-pin DIMM (PC133/PC100, CL2).

\* 256Mbit x 8 ICs type 256Mbyte DIMM is not supported. 128Mbit x 16 ICs type is recommended.

## ■ Installation - MPC4000

1. Remove the fixing screws of the MPC4000 Side Panels (4pcs. on each side) and remove Side Panels. Next, remove the screws (5pcs. on each side) hidden by the Side Panels and then remove the center screws (2pcs.) located underneath the Armrest and the topmost of Rear Panel. The Top Panel Block can be swing-opened by lifting the Armrest from the front. Save the removed screws.
  2. Remove the fixing screws (4pcs.) for the Mask Plate (lower slot) on the Rear Panel and remove the Mask Plate. Save the screws for later use. The Mask Plate is not used.
  3. Referring to the illustration, remove the fixing screw (1pc.) on the I/O board and install the Mounting Post (S) in its place. Save the screw for later use.
  4. Set the IB-48P on the Rear Panel and Mounting Posts and fix it securely with the screws removed in earlier steps and the Fixing Screw (gold) included.
  5. Connect the cable from the IB-48P board to the connector (P2) on the I/O board.
  6. Replace and fix the Top Panel Block and Side Panels in the opposite order to which they were removed.
- \* Be sure to fix the screws and connectors securely to avoid malfunctioning.

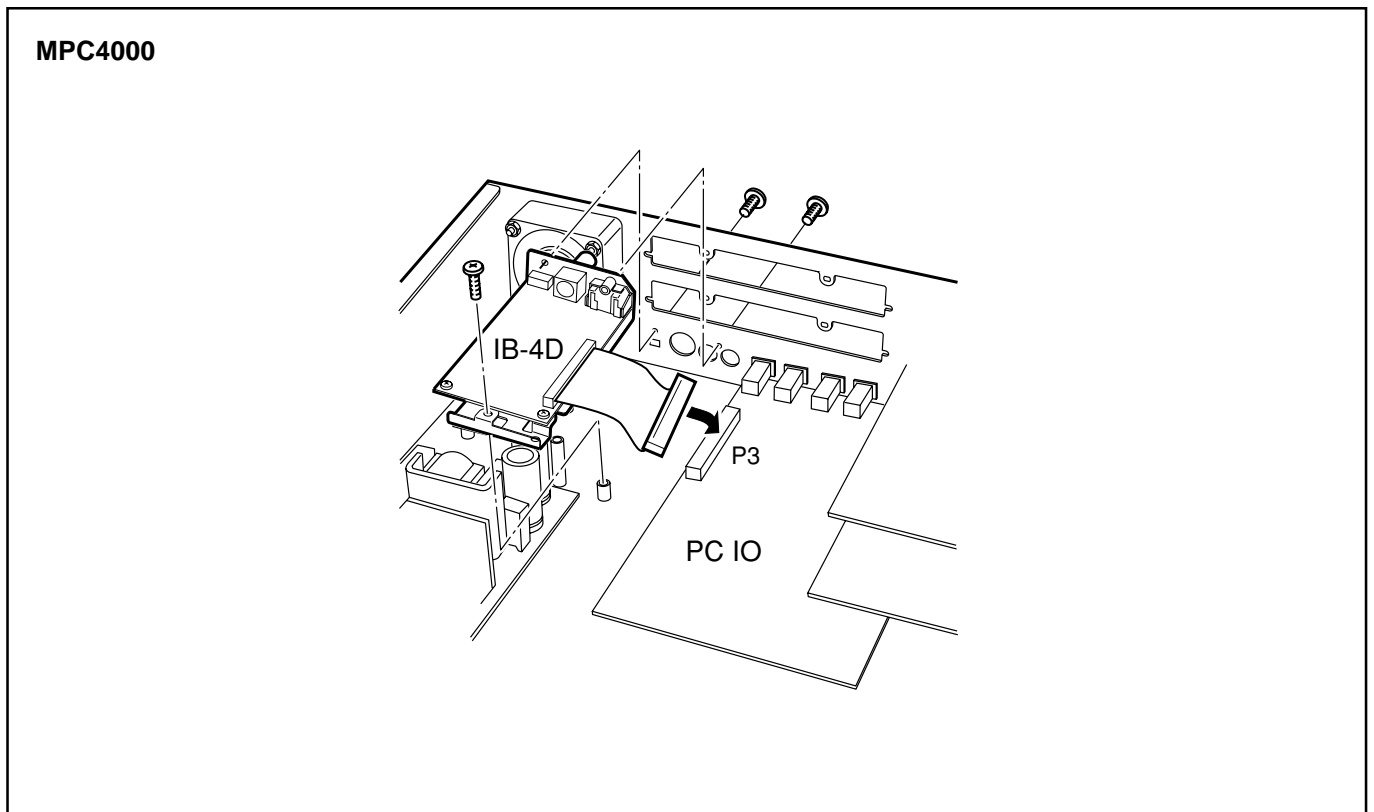




## ■ Installation - MPC4000

1. Remove the fixing screws of the MPC4000 Side Panels (4pcs. on each side) and remove Side Panels. Next, remove the screws (5pcs. on each side) hidden by the Side Panels and then remove the center screws (2pcs.) located underneath the Armrest and the topmost of Rear Panel. The Top Panel Block can be swing-opened by lifting the Armrest from the front. Save the removed screws.
2. Remove the fixing screws (2pcs.) for the Mask Plate on the Rear Panel and remove the Mask Plate. Save the screws for later use. The Mask Plate is not used.
3. Referring to the illustration, set the IB-4D on the Rear Panel and Mounting Post and fix it securely with the screws removed in earlier step and the Fixing Screw included.
4. Connect the cable from IB-4D board to the connector (P3) on the I/O board.
5. Replace and fix the Top Panel Block and Side Panels in the opposite order to which they were removed.

\* Be sure to fix the screws and connectors securely to avoid malfunctioning.



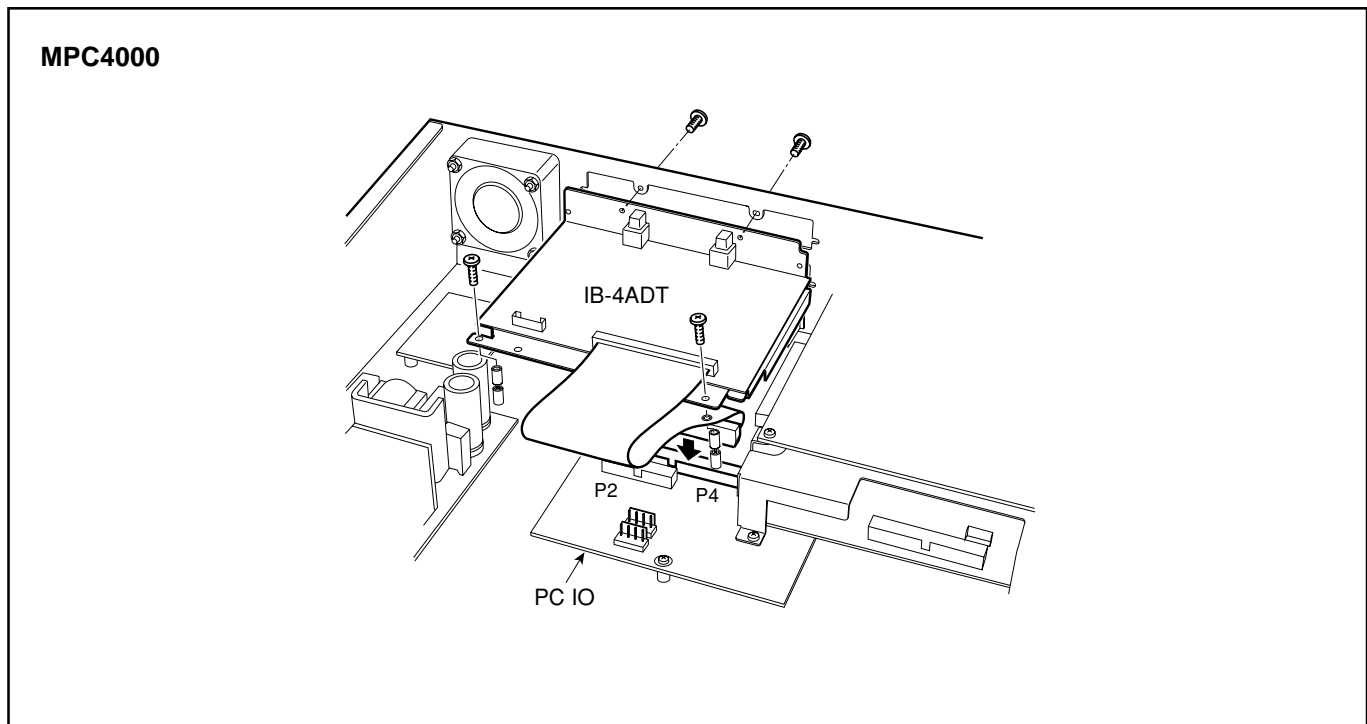
## ■ Installation – MPC4000

1. Remove the fixing screws of the MPC4000 Side Panels (4pcs. on each side) and remove Side Panels. Next, remove the screws (5pcs. on each side) hidden by the Side Panels and then remove the center screws (2pcs.) located underneath the Armrest and the topmost of Rear Panel. The Top Panel Block can be swing-opened by lifting the Armrest from the front. Save the removed screws.
2. Remove the fixing screws (4pcs.) for the Mask Plate (upper slot) on the Rear Panel and remove the Mask Plate. Save the screws for later use. The Mask Plate is not used.
3. Referring to the illustration, remove the fixing screw (1pc.) on the I/O board and install the Mounting Post (S) in its place. Then extend the 2 Mounting Posts with the 2 Mounting Posts (L) included.
4. Set the IB-48P on the Rear Panel and Mounting Posts and fix it securely with the screws removed in earlier step and the Fixing Screws (gold, 2pcs.) included.
5. Connect the cable from the IB-4ADT board to the connector (P4) on the I/O board.
6. Replace and fix the Top Panel Block and Side Panels in the opposite order to which they were removed.

**Note 1:** When the IB-48P 8-Individual Output board is installed at the lower slot, remove the fixing screws (2pcs.) of the Mounting Posts for the IB-48P and re place them with the 2 Mounting Posts (L) included and mount the IB-4ADT on them.

**Note 2:** On the MPC4000 with IB-4D SP-DIF Digital Interface Board installed, Connect the 8-pin Connecting Cable included between the IB-4D (P2) and IB-4ADT (P1) boards.

