
Service Manual

Model
VM08

8ch Digital Mixer with DSP Effects

Fostex[®]

FOSTEX CORPORATION 3-2-35 Musashino, Akishima, Tokyo, Japan 196-0021

FOSTEX CORPORATION OF AMERICA 15431 Blackburn Ave., Norwalk, CA 90650, U.S.A.

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Fostex[®]

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION:
TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

ATTENTION:
POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU' AU FOND.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

"WARNING"

"TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE."

SAFETY INSTRUCTIONS

1. Read instructions - All the safety and operating instructions should be read before the appliance is operated.
 2. Retain instructions - The safety and operating instructions should be retained for future reference.
 3. Heed warnings - All warnings on the appliance and in the operating instructions should be adhered to.
 4. Follow instructions - All operating and use instructions should be followed.
 5. Water and Moisture - The appliance should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
 6. Carts and Stands - The appliance should be used only with a cart or stand that is recommended by the manufacturer.
-
7. Wall or Ceiling Mounting - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
 8. Ventilation - The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

9. Heat - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. Power Sources - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization - The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. Power Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. Cleaning - The appliance should be cleaned only as recommended by the manufacturer.
14. Nonuse Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
15. Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
16. Damage requiring Service - The appliance should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.
17. Servicing - The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

8. BLOCK DIAGRAM

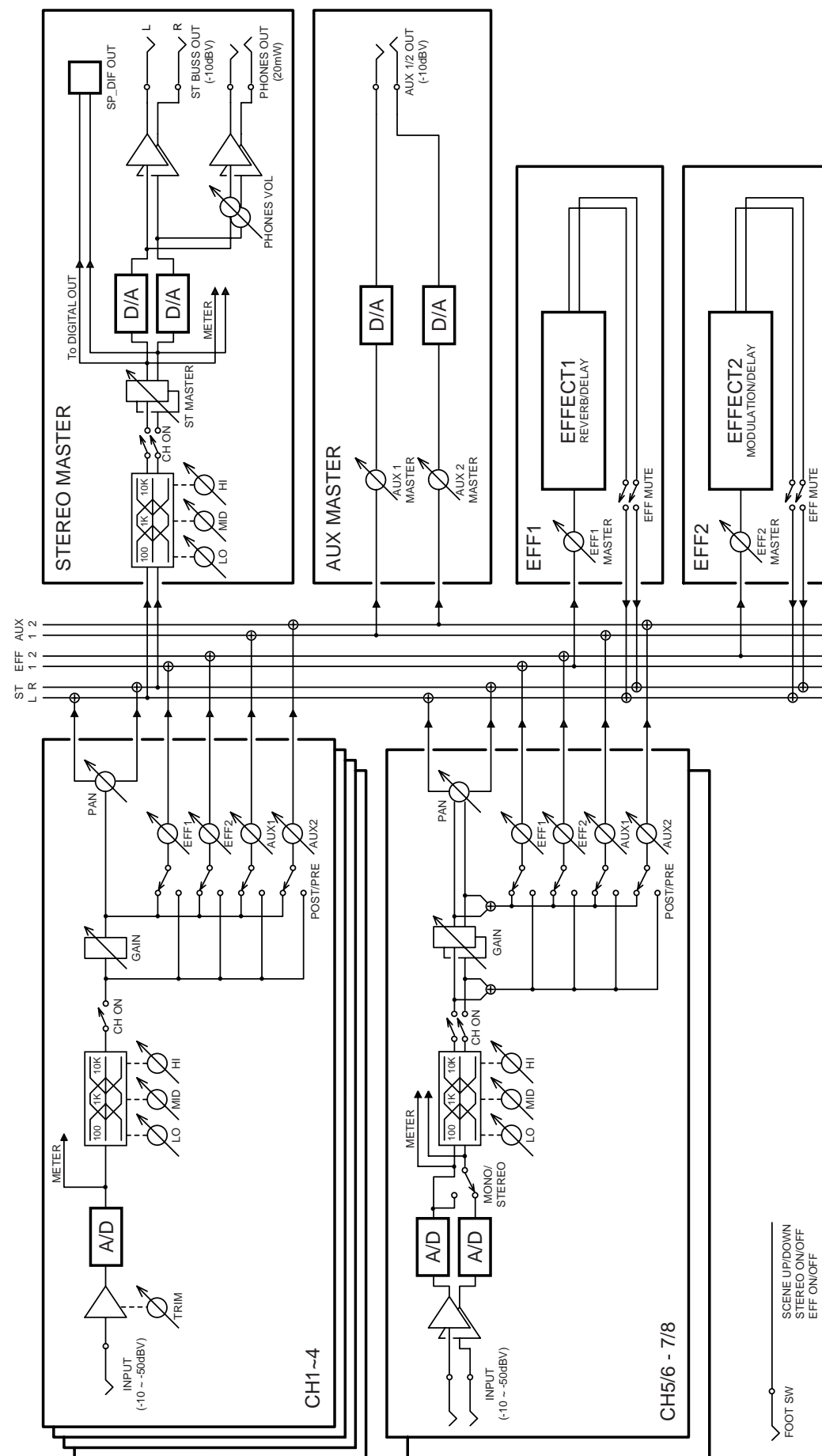


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NOTES

* Parts List and circuit diagrams are given in this manual to assist the service technician in maintaining the Model VM08.

* The following accessories are supplied with VM08 as the standard accessories.

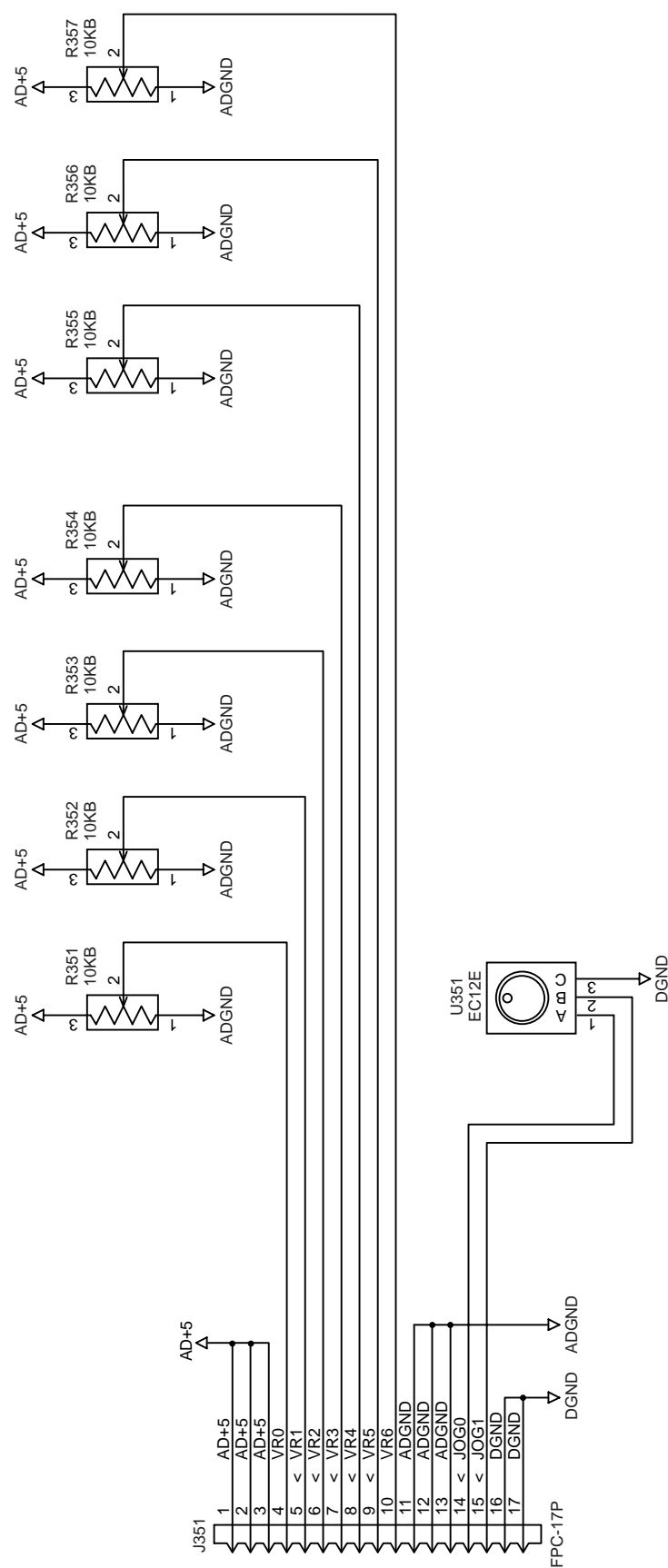
Owner's manual	: 8288448000
⚠ AC adaptor AD-9B	: 8270818003 (for USA/CND)
	: 8270818006 (for EUR)
	: 8270818007 (for UK)
	: 8270818010 (for JPN)

* Following is the packing material for the Model VM08.