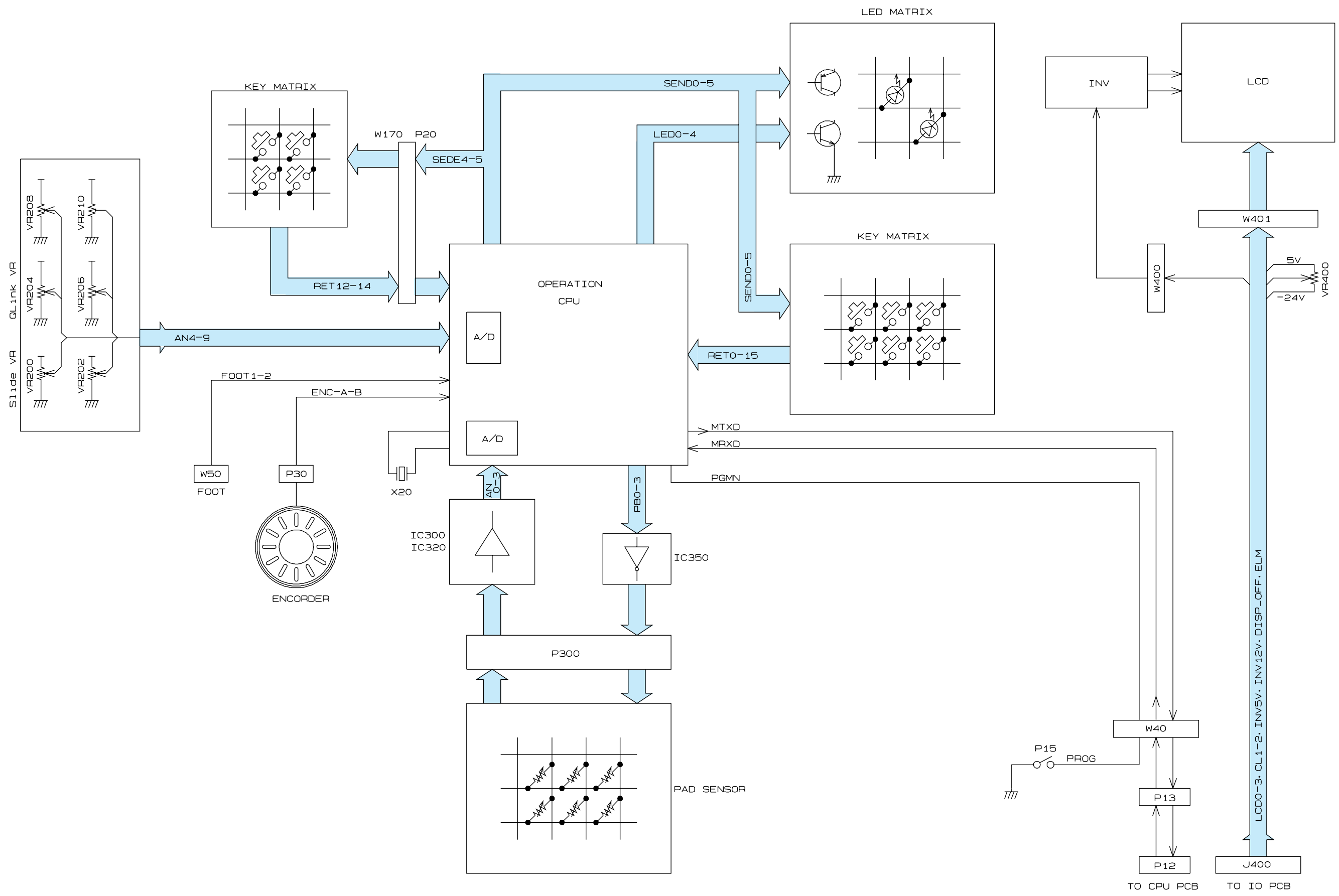
\* Be sure to fix the screws and connectors securely to avoid malfunctioning.



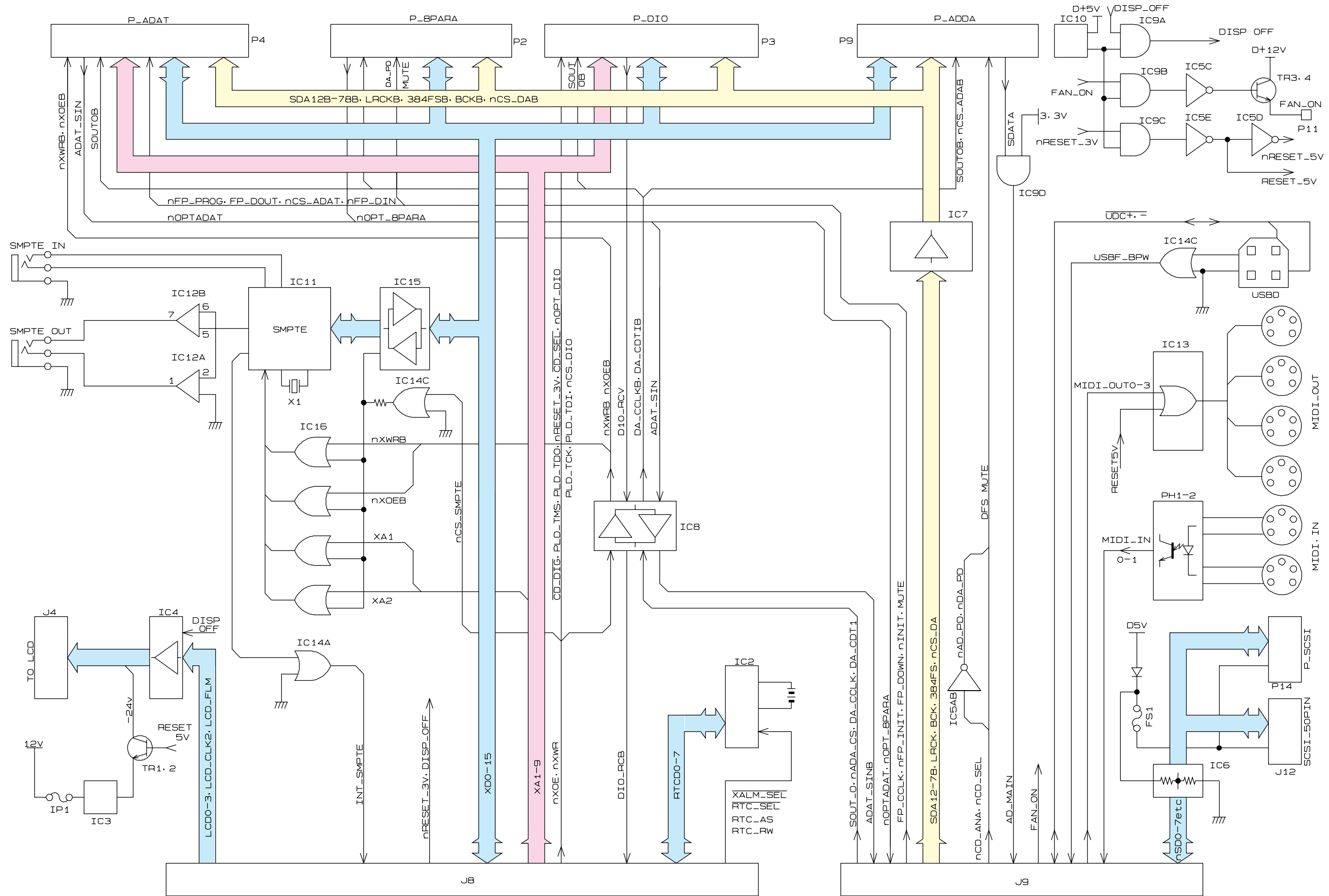
# **AKAI professional M.I. Corp.**

1-3, Hiranuma 1-Chome, Nishi-Ku, Yokohama, Japan

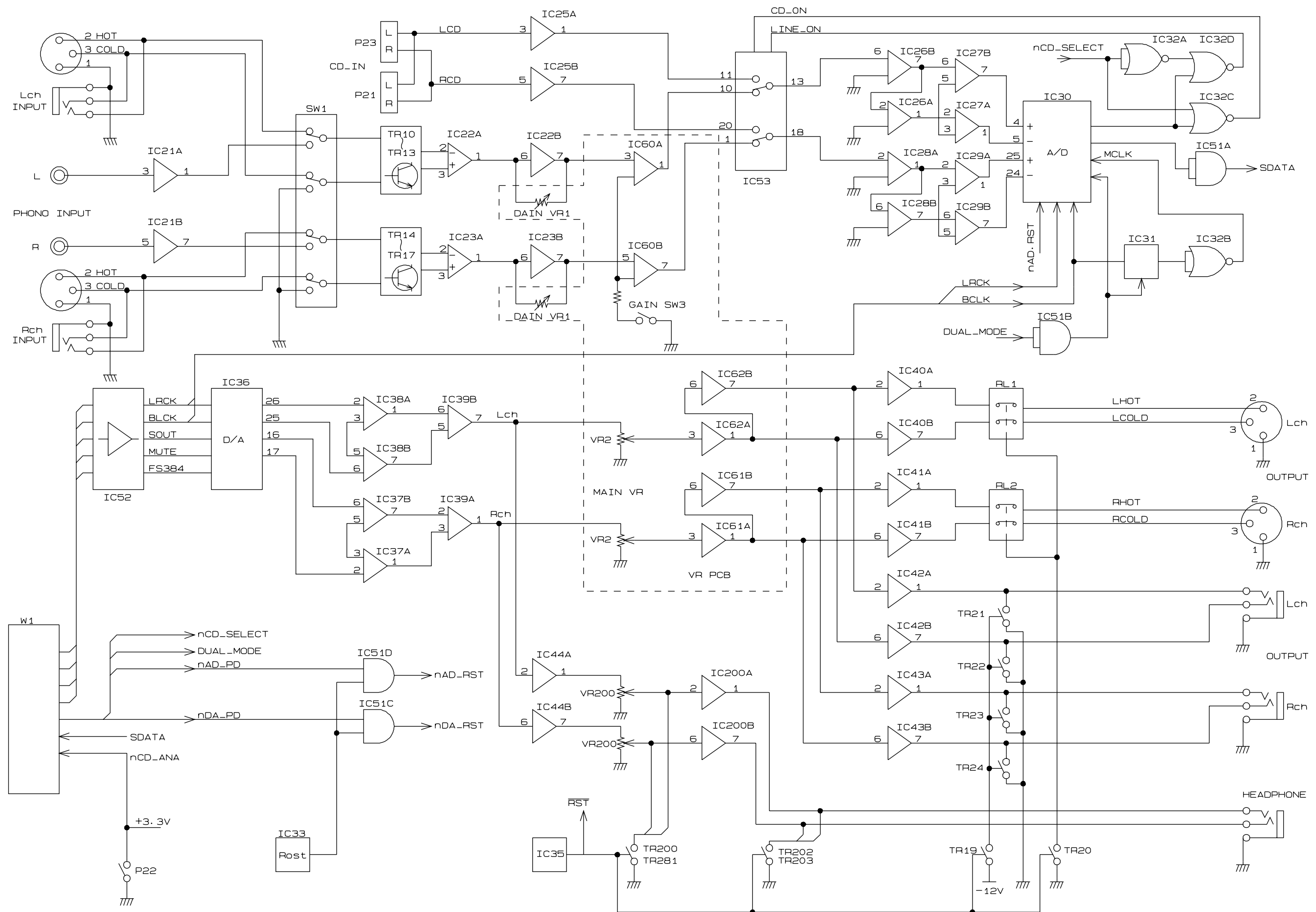
SERVICE SECT. PHONE : +81-45-412-2373 FAX : +81-45-412-2372



MPC4000  
OPERATION  
BLOCK DIAGRAM



MPC4000  
PC IO  
BLOCK DIAGRAM

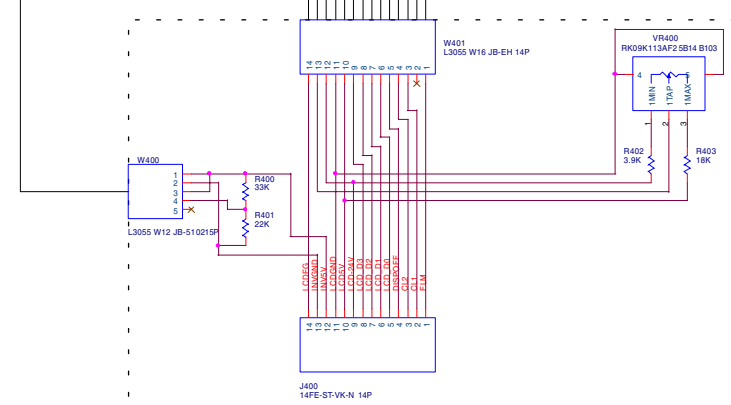
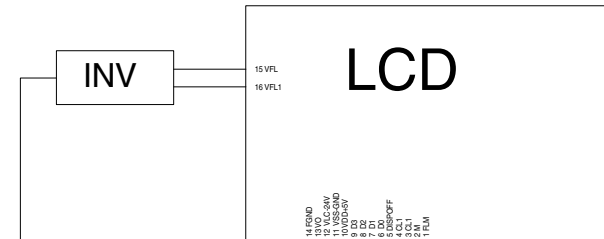
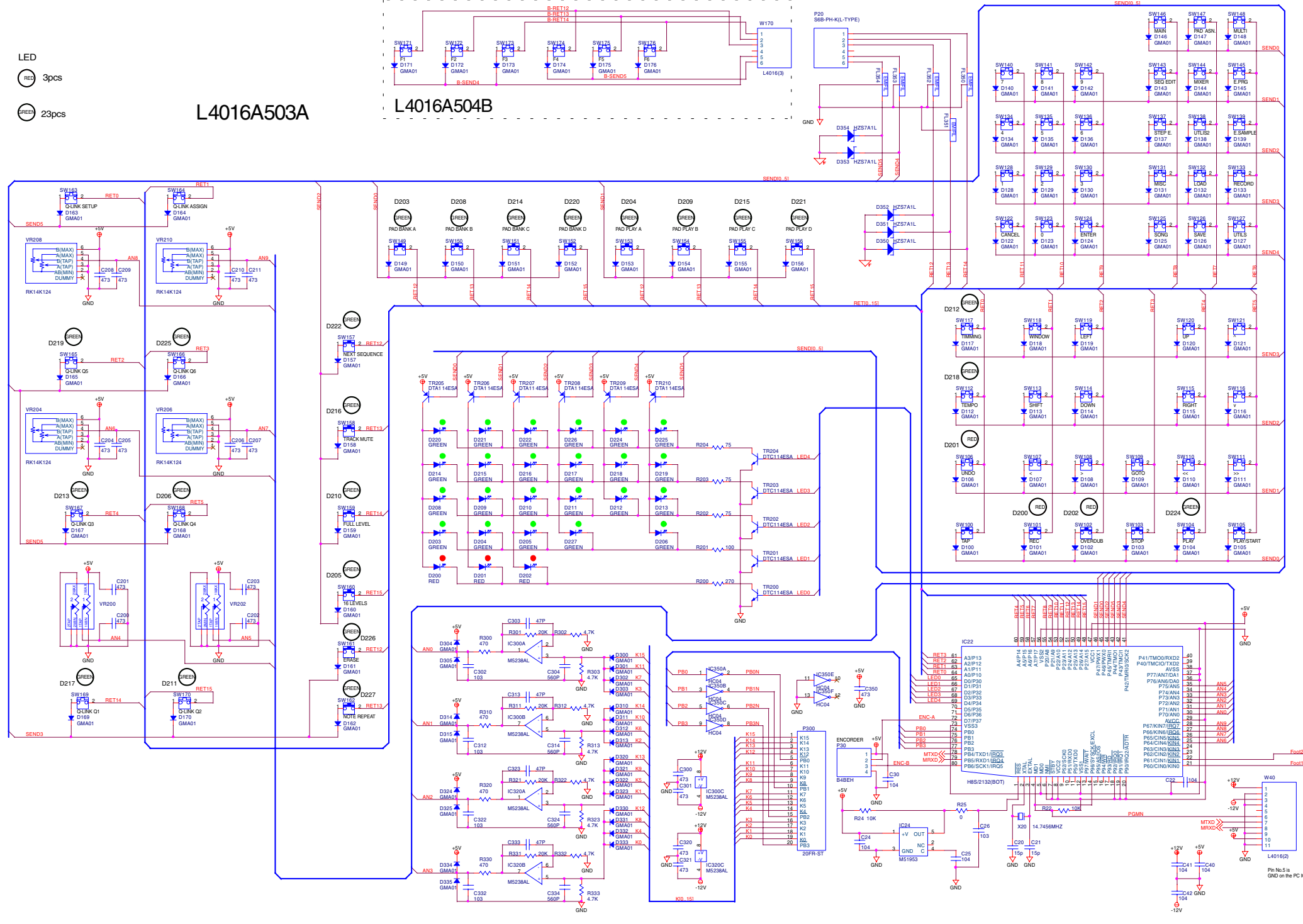


MPC4000  
AD DA  
BLOCK DIAGRAM

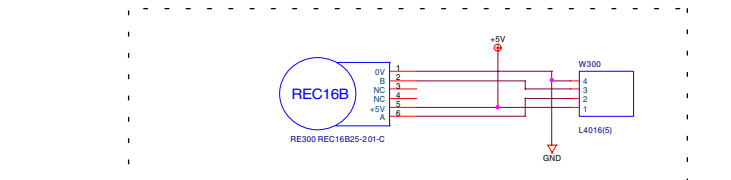
- LED
- 3pcs
- 23pcs

L4016A503A

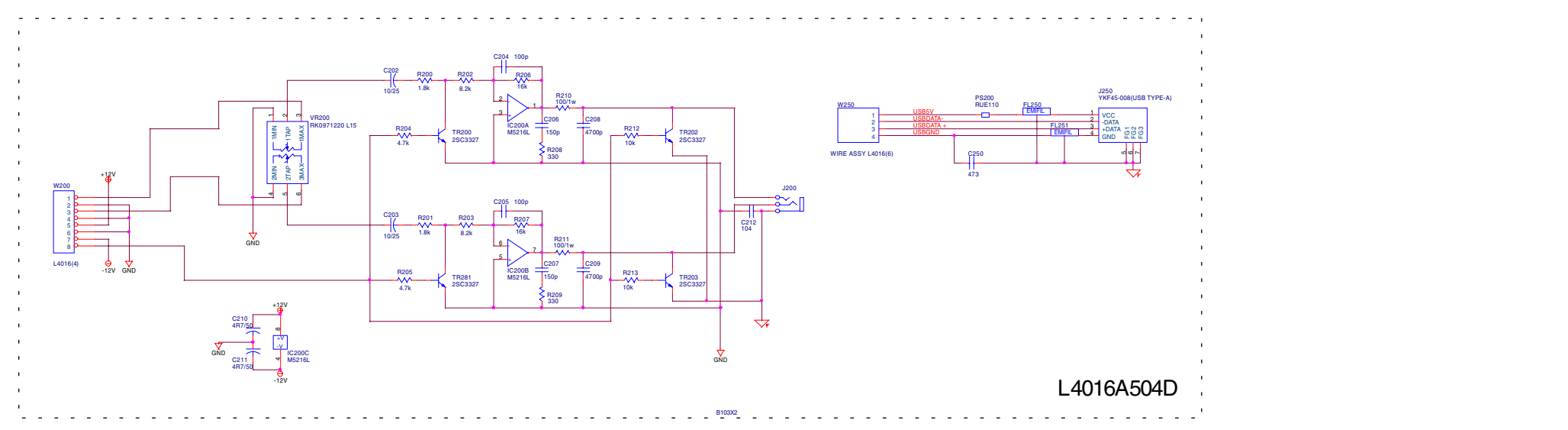
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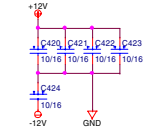
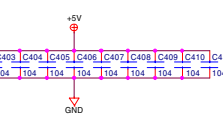
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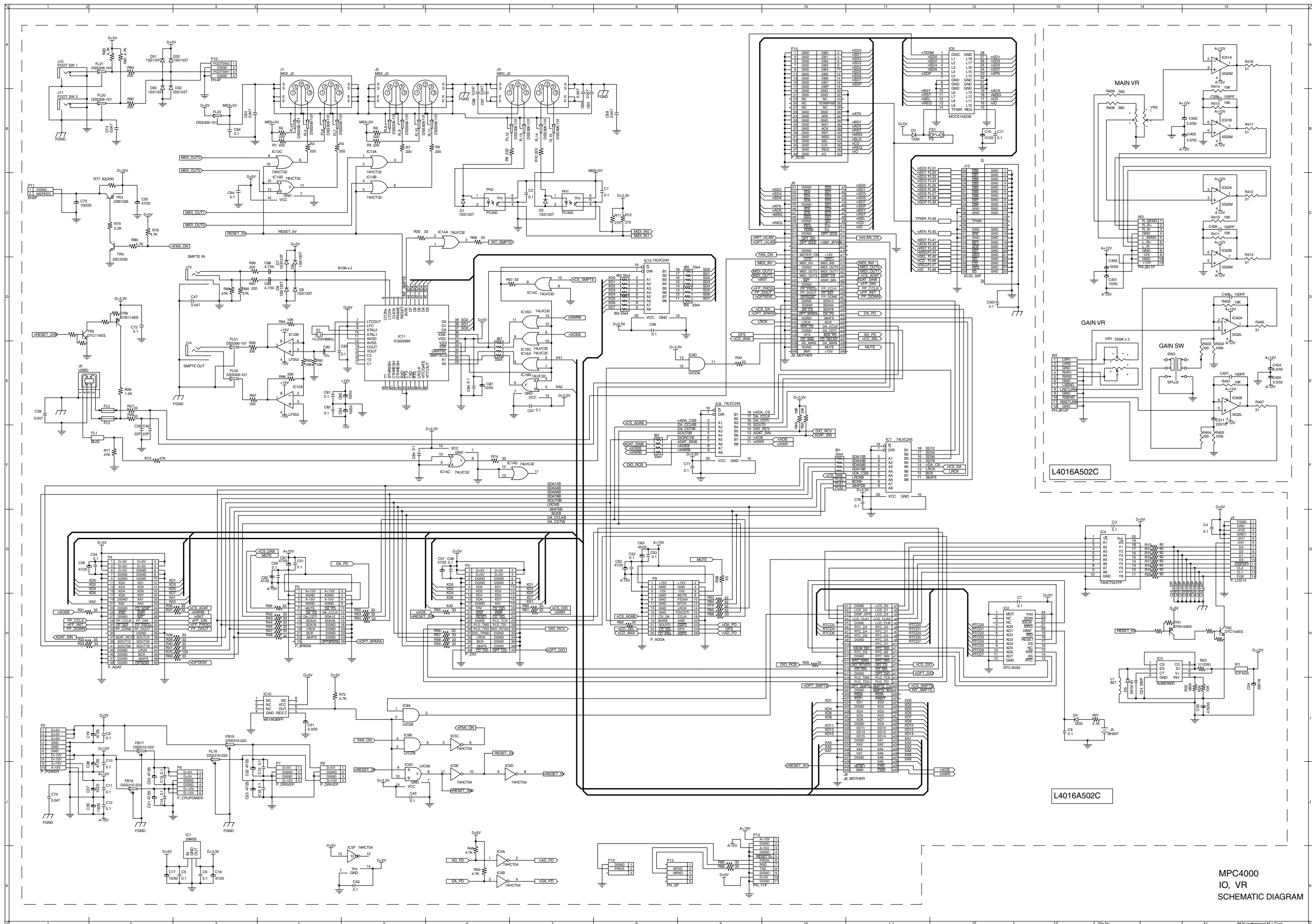
L4016A504A