PACK, SIDE, L, VM08	: 8228456000
PACK, SIDE, R, VM08	: 8228457000
CARTON, INNER, VM08	: 8228732000
CARTON, OUTER, VM08	: 8228911000

CAUTION

⚠ Parts marked with this sign are safety critical components. They must always be replaced with identical components. Refer to the Fostex Parts List and ensure exact replacement.



1. SPECIFICATIONS

DEFINITION (Specification Unit : 0 dBV = 1 Vrms)

NORMAL FADER POSITION
 Master fader
 Input fader
 INPUT 1~4 PAN
 INPUT 5/6, 7/8 PAN

80 position (Master Fader display)
 80 position (Channel Fader display)
 Fully CCW (L) or CW (R) position
 Center position

MIXER SECTION

INPUT 1~4
 Input Level -50dBV ~ -4dBV
 Input Impedance 20kΩ or more
 Connector Ø6mm Mono Phone Jack/Unbalanced

INPUT 5/6, 7/8
 Input Level -6dBV
 Input Impedance 20kΩ or more
 Connector Ø6mm TRS Phone Jack/Unbalanced
 Tip:Input 5, 7 / Ring:Input 6, 8

STEREO OUTPUT (L, R)
 Output Level -10dBV
 Load Impedance 10kΩ or more
 Connector Ø6mm Mono Phone Jack/Unbalanced

AUX SEND 1/2
 Output Level -10dBV
 Load Impedance 10kΩ or more
 Connector Ø6mm TRS Phone Jack/Unbalanced
 Tip:Send 1 / Ring:Send 2

PHONES OUT
 Output Level 30mW MAX (32Ω load)
 Load Impedance 16Ω or more
 Connector Ø6mm TRS Phone Jack

EQUALIZER
 HI (Shelving Type) ±18dB or more (10kHz)
 MID (peaking type, Q=1.0) ±18dB or more (1kHz)
 LO (Shelving Type) ±18dB or more (100Hz)

FREQUENCY RESPONSE
 Input 1~4 (-4dBV) -> Stereo Out (-10dBV) +1, -2dB (20Hz ~ 20kHz)
 Input 5~8 (-6dBV) -> Stereo Out (-10dBV) +1, -2dB (20Hz ~ 20kHz)
 Input 1~4 (-50dBV) -> Stereo Out (-10dBV) +1, -3dB (20Hz ~ 20kHz)
 Input 1~4 (-4dBV) -> Aux Send 1/2 (-10dBV) +1, -2dB (20Hz ~ 20kHz)
 Input 5~8 (-6dBV) -> Aux Send 1/2 (-10dBV) +1, -2dB (20Hz ~ 20kHz)
 Input 5~8 (-6dBV) -> Phones Out (10mW/16Ω) +1, -3dB (80Hz ~ 10kHz)

S/N (with DAT envelope filter)
 Input 1~4 (+8dBV) -> Stereo Out (+2dBV) 86dB or more (IHF-A)
 Input 5~8 (+6dBV) -> Stereo Out (+2dBV) 86dB or more (IHF-A)
 Input 1~4 (-38dBV) -> Stereo Out (+2dBV) 75dB or more (IHF-A)
 Input 1~4 (+8dBV) -> Aux Send 1/2 (+2dBV) 86dB or more (IHF-A)
 Input 5~8 (+6dBV) -> Aux Send 1/2 (+2dBV) 86dB or more (IHF-A)
 Phones Out Residual Noise (VR : Min) -85dBV or more (IHF-A)

DISTORTION (with DAT envelope filter)
 Input 1~4 (+6dBV) -> Stereo Out (0dBV) 0.03% or less (1kHz)
 Input 5~8 (+4dBV) -> Stereo Out (0dBV) 0.03% or less (1kHz)
 Input 1~4 (-40dBV) -> Stereo Out (0dBV) 0.08% or less (1kHz)
 Input 1~4 (+6dBV) -> Aux Send 1/2 (0dBV) 0.03% or less (1kHz)
 Input 5~8 (+4dBV) -> Aux Send 1/2 (0dBV) 0.03% or less (1kHz)
 Input (0dBV) -> Phones Out (20mW/16Ω) 1.0% or less (1kHz)

CROSSTALK
 Input 1~4 (-4dBV) -> Aux Send 1/2 (0dBV) (Non input channel is measured.) 60dB or more (1kHz)

CLICK NOISE
 Power ON/OFF Stereo Out -20dBVp-p or less
 Aux Out -20dBVp-p or less
 Other switching Stereo Out -30dBVp-p or less
 Aux Out -30dBVp-p or less

SHOCK NOISE
 LEVEL INDICATION
 Type LCD Bargraph Meter
 Number of Indicated Levels 10dots (-48, -30, -24, -18, -12, -9, -6, -3, -1, OL)
 Reference Level (-10dBV) Indication -12dB

DIGITAL SECTION

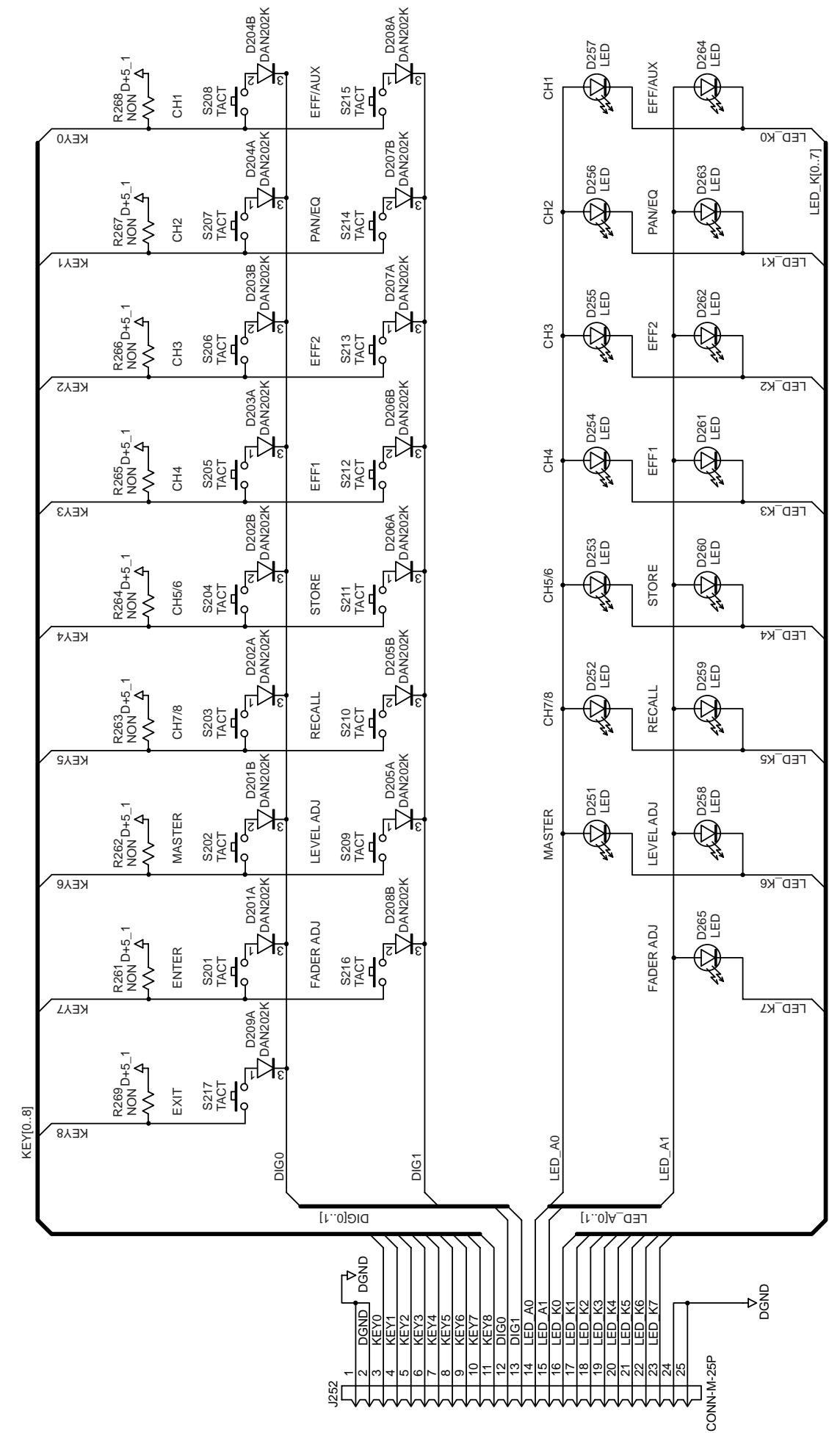
SAMPLING FREQUENCY 44.1kHz
 QUANTIZATION 16 bit linear
 A/D CONVERTER 20bit, 64-times Over Sampling, ΔΣ
 D/A CONVERTER 24bit 128-time, Over Sampling, ΔΣ
 S/P DIF OUT
 Format IEC 60958 (S/P DIF)
 Connector Optical