L4016A504D



MPC4000  
PC OPERATION & PC(#)  
OTHERS---A/B/C/D  
SCHEMATIC DIAGRAM

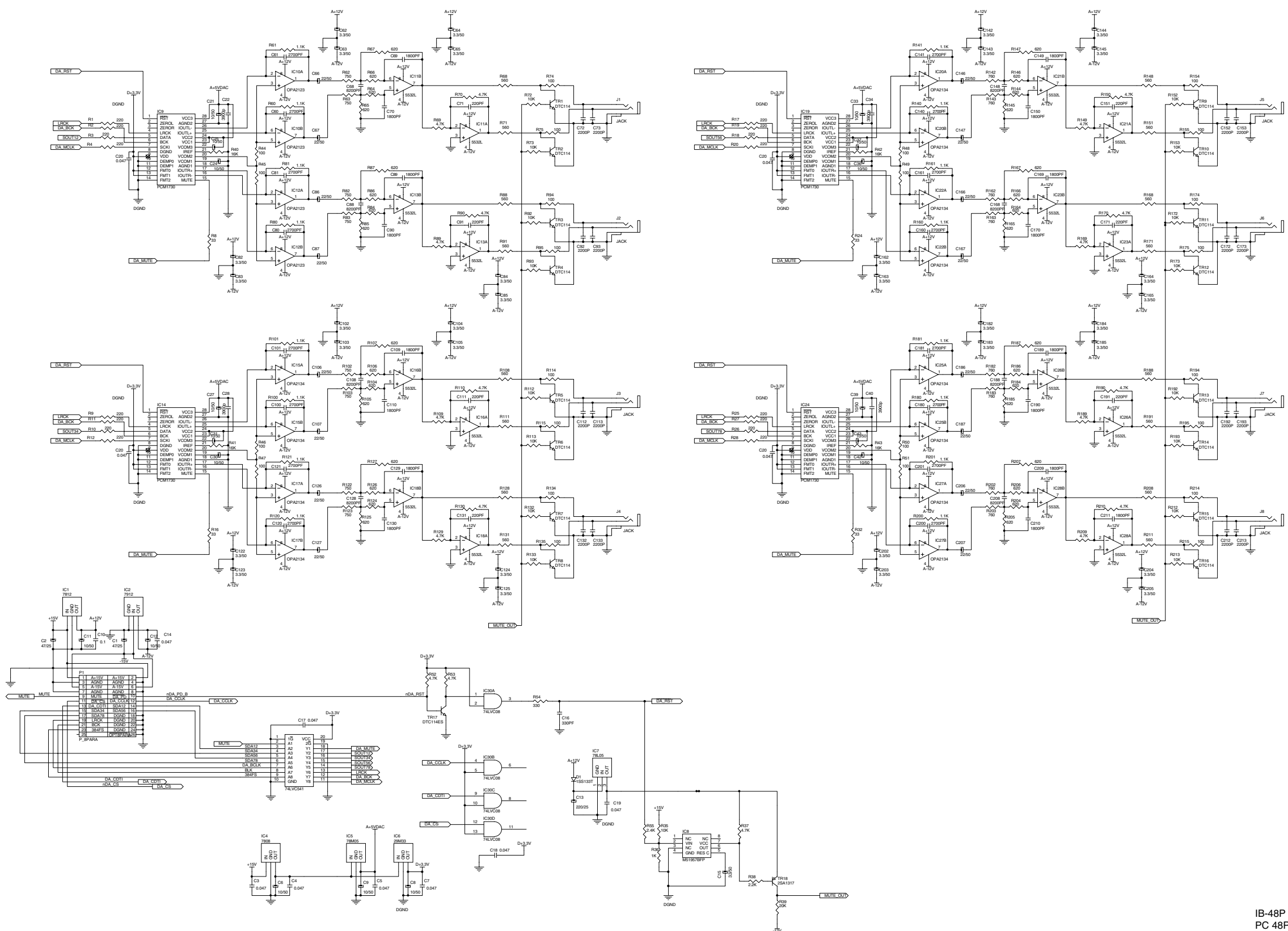


MPC4000  
IO, VR  
SCHEMATIC DIAGRAM

L4016A502C

L4016A502C

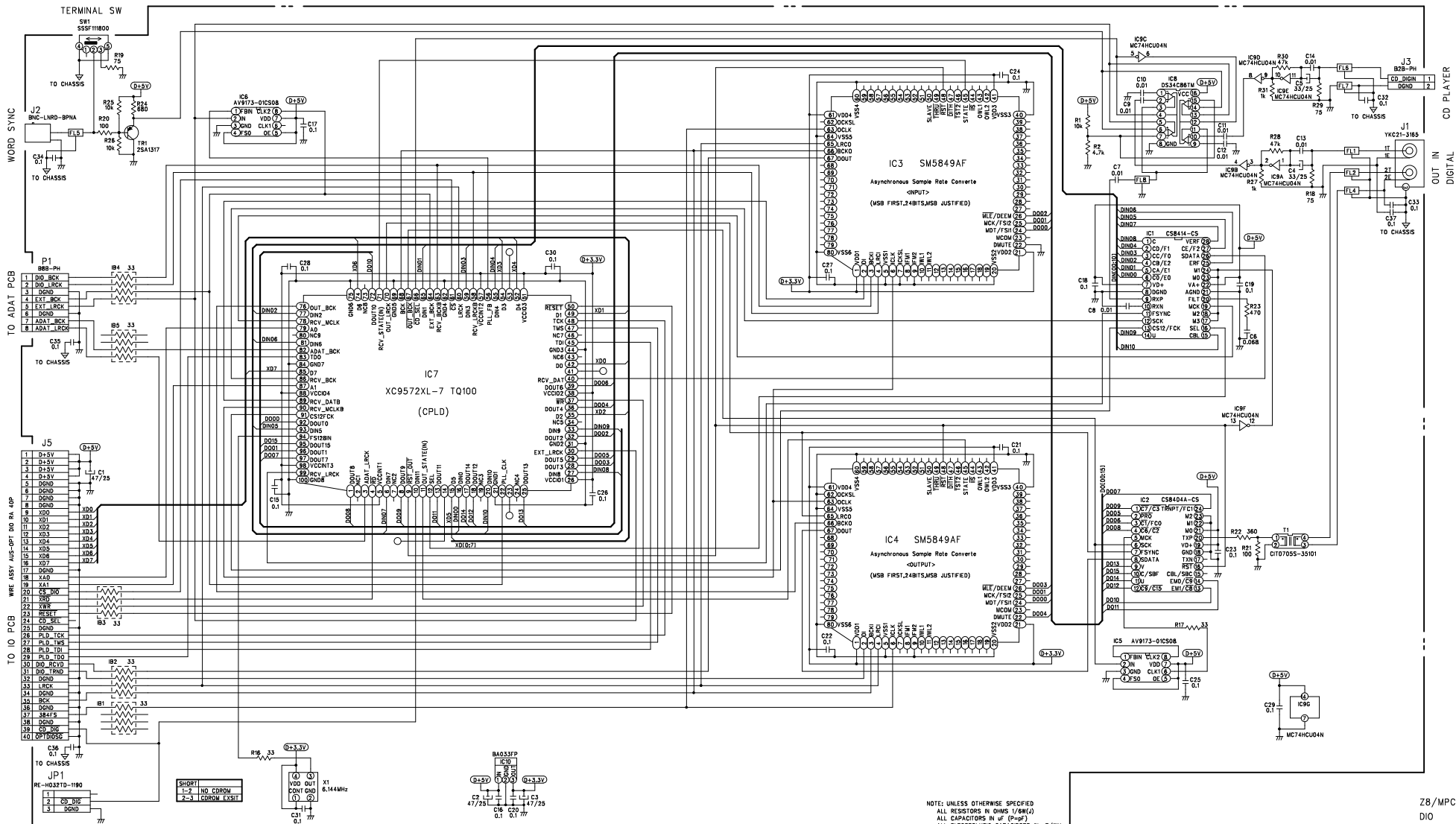




IB-48P  
PC 48P.BLK  
SCHEMATIC DIAGRAM

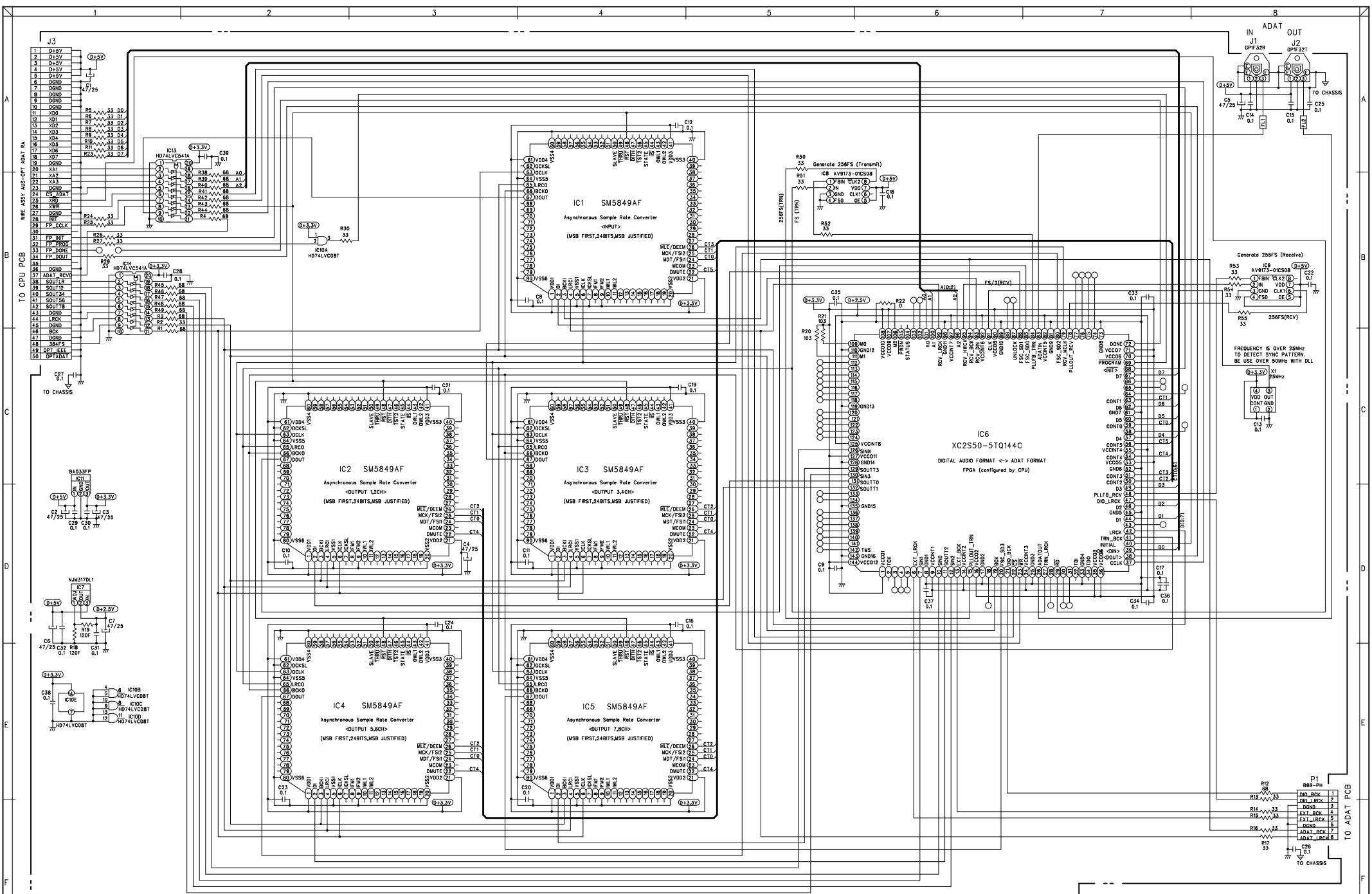
HISTORY OF CHANGE

- 2001/10/19  
 (1) IC3 22pin -> DGND  
 (Because spec over)  
 (2) IC8 inserted. TR1 emitter -> IC8 -> IC6, etc.  
 (Because low level was 0.6V (near TTL VIL spec limit))
- 2001/11/21  
 (1) IC1 17,18,23,24pin <- INVERTED RESET-COUT  
 (2) FL8 inserted. IC8 3,12pin -> FL8 -> C7