GENERAL

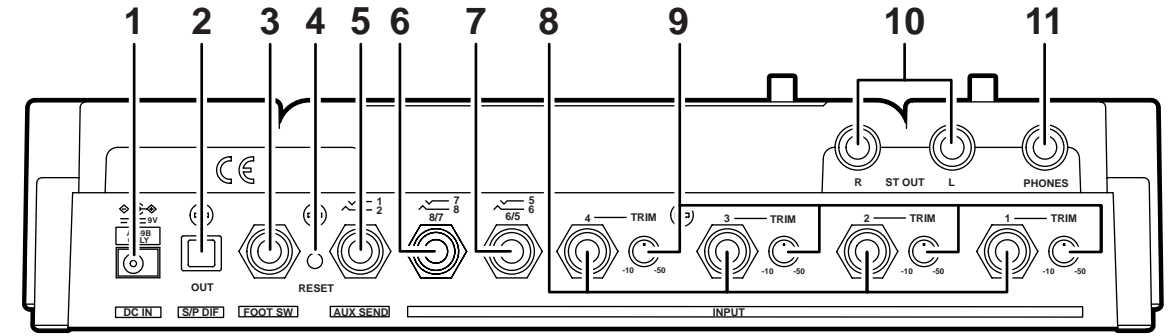
DC IN AD-9B, DC9V, 650mA (Center : Positive)
 DIMENSIONS 300 (W) x 212 (D) x 70 (H) mm
 WEIGHT Approx. 1.2kg
 POWER SUPPLY
 USA/CND 120VAC, 60Hz
 EUR/UK 230VAC, 50/60Hz
 JPN 100VAC, 50/60Hz

* Specifications and appearance are subject to change without notice for product improvement.

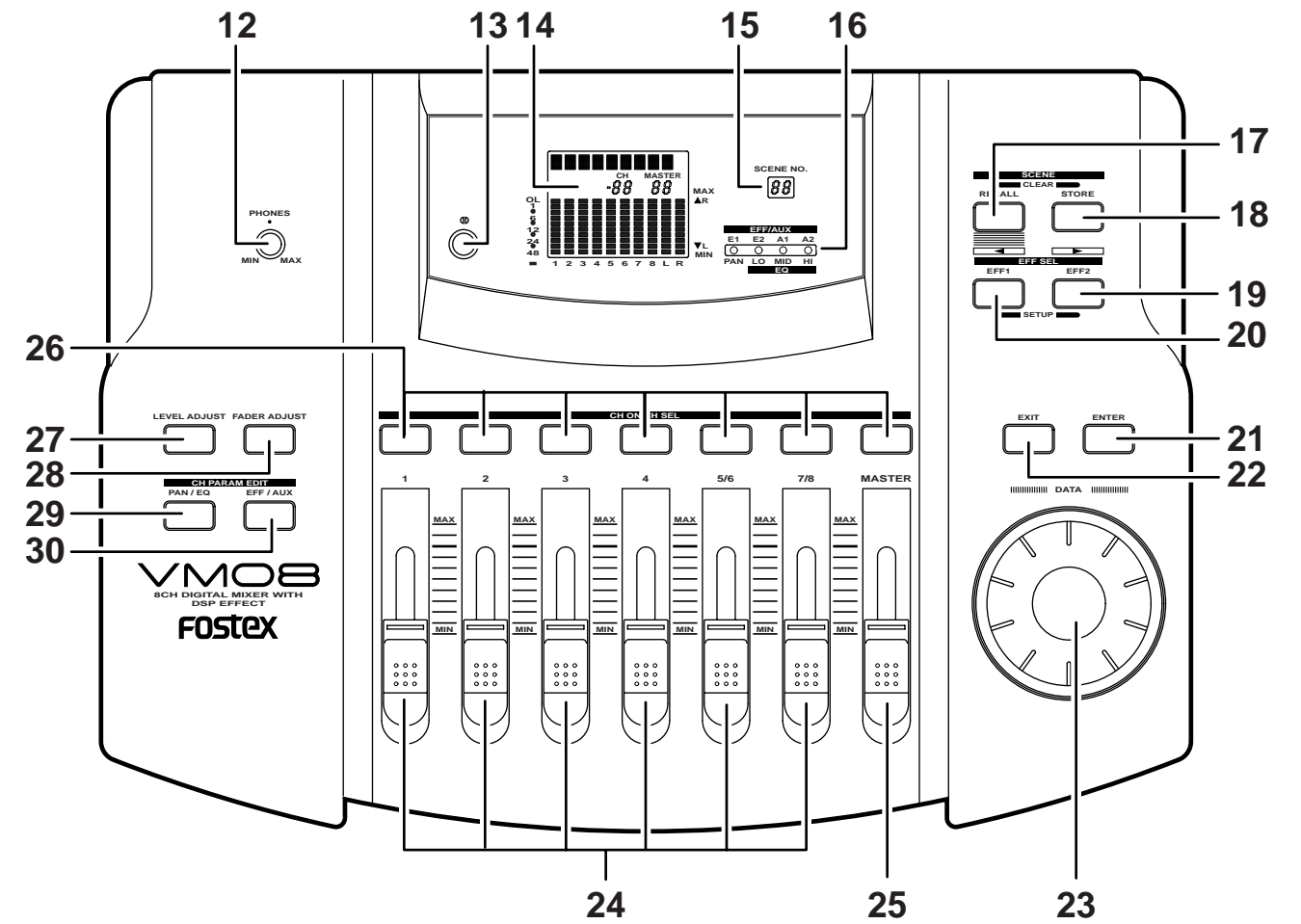
DISPLAY (2/2) : KEY & LED



2. CONTROLS, INDICATORS AND CONNECTORS

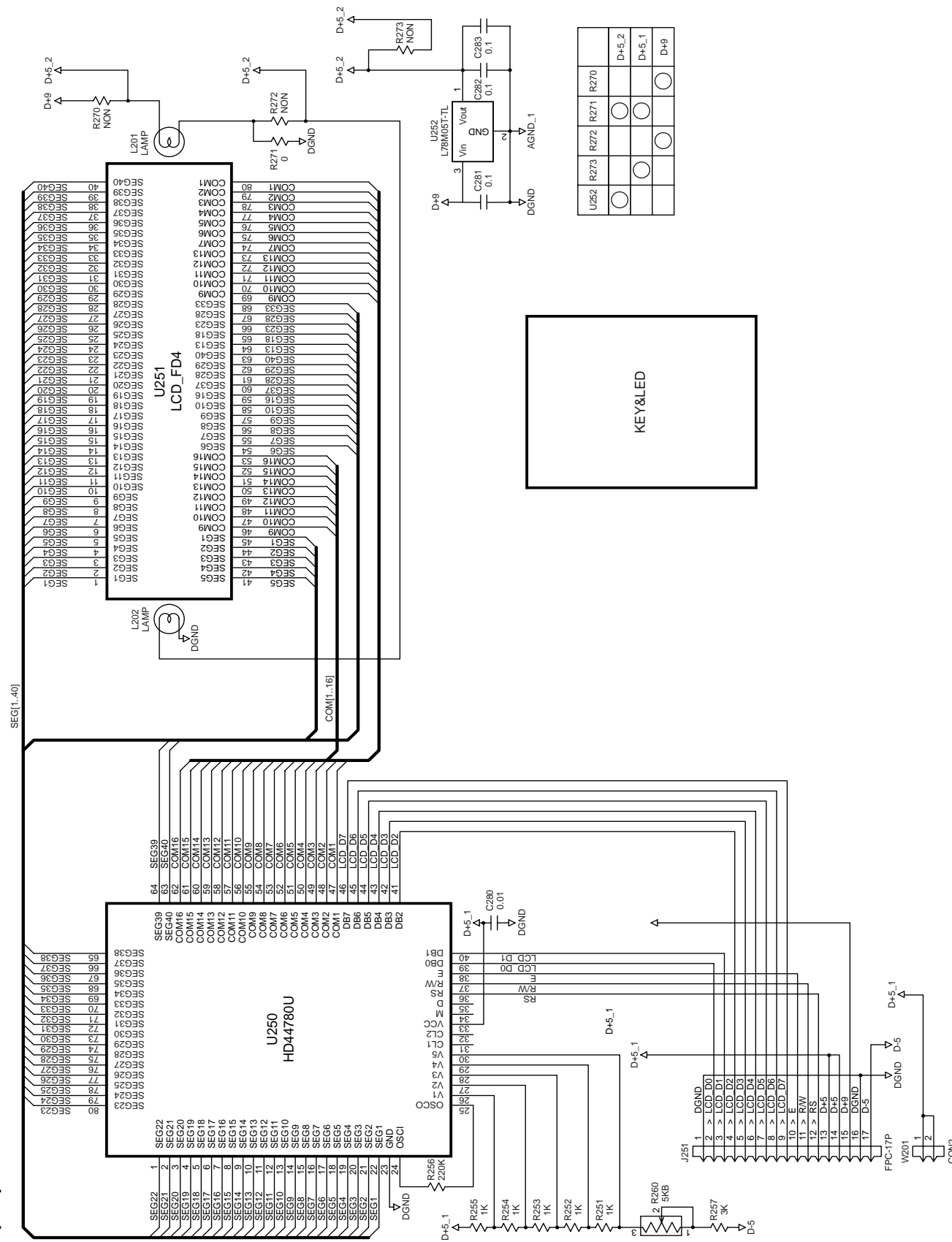


1. DC INLET connector (Center : Positive)
2. S/P DIF optical output connector [Optical]
3. FOOT SW jack [Ø6 mm Phone] (unlatched)
4. RESET switch
5. AUX SEND jack [Ø6 mm TRS Phone]
6. INPUT 7/8 jack [Ø6 mm TRS Phone]
7. INPUT 5/6 jack [Ø6 mm TRS Phone]
8. INPUT 1/2/3/4 jacks [Ø6 mm Phone]
9. TRIM knobs 1/2/3/4
10. Stereo OUTPUT L/R jacks [Ø6 mm Phone]
11. Headphone jack [Ø6 mm TRS Phone]



12. Headphone volume control knob
13. Contrast adjusting knob
14. LCD display
15. SCENE Number display
16. Status indicator
17. SCENE RECALL key
18. SCENE STORE key
19. EFFECT 2 Select key
20. EFFECT 1 Select key
21. ENTER key
22. EXIT key
23. DATA encoder
24. INPUT faders
25. MASTER fader
26. CHANNEL ON/SELECT keys
27. LEVEL ADJUST key
28. FADER ADJUST key
29. PAN/EQ select key
30. EFF/AUX select key

DISPLAY (1/2) : LCD

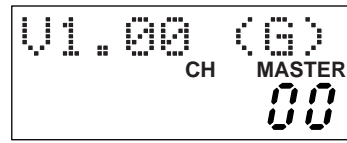


3. SERVICE MODE

3-1 Software Version Check

While holding down both the PAN/EQ and EFF/AUX keys, press the EFF 1 key.

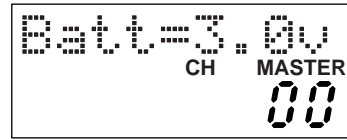
- The LCD Display will show the Software Version of the VM08 for about a second, and then return to the Normal mode display.



3-2 Battery Check

While holding down both the PAN/EQ and EFF/AUX keys, press the EFF 2 key.

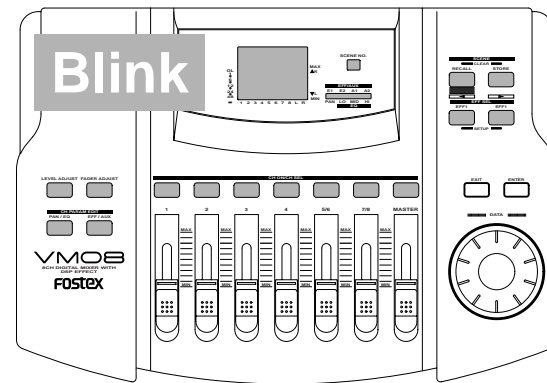
- The LCD Display will show the voltage of the memory backup battery inside the VM08 for about a second, and then return to the Normal mode display.
- If the voltage falls below 2.2V, the message "BattEmpty" will appear when powering ON.
- If the message "BattEmpty" is displayed, please replace the battery with the new one. For exchanging procedure, please refer to page 7.



3-3 Display Check

While holding down both the PAN/EQ and EFF/AUX keys, press the EXIT key.

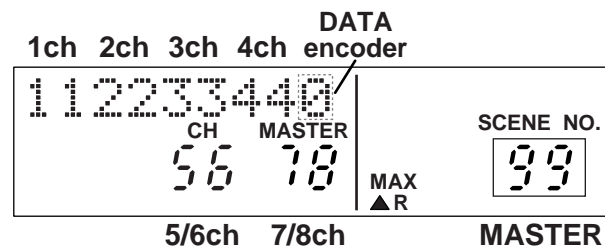
- All the LEDs and LCD segments are supposed to start blinking. Check if they are correctly blinking or not.
- Pressing the ENTER key will change the blinking pattern.
- Pressing the EXIT key will put the VM08 in the condition right after powering on.



3-4 Fader Check

While holding down both the PAN/EQ and EFF/AUX keys, press the FADER ADJUST key.

- Confirm that 1~4 channel parameter value (00~99) and the DATA encoder parameter value (0~9) correctly appears on the Character Display.
- Confirm that 5/6 channel parameter value (00~99) correctly appears on the CH FADER Display.
- Confirm that 7/8 channel parameter value (00~99) correctly appears on the MASTER FADER Display.
- Confirm that Master Fader parameter value (00~99) correctly appears on the SCENE NO. Display.
- If the EXIT key is pressed, the VM08 returns to Normal mode display.



3-5 Key Check

While holding down both the PAN/EQ and EFF/AUX keys, press the LEVEL ADJUST key.