NOTE: UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS (R/N/K)  
 ALL CAPACITORS IN uF (P=PF)  
 ALL ELECTROLYTIC CAPACITORS IN uF/MV

Z8/MPC, Z4 OPTION  
 DIO  
 SCHEMATIC DIAGRAM



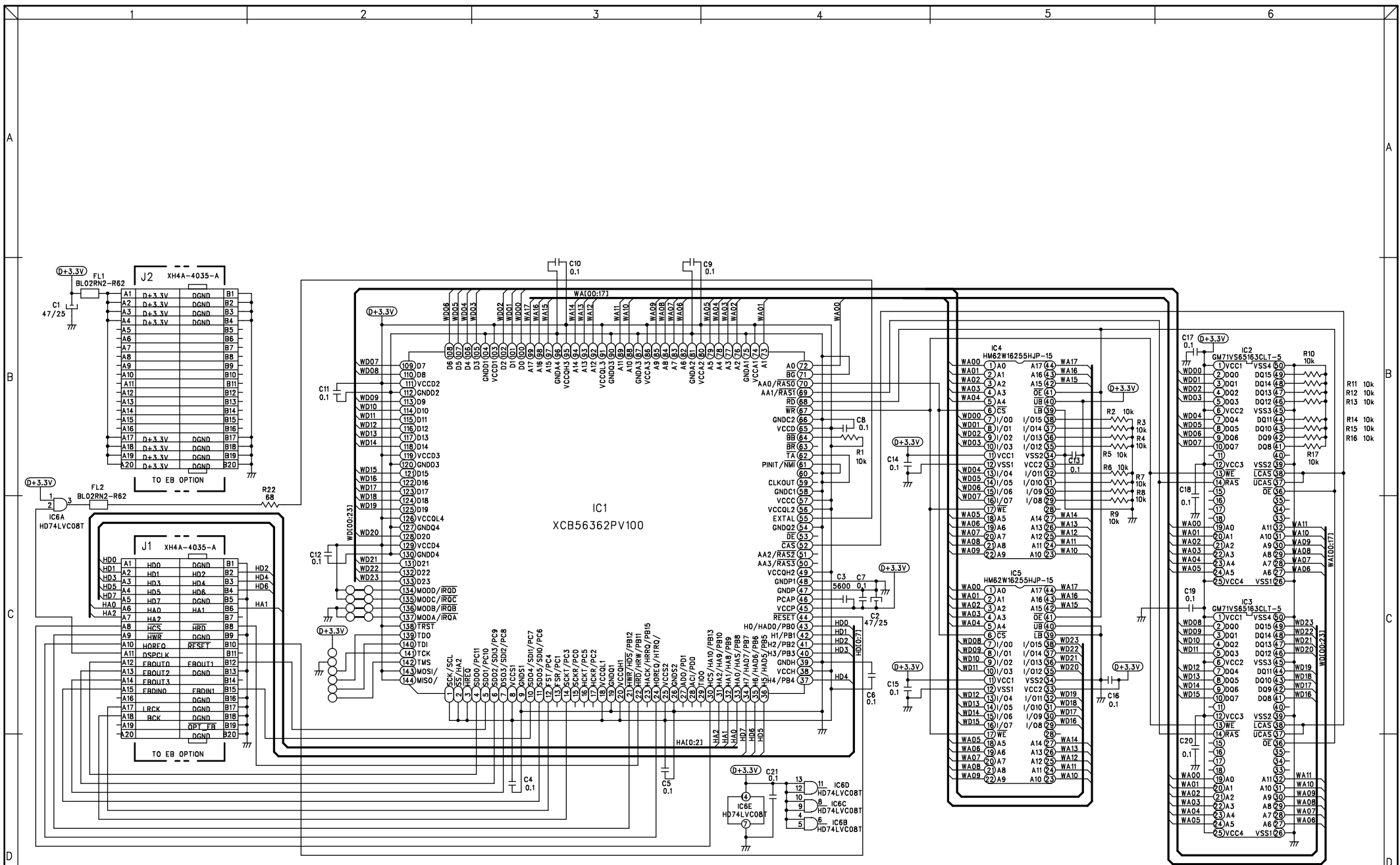
IL40041 2001/12/15  
 DELETE IC10(LV245), R28, R31-R37  
 CHANGE R22: 10 kohm -> 0 ohm, and to GND  
 IL39723 2001/10/15  
 ADD IC10(LV208)

NOTE: UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS (R#N#)  
 ALL CAPACITORS IN uF (P#uF)  
 ALL ELECTROLYTIC CAPACITORS IN uF/VV

WARNING:  $\Delta$  INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY.  
 REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S  
 RECOMMENDED PARTS

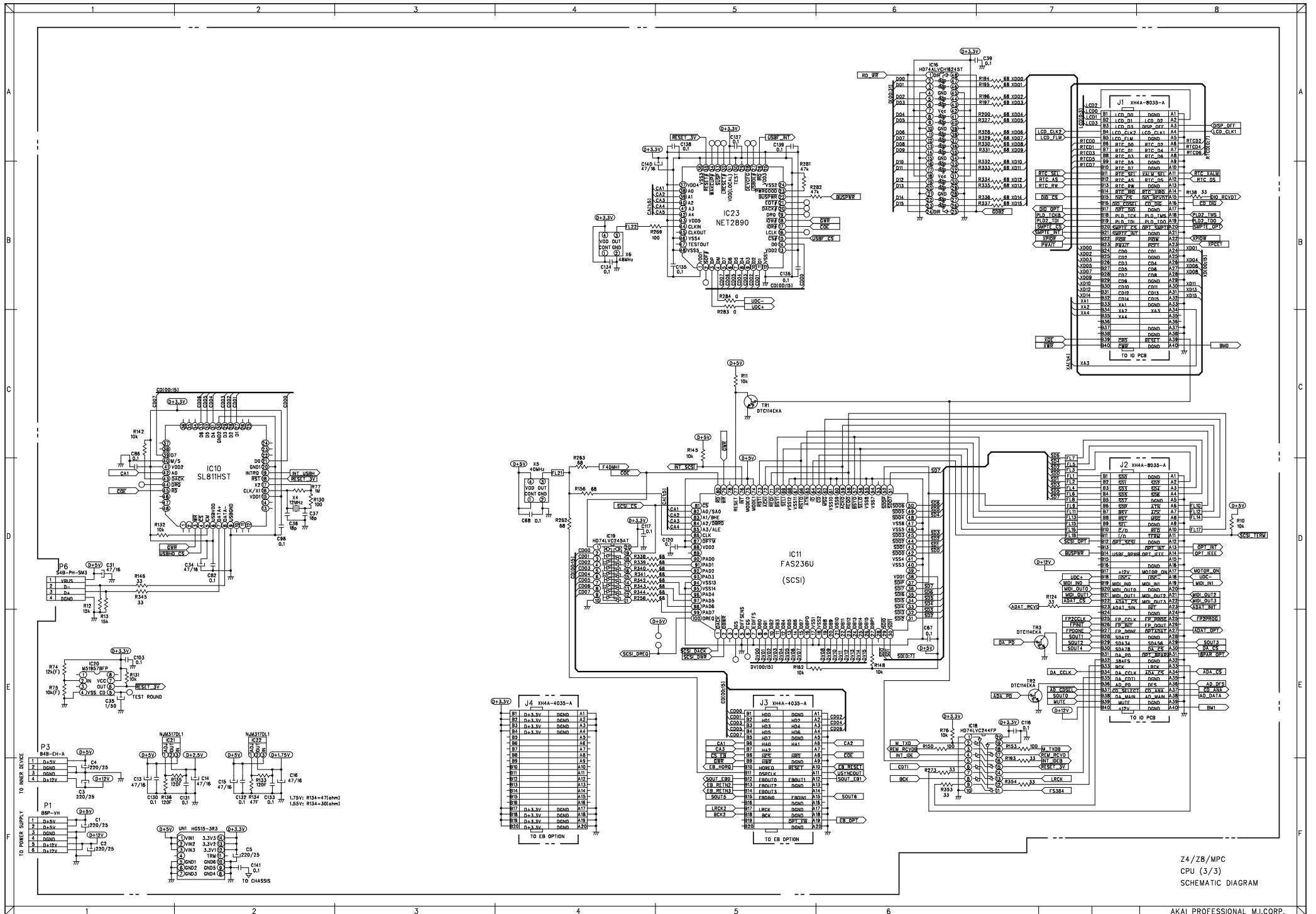
AVERTISSEMENT:  $\Delta$  IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ.  
 REMPLACER SEULEMENT LES PIÈCES RECOMMANDÉES PAR LE FABRICANT

IB-4ADT (Z/MPC)  
 ADAT  
 SCHEMATIC DIAGRAM

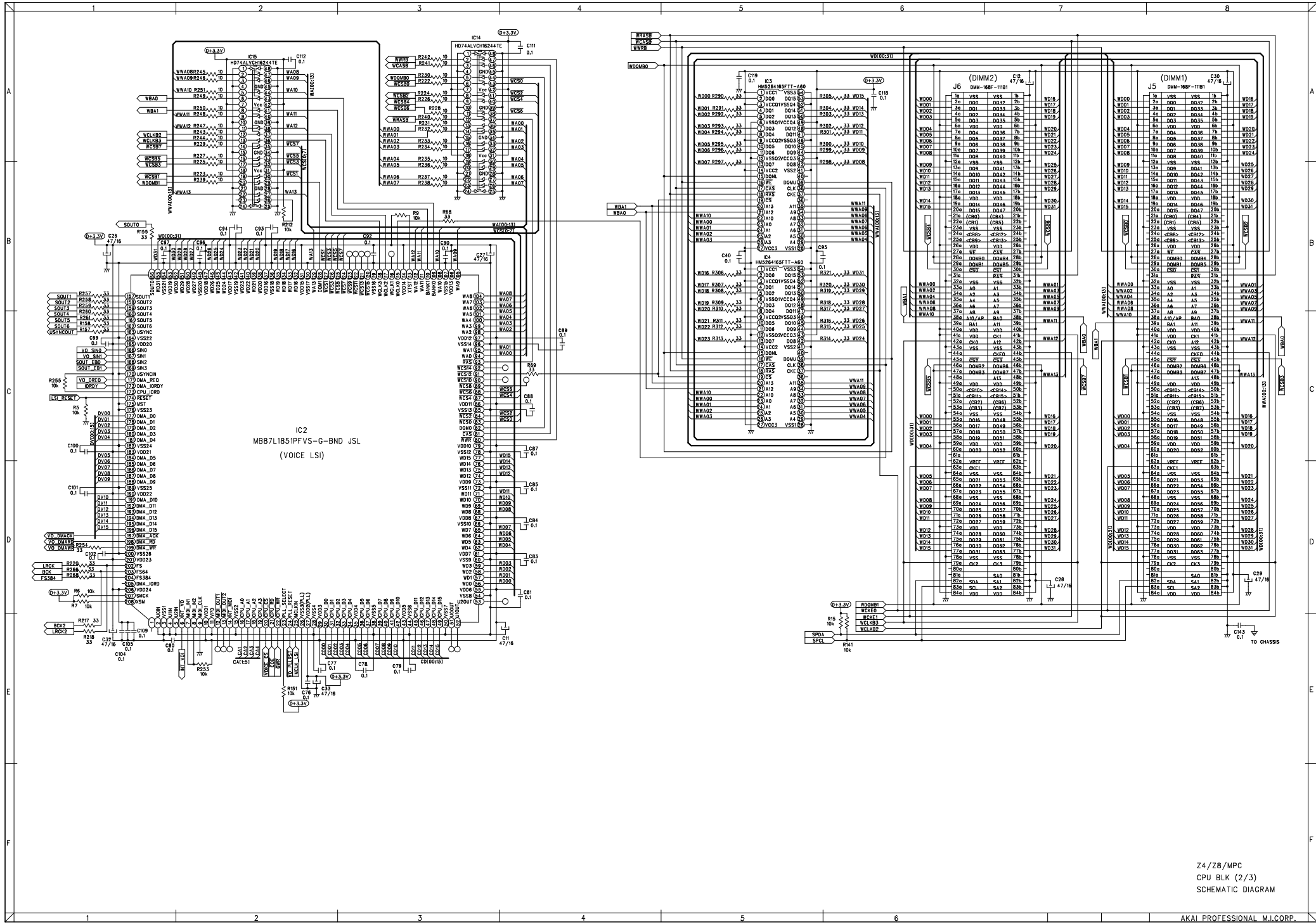


NOTE: UNLESS OTHERWISE SPECIFIED  
 ALL RESISTORS IN OHMS 1/6W(J)  
 ALL CAPACITORS IN uF (P=pF)  
 ALL ELECTROLYTIC CAPACITORS IN uF/WV

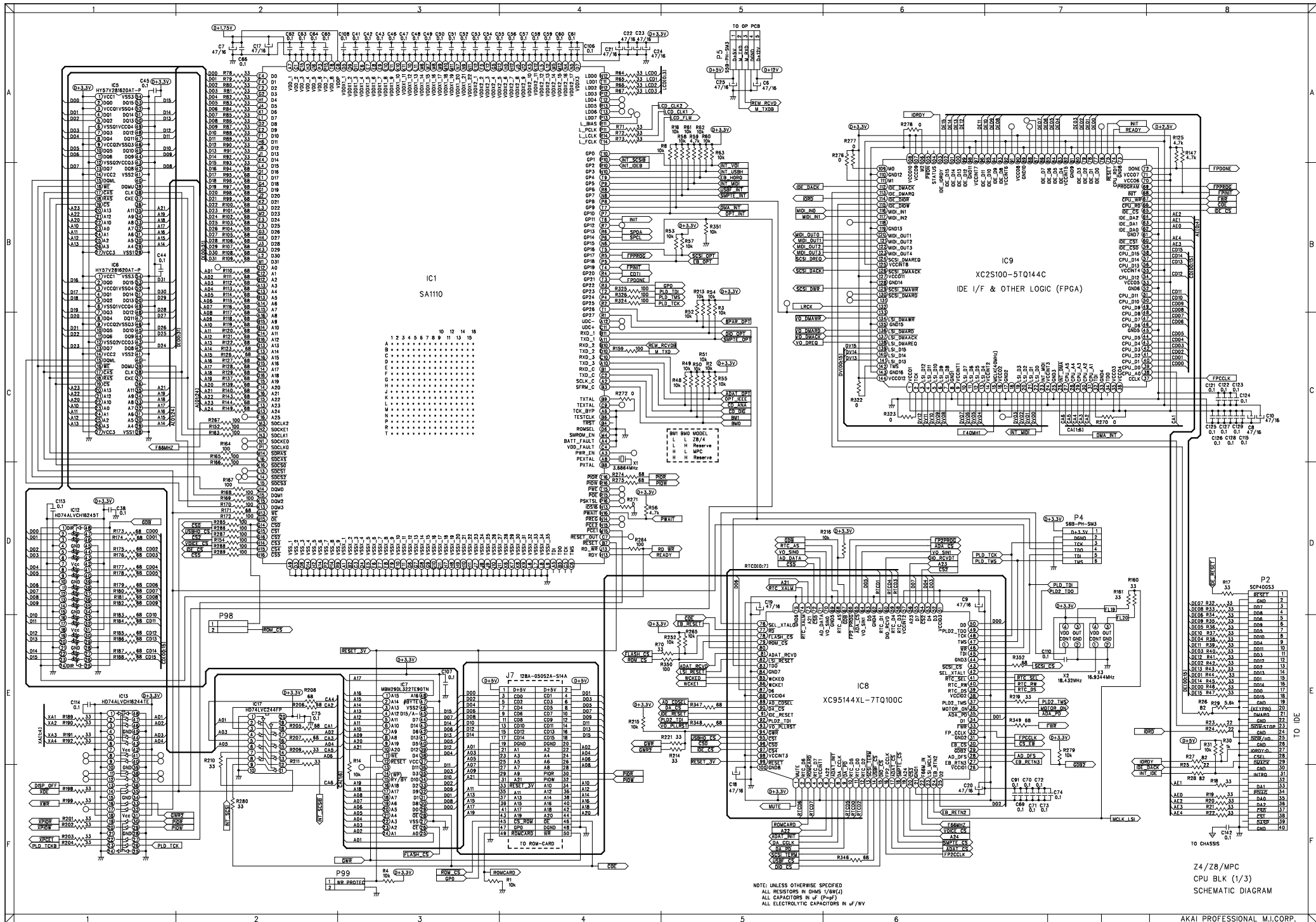
Z4/8,MPC  
 EFFECT BOARD  
 SCHEMATIC DIAGRAM



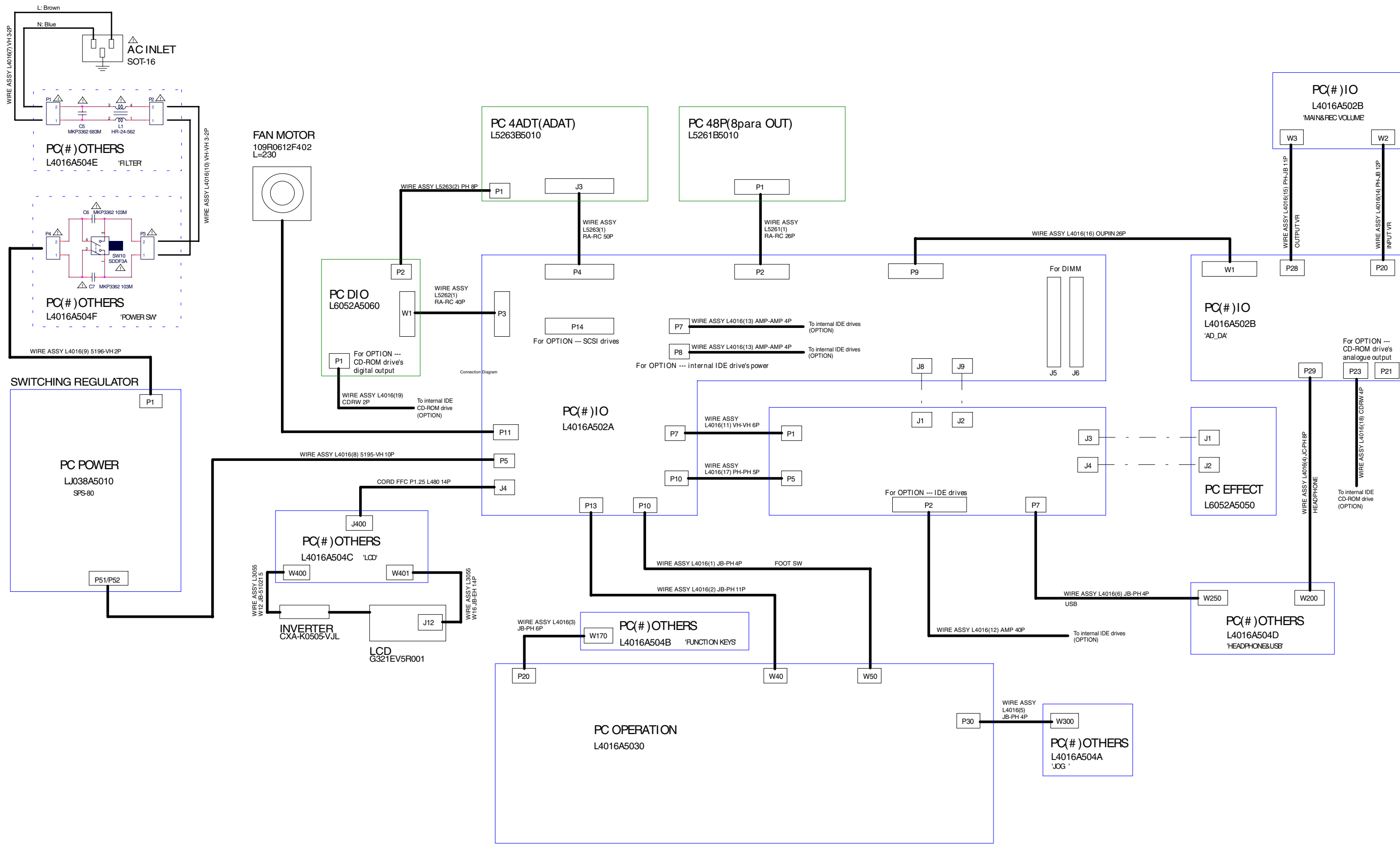
Z4/ZB/MPC  
CPU (3/3)  
SCHEMATIC DIAGRAM