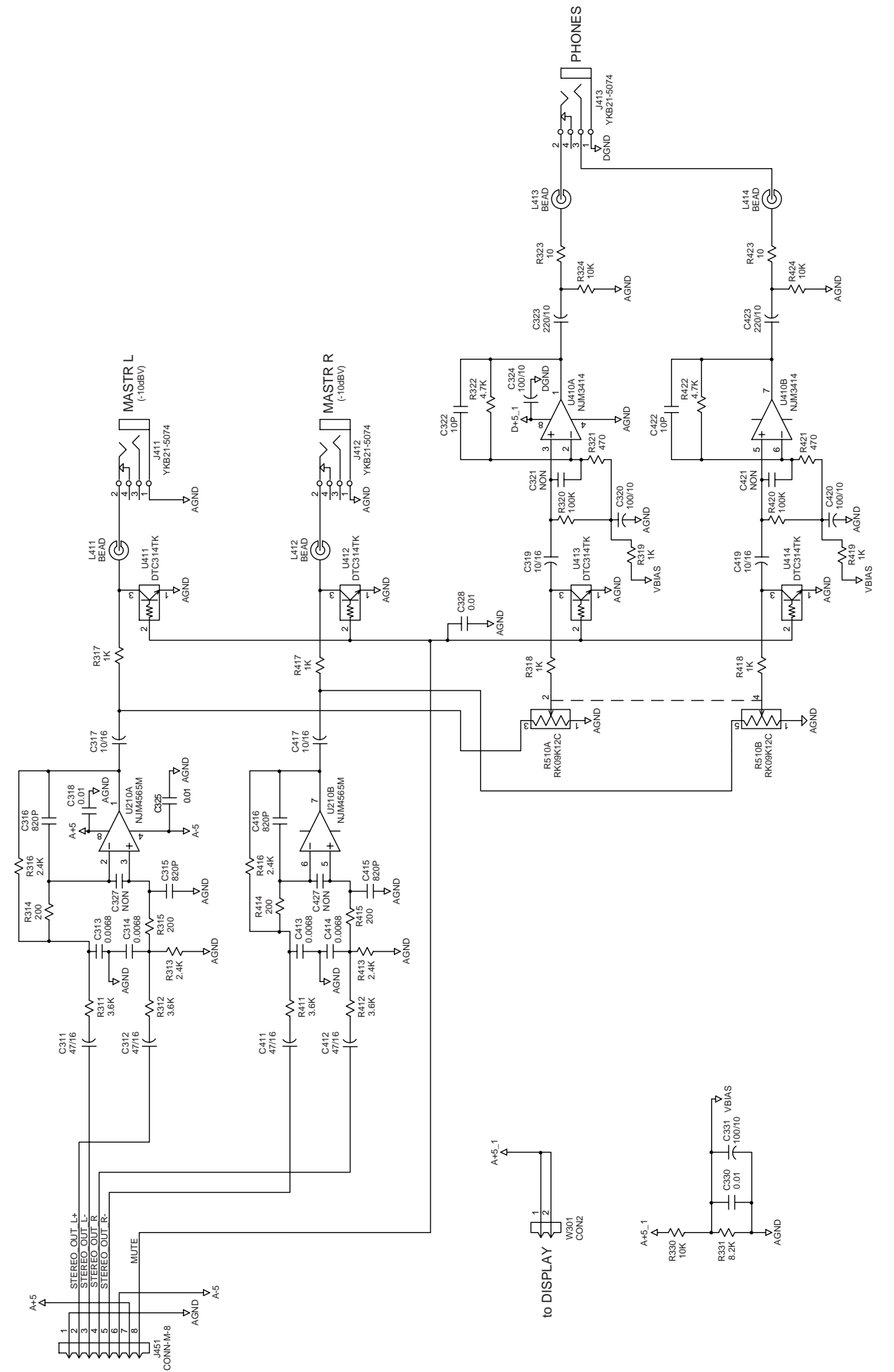
- Confirm that the name of the switch you press appears on the Character Display.
- If two or more switches are pressed at the same time, "NG" prompt will be displayed on the Character Display.
- If DATA encoder is rotated, the VM08 returns to Normal mode display.

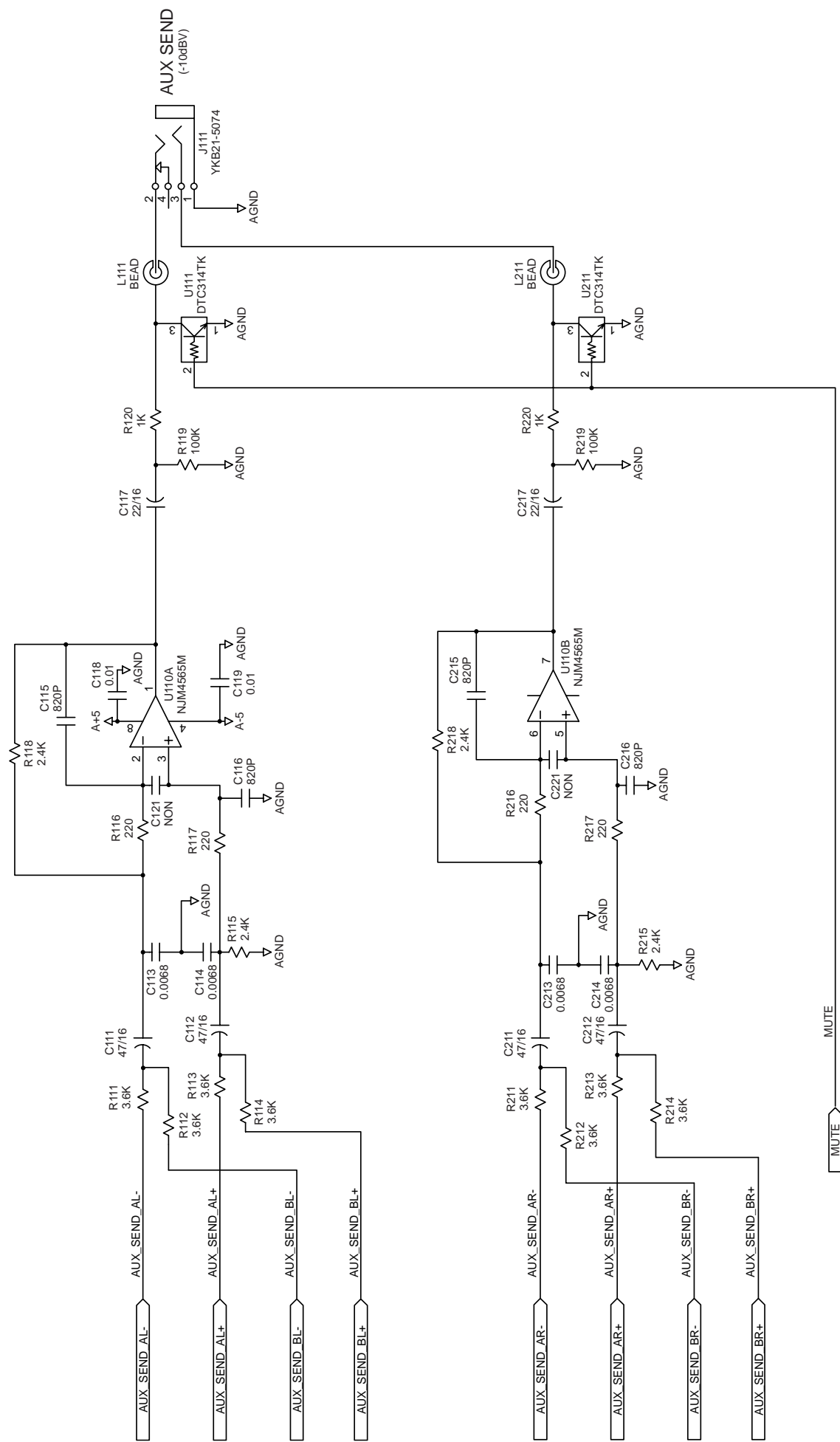
3-6 Test Scene RECALL

While holding down both the PAN/EQ and EFF/AUX keys, press the SCENE RECALL key

- This mode is designed to use at our manufacturer exclusively. It has nothing to do with servicing the unit.