Z4/28/MPC  
CPU BLK (2/3)  
SCHEMATIC DIAGRAM

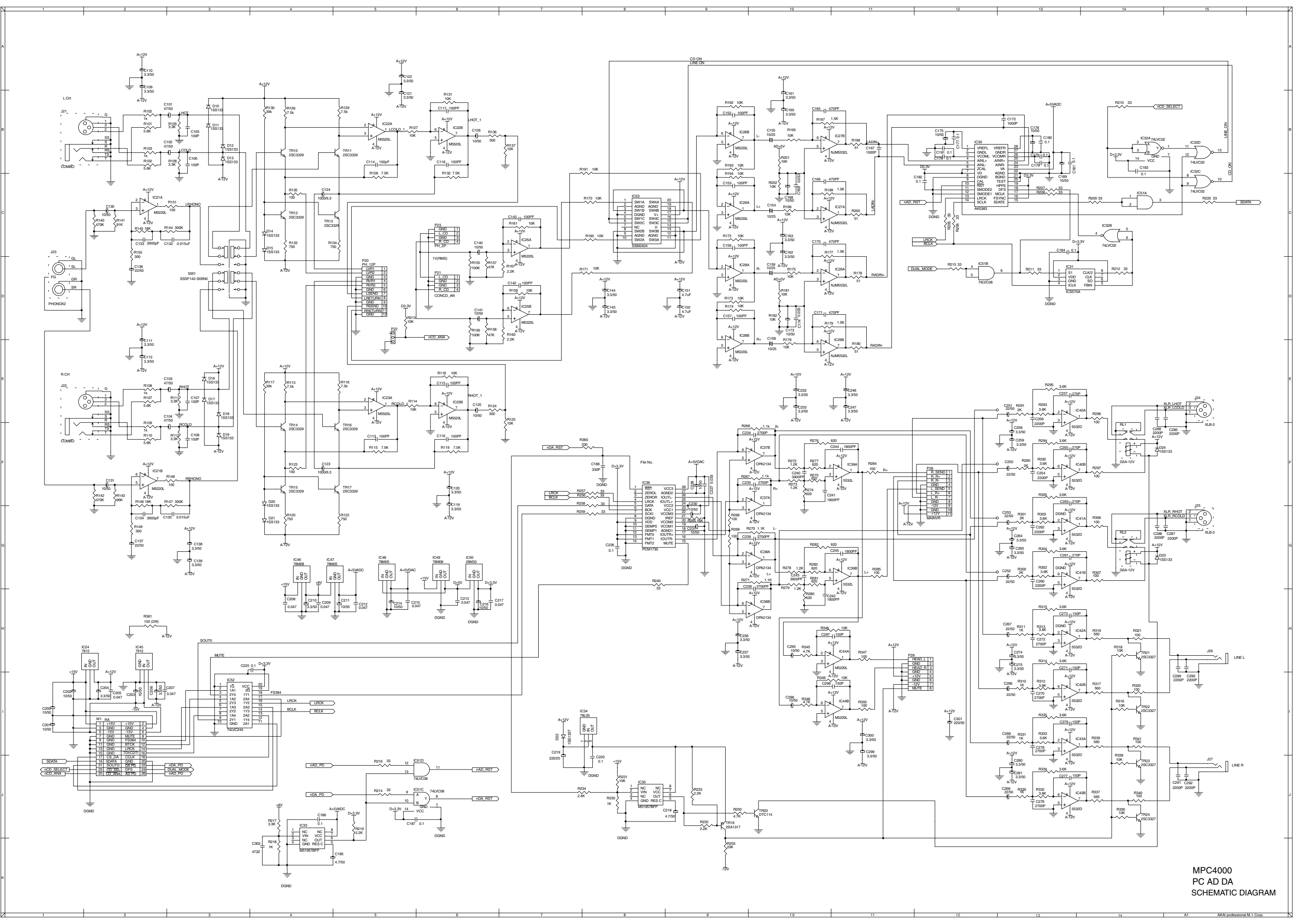


Z4/Z8/MPC  
CPU BLK (1/3)  
SCHEMATIC DIAGRAM

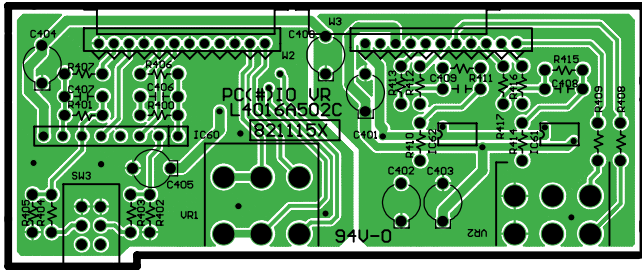


MPC4000  
CONNECTION DIAGRAM

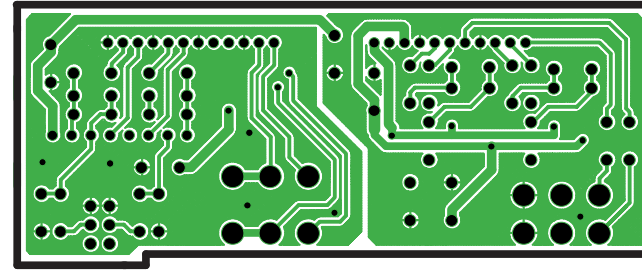




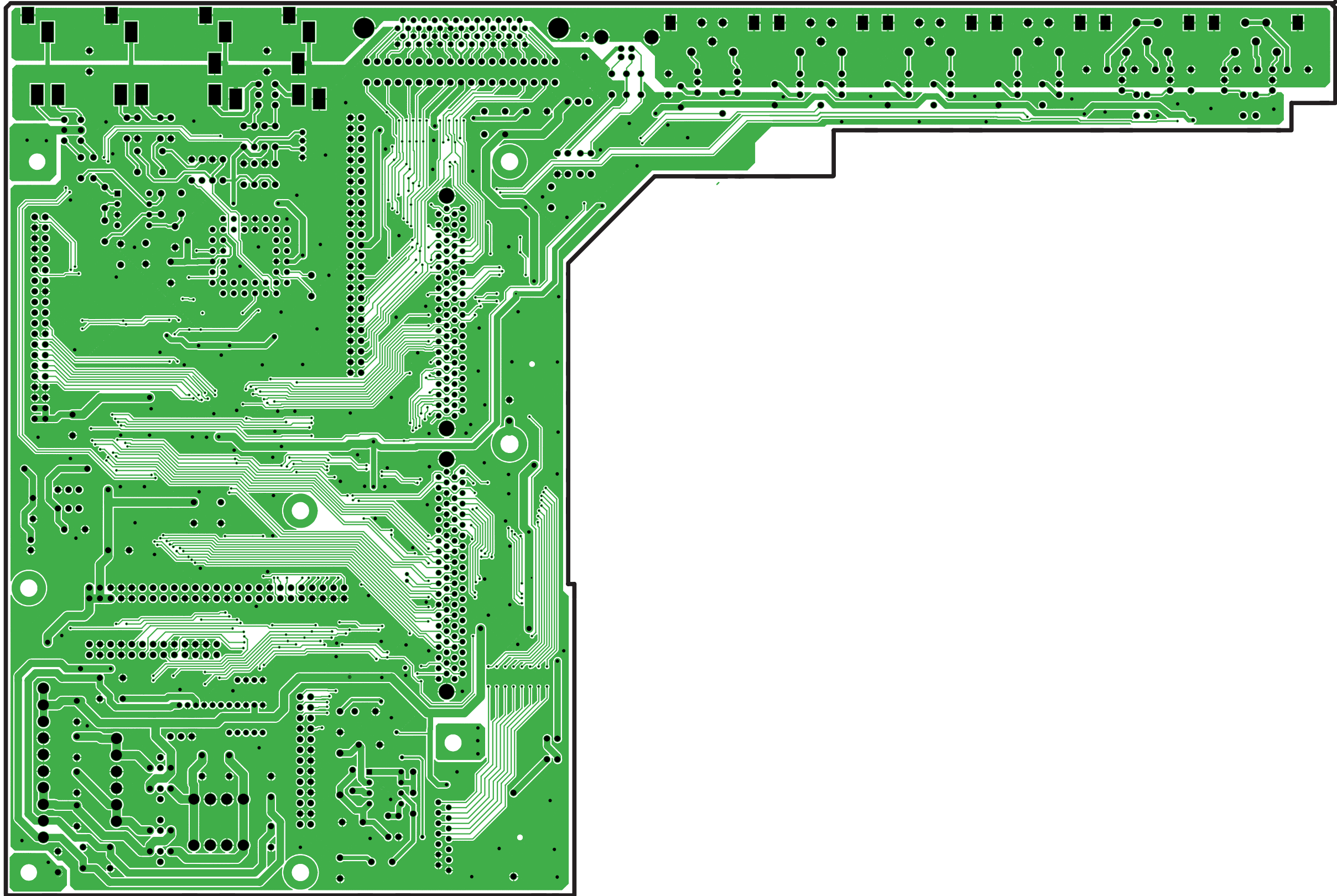
MPC4000  