ANALOG OUT (1/1)





3-7 Memory Clear

While holding down both the PAN/EQ and EFF/AUX keys, press the SCENE STORE key

- Pressing the ENTER key would clear the memory and the message “ClearMem!” appears. All the setup will be initialized.
- Pressing the key other than ENTER returns to the Normal Mix mode display (The Scene No. 00 is displayed.) and the memory will not be initialized.
- Pressing the RESET SW would also clear the memory and the message “ClearMem!” appears.



Gain Table

The value appears in the LCD display corresponds to the gain in dB as shown below.

INPUT Fader
MASTER Fader
EFFECT Send

Value	Gain (dB)
00	-∞
01	-72.0
05	-55.0
10	-42.5
15	-35.0
20	-28.75
25	-23.0
30	-18.0
35	-15.5
40	-13.0
45	-10.5
50	-8.5
55	-7.0
60	-5.5
65	-4.0
70	-2.5
75	-1.25
80	0
85	+1.5
90	+3.0
95	+4.67
99	+6.0

INPUT 1~4 PAN

Value	Gain (dB)	
	Left	Right
L10	0.0	-∞
L9	-0.1	-32.0
L8	-0.25	-23.5
L7	-0.4	-17.6
L6	-0.7	-14.1
L5	-1.0	-11.3
L4	-1.4	-9.0
L3	-1.8	-7.1
L2	-2.2	-5.5
L1	-2.6	-4.2
C	-3.0	-3.0
R1	-4.2	-2.6
R2	-5.5	-2.2
R3	-7.1	-1.8
R4	-9.0	-1.4
R5	-11.3	-1.0
R6	-14.1	-0.7
R7	-17.6	-0.4
R8	-23.5	-0.25
R9	-32.0	-0.1
R10	-∞	0.0

INPUT 5/6, 7/8
BAL
MASTER BAL

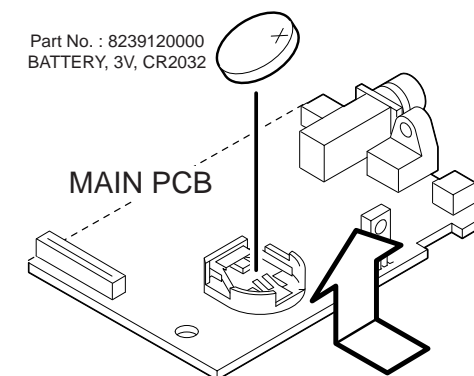
Value	Gain (dB)	
	Left	Right
L10	0	-∞
L9	0	-36
L8	0	-26
L7	0	-18
L6	0	-12
L5	0	-8
L4	0	-5
L3	0	-3
L2	0	-1.5
L1	0	-0.5
C	0	0
R1	-0.5	0
R2	-1.5	0
R3	-3	0
R4	-5	0
R5	-8	0
R6	-12	0
R7	-18	0
R8	-26	0
R9	-36	0
R10	-∞	0

REPLACING THE BATTERY

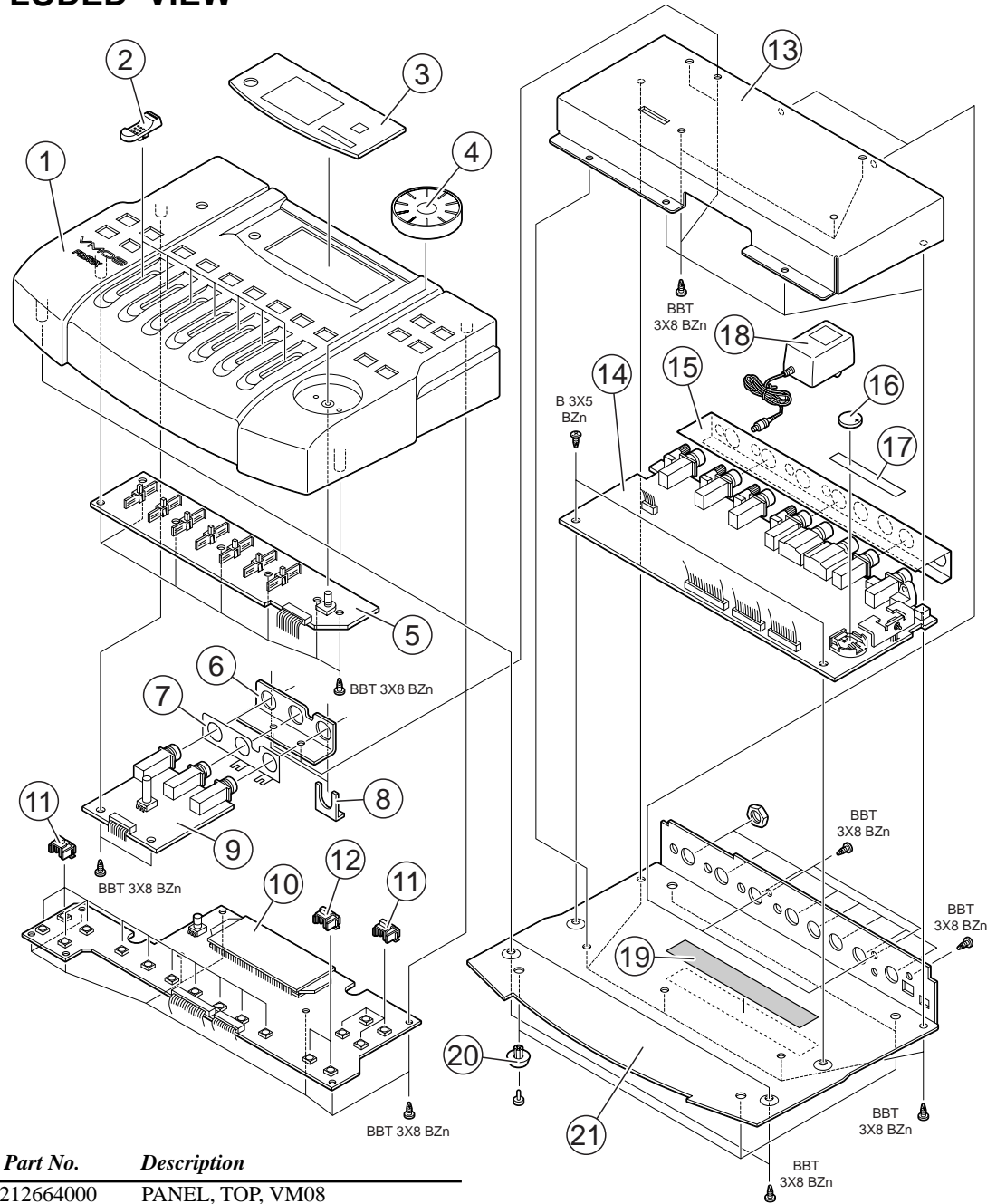
If the voltage of the internal memory backup battery falls below 2.2V, the message “BattEmpty” will appear when powering ON.

CAUTION

- Replacing the battery with the new one would basically initialize the backup data.
- In order to retain the backup data, please replace the battery while powering on.