PC AD DA  
SCHEMATIC DIAGRAM



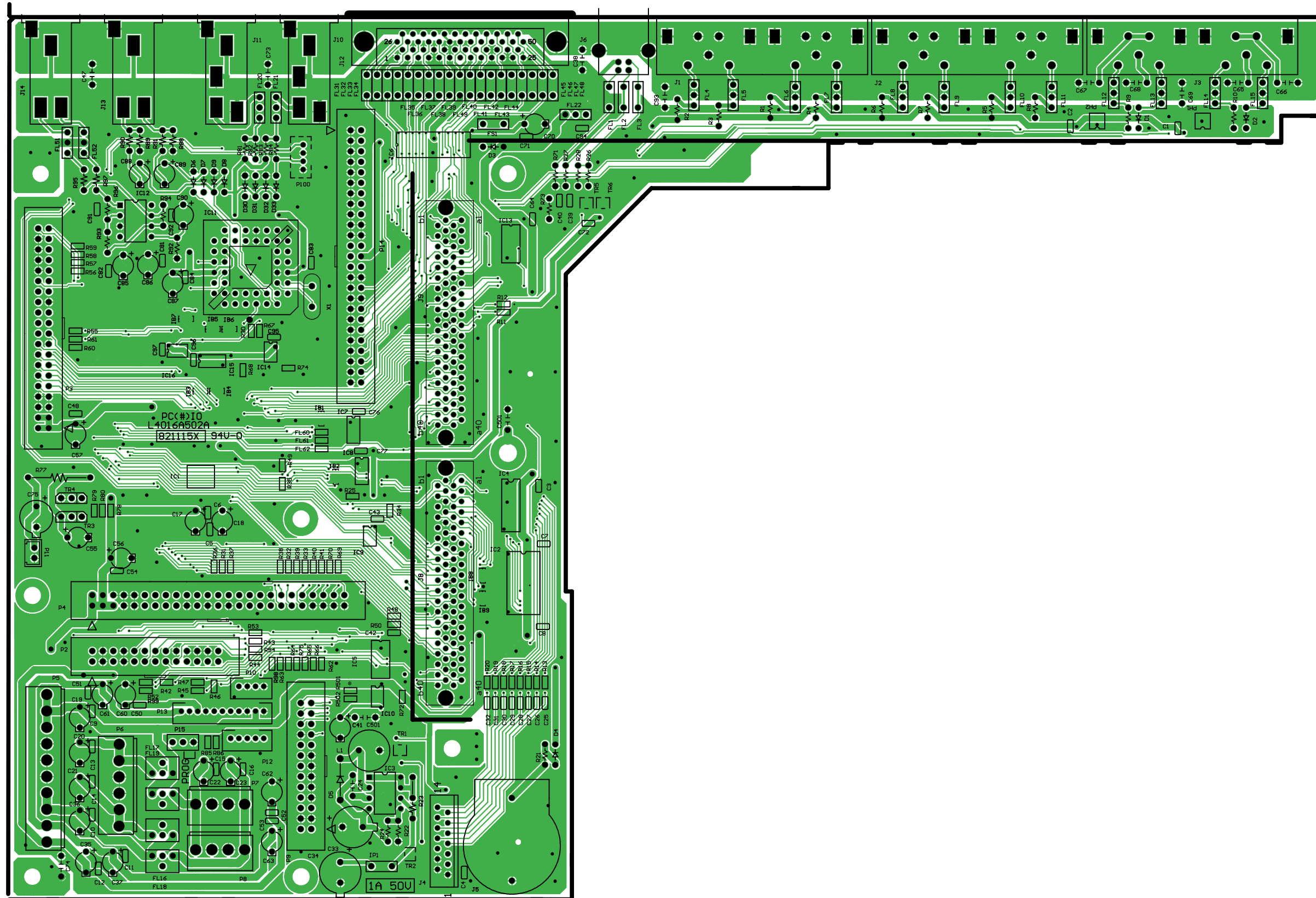
PC IO VR BLK



PC IO VR BLK

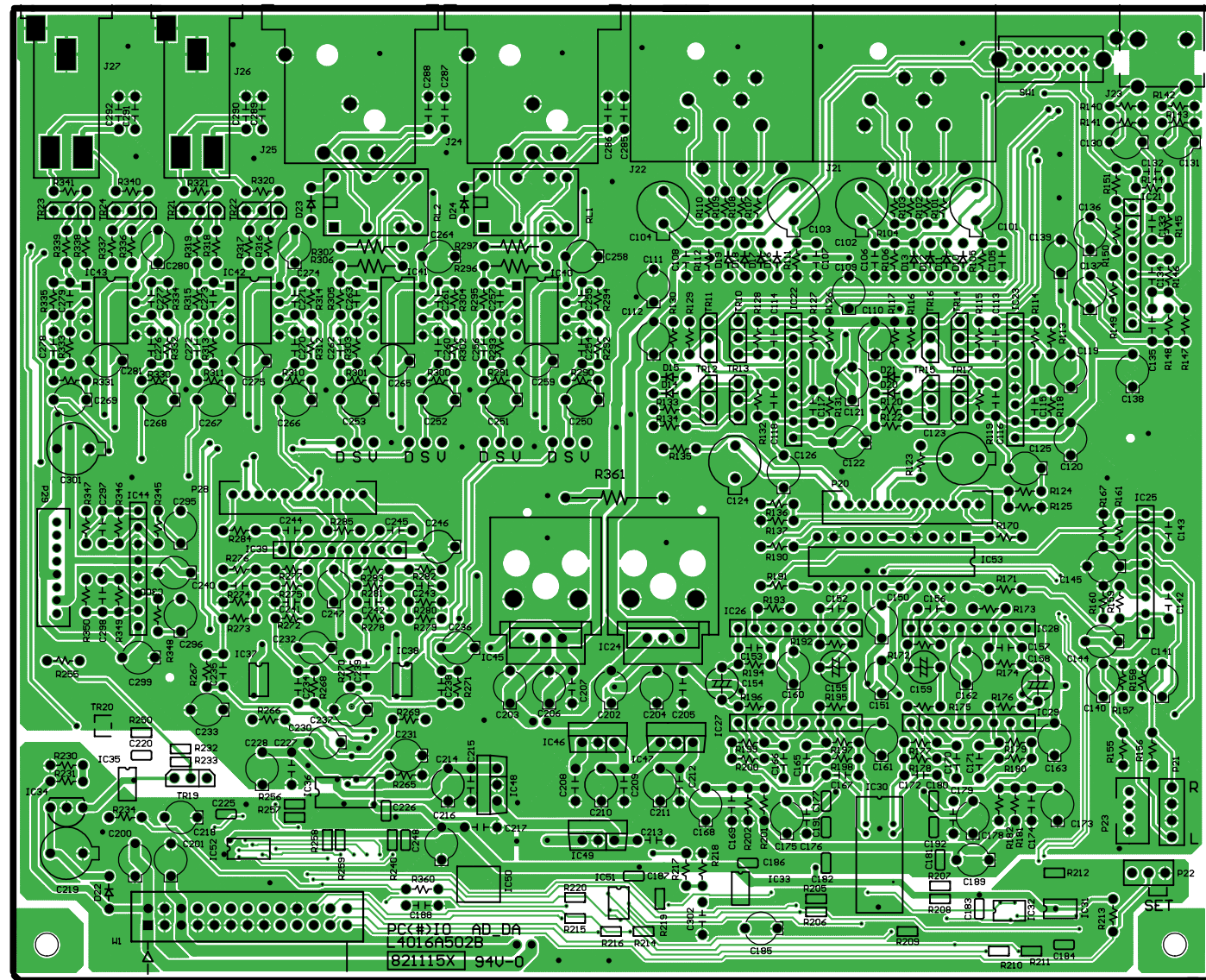


PC IO BLK

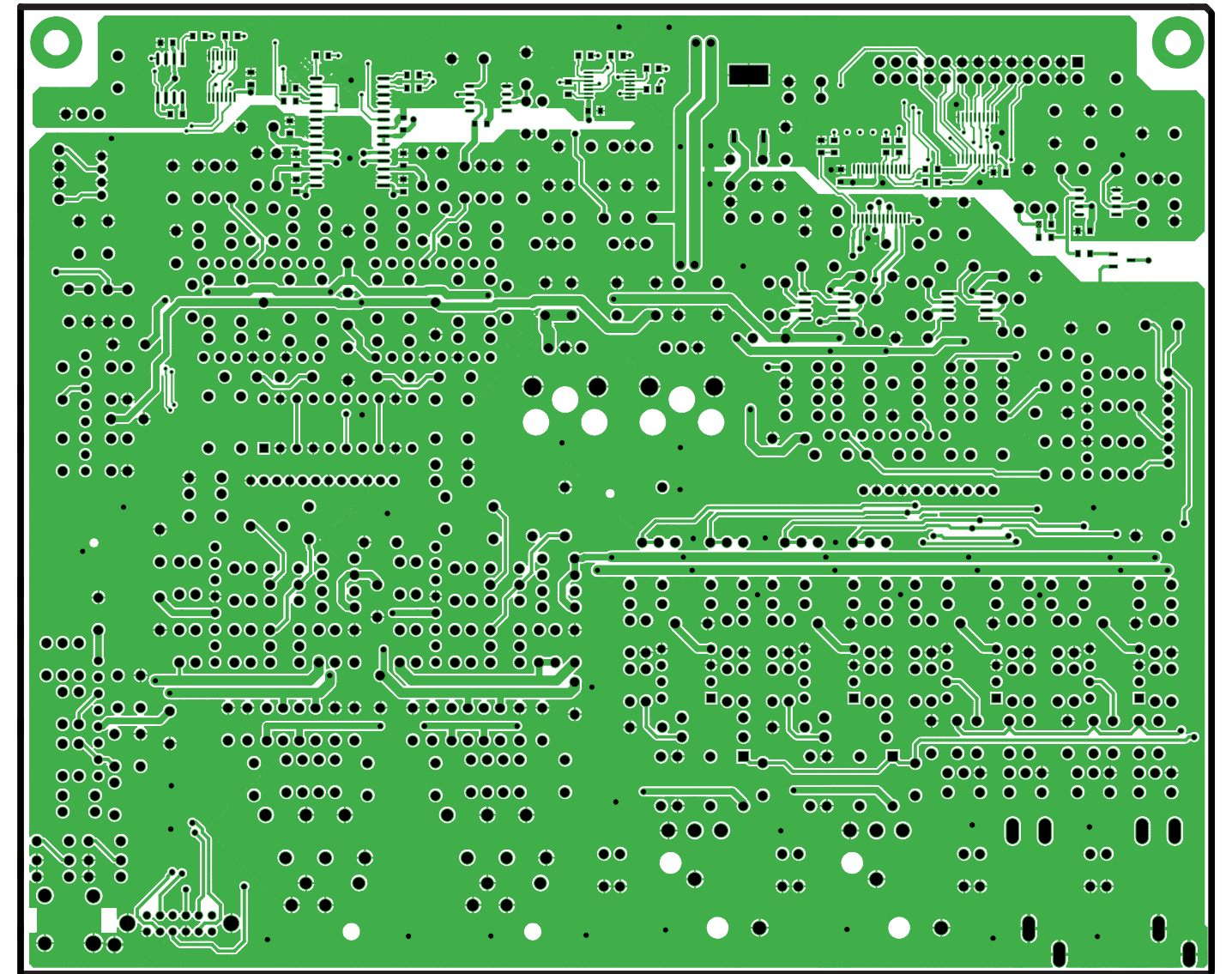


PC IO BLK

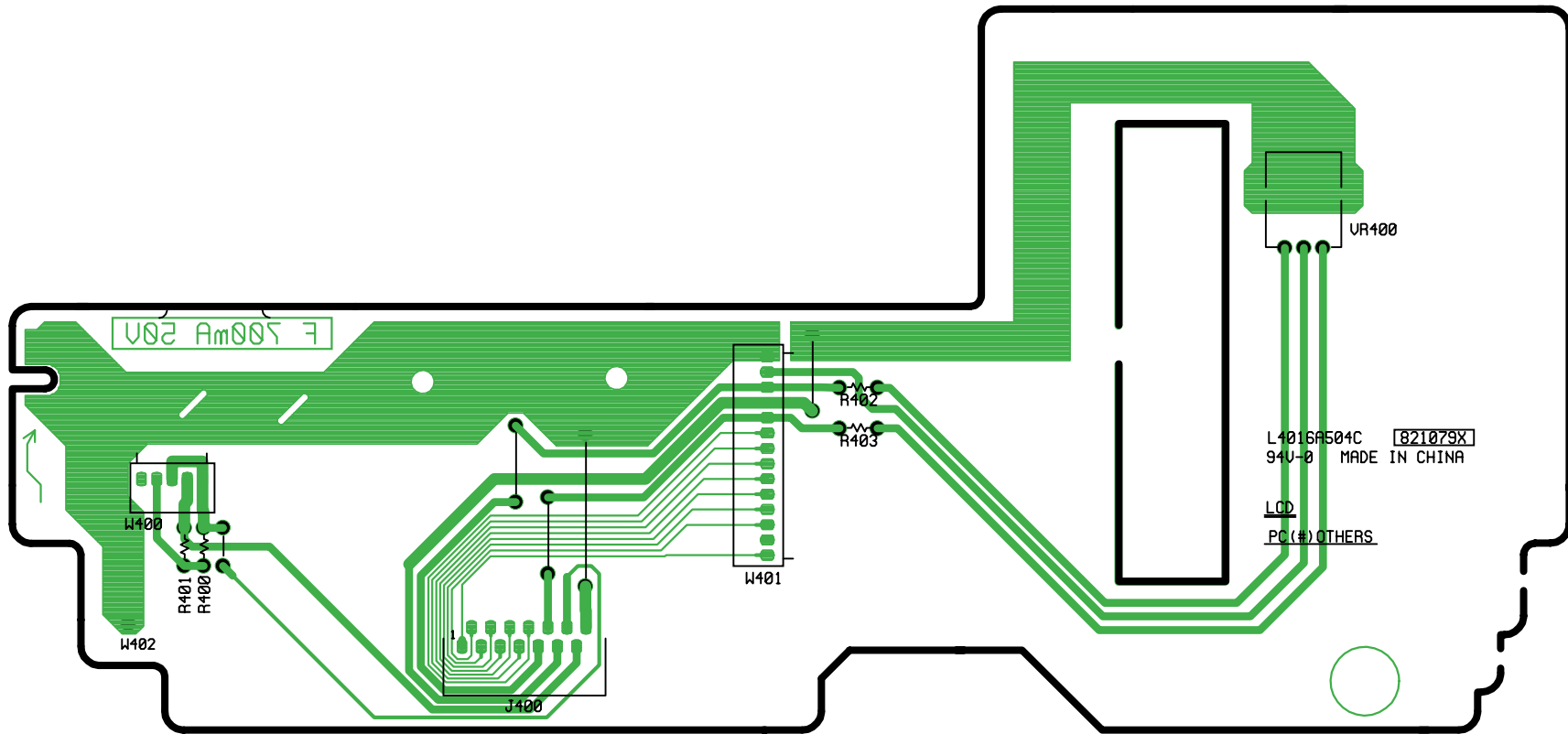




PC IO ADDA BLK



PC IO ADDA BLK



PC LCD BLK