4. EXPLODED VIEW

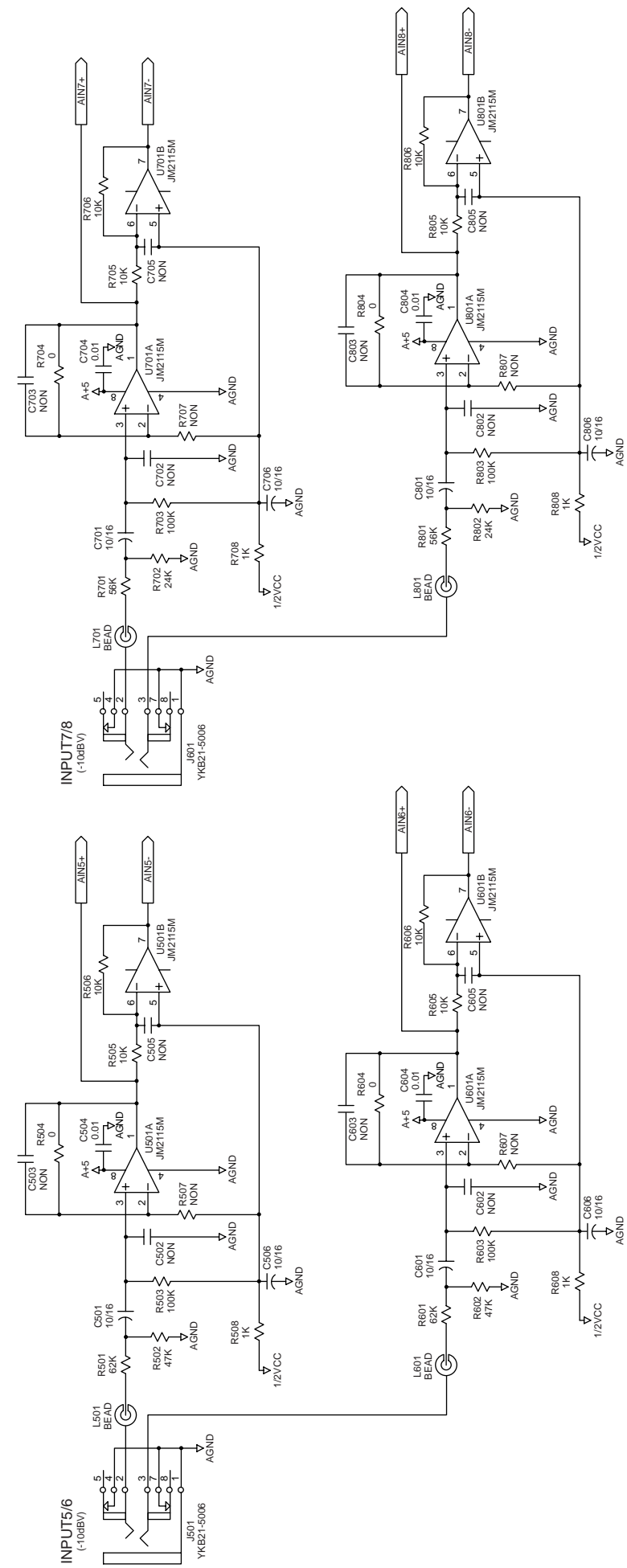


No.	Part No.	Description
1	8212664000	PANEL, TOP, VM08
2	8226239001	KNOB, FADER, N4.5
3	8212665000	WINDOW, LCD, VM08
4	8226238000	KNOB, JOG, FD-4/VM08
5	8274229000	PCB ASSY, FADER, VM08
6	8221301000	BRACKET, PHONES, VM08
7	8216731000	SHIELD, PHONES, VM08
8	8204082000	PLATE, MOUNTING, B
9	8274230000	PCB ASSY, PHONES, VM08
10	8274228000	PCB ASSY, DISPLAY, VM08
11	8226246001	BUTTON, 7X13, LED
12	8226246002	BUTTON, 7X13, N4.5
13	8221299000	SHIELD, MAIN, VM08
14	8274227000	PCB ASSY, MAIN, VM08
15	8216714000	SHIELD, EMI, VM08
16	8239120000	BATTERY, 3V, CR2032
17	8216699000	SHEET, BATTERY, VM04/VM08
18	8270818003	AC ADAPTOR, AD-9B/USA, CSA
	8270818006	AC ADAPTOR, AD-9B/EUR
	8270818007	AC ADAPTOR, AD-9B/UK
	8270818010	AC ADAPTOR, AD-9B/JPN
19	8216723000	SHEET, ISOLATION, VM08
20	8207012000	FOOT, FF-822
21	8221300000	PANEL, BOTTOM, VM08

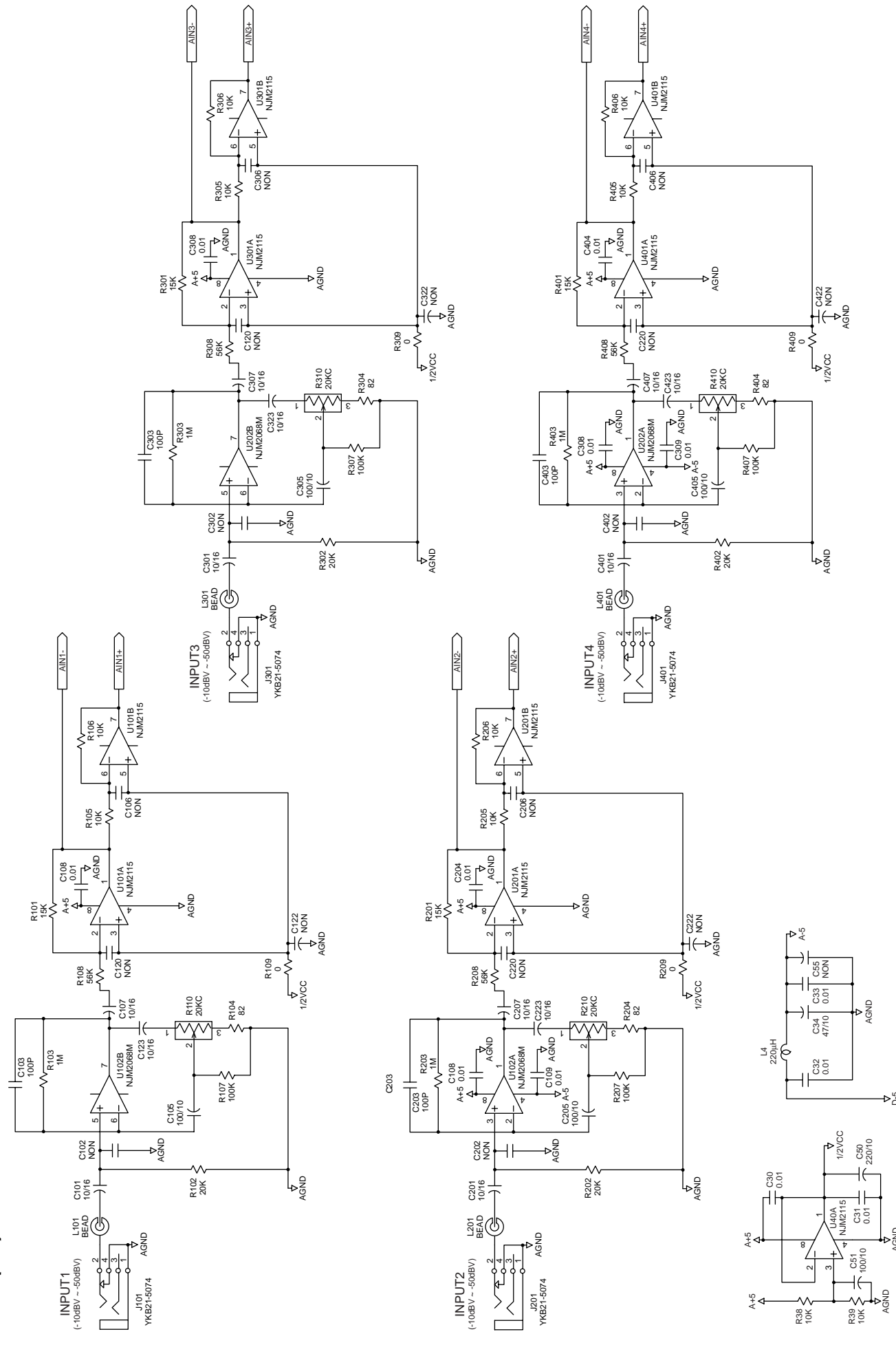
* Flat Cable Connections

- A, MAIN PCB : J2 <-> DISPLAY PCB : J251
CABLE, FLAT, FFC, 17P, L150 (P/N 8276839615)
- B, MAIN PCB : J3 <-> FADER PCB : J351
CABLE, FLAT, FFC, 17P, L200 (P/N 8276839620)
- C, MAIN PCB : J5 <-> DISPLAY PCB : J252
CABLE, FLAT, FFC, 25P, L150 (P/N 8276840415)
- D, MAIN PCB : J6 <-> PHONES PCB : J351
CABLE, FLAT, FFC, 8P, L150 (P/N 8276838715)

MAIN (8/9) : ANALOG IN 2



MAIN (719) : ANALOG IN 1



5. PARTS LIST
8274227000 PCB ASSY, MAIN, VM08

Ref. No.	Part No.	Description
ICs		
U001	8236541300	IC, ST, AN, DC-DC, NJM2360AM
U002	8236545014	IC, ST, TSSOP, 74VHC14
U003	8236502500	IC, ST, AN, RESET, NJM2103M
U004	8236086201	IC, QFP, DG, CPU, VM08, MN101C28DFA
U005	8236046701	IC, 220, AN, REGULATOR, TA78DM05S
U006	8236570801	IC, ST, DG, DRIVER, DTB114TK
U007, 008	8236570101	IC, ST, DG, DRIVER, DTC114EK
U009	8236545086	IC, ST, TSSOP, 74VHC86
U010	8236504900	IC, ST, DG, DIGITALOUT, TC9271F
U011	8236540301	IC, ST, AN, REGULATOR, L78M05T-TL
U020	8236541700	IC, ST, DG, ADDA, AK4522
U021~024	8236545000	IC, ST, TSSOP, 74VHC00
U025	8236545010	IC, ST, TSSOP, 74VHC10
U026	8236086100	IC, QFP, DG, DSP, AK7716
U030	8236086100	IC, QFP, DG, DSP, AK7716
U031	8236086100	IC, QFP, DG, DSP, AK7716
U032	8236084600	IC, TSOP, DG, SRAM, TC551001CFT-70L
U040	8236505011	IC, ST, AN, OPAMP, NJM2115M(TEI)
U101~801	8236505011	IC, ST, AN, OPAMP, NJM2115M(TEI)
U102, 202	8236540500	IC, ST, AN, NJM2068MD(TEI)
U110	8236541200	IC, ST, AN, OPAMP, NJM4565M
U111	8236570201	IC, ST, DG, DRIVER, DTC314TK
U212	8236570201	IC, ST, DG, DRIVER, DTC314TK
TRANSISTORS		
Q001, 002	8234100802	TR, VT, PNP, 2SA1150Y
DIODES		
D001, 002	8234019612	D, VT, DSK10C-ET1
D003	8234108400	D, VT, SCHOTTKY, EK03W
D004	8234019612	D, VT, DSK10C-ET1
D005	8234502100	D, ST, SCHOTTKY, SB05-05CP
D006, 007	8234502800	D, ST, DAN202K
D008	8234019612	D, VT, DSK10C-ET1
D009~011	8234502800	D, ST, DAN202K
RESISTORS		
R001~003	8230510473	RES, ST, CARBON, 1/15W, 47K, 5%
R004	8230510104	RES, ST, CARBON, 1/15W, 100K, 5%
R005	8230500109	RES, ST, CARBON, 1/10W, 1.5%
R006	8230510102	RES, ST, CARBON, 1/15W, 1K, 5%
R007	8230510302	RES, ST, CARBON, 1/15W, 3K, 5%
R008~015	8230510750	RES, ST, CARBON, 1/15W, 75, 5%
R016~019	8230510101	RES, ST, CARBON, 1/15W, 100, 5%
R020	8230510102	RES, ST, CARBON, 1/15W, 1K, 5%
R021~025	8230510103	RES, ST, CARBON, 1/15W, 10K, 5%
R026~028	non	non
R029	8230510103	RES, ST, CARBON, 1/15W, 10K, 5%
R030	8230510103	RES, ST, CARBON, 1/15W, 10K, 5%
R032	8230510103	RES, ST, CARBON, 1/15W, 10K, 5%
R033, 034	8230510102	RES, ST, CARBON, 1/15W, 1K, 5%
R035	8230510222	RES, ST, CARBON, 1/15W, 2.2K, 5%
R036	8230510124	RES, ST, CARBON, 1/15W, 120K, 5%
R037	8230510000	RES, ST, CARBON, 1/15W, 0, 5%
R038, 039	8230510103	RES, ST, CARBON, 1/15W, 10K, 5%
R040~049	8230510473	RES, ST, CARBON, 1/15W, 47K, 5%
R050~053	8230510473	RES, ST, CARBON, 1/15W, 47K, 5%
R054	8242505102	FILTER, ST, EMI, EXC3BB, 102
R055~059	8230510473	RES, ST, CARBON, 1/15W, 47K, 5%
R060~063	8230510331	RES, ST, CARBON, 1/15W, 330, 5%
R072	8230510101	RES, ST, CARBON, 1/15W, 100, 5%
R073	8230510100	RES, ST, CARBON, 1/15W, 10, 5%
R074~080	8230510101	RES, ST, CARBON, 1/15W, 100, 5%
R081	8230510100	RES, ST, CARBON, 1/15W, 10, 5%
R101~401	8230510153	RES, ST, CARBON, 1/15W, 15K, 5%
R102~402	8230510203	RES, ST, CARBON, 1/15W, 20K, 5%
R103~403	8230510105	RES, ST, CARBON, 1/15W, 1M, 5%
R104~404	8230510820	RES, ST, CARBON, 1/15W, 82, 5%
R105~405	8230510103	RES, ST, CARBON, 1/15W, 10K, 5%
R106~406	8230510103	RES, ST, CARBON, 1/15W, 10K, 5%
R107~407	8230510104	RES, ST, CARBON, 1/15W, 100K, 5%
R108~408	8230510563	RES, ST, CARBON, 1/15W, 56K, 5%
R109~409	8230510000	RES, ST, CARBON, 1/15W, 0, 5%
R110~410	8240293003	POT, PL, RT9, 20KC, EVU
R111, 211	8230510362	RES, ST, CARBON, 1/15W, 3.6K, 5%
R112, 212	8230510362	RES, ST, CARBON, 1/15W, 3.6K, 5%
R113, 213	8230510362	RES, ST, CARBON, 1/15W, 3.6K, 5%
R114, 214	8230510362	RES, ST, CARBON, 1/15W, 3.6K, 5%
R115, 215	8230510242	RES, ST, CARBON, 1/15W, 2.4K, 5%
R116, 216	8230510221	RES, ST, CARBON, 1/15W, 220, 5%
R117, 217	8230510221	RES, ST, CARBON, 1/15W, 220, 5%
R118, 218	8230510242	RES, ST, CARBON, 1/15W, 2.4K, 5%
R119, 219	8230510104	RES, ST, CARBON, 1/15W, 100K, 5%
R120, 220	8230510102	RES, ST, CARBON, 1/15W, 1K, 5%
R150~156	8230510101	RES, ST, CARBON, 1/15W, 100, 5%
R157~160	8230510331	RES, ST, CARBON, 1/15W, 330, 5%

RESISTORS

Ref. No.	Part No.	Description
R161	8230510100	RES, ST, CARBON, 1/15W, 10, 5%
R170	8230510100	RES, ST, CARBON, 1/15W, 10, 5%
R171~175	8230510101	RES, ST, CARBON, 1/15W, 100, 5%
R176~179	8230510331	RES, ST, CARBON, 1/15W, 330, 5%
R190	8230510100	RES, ST, CARBON, 1/15W, 10, 5%
R191~193	8230510101	RES, ST, CARBON, 1/15W, 100, 5%
R194~197	8230510331	RES, ST, CARBON, 1/15W, 330, 5%
R501, 601	8230510623	RES, ST, CARBON, 1/15W, 62K, 5%
R701, 801	8230510563	RES, ST, CARBON, 1/15W, 56K, 5%
R502, 602	8230510473	RES, ST, CARBON, 1/15W, 47K, 5%
R702, 802	8230510243	RES, ST, CARBON, 1/15W, 24K, 5%
R503~803	8230510104	RES, ST, CARBON, 1/15W, 100K, 5%
R504~804	8230510000	RES, ST, CARBON, 1/15W, 0, 5%
R505~805	8230510103	RES, ST, CARBON, 1/15W, 10K, 5%
R506~806	8230510103	RES, ST, CARBON, 1/15W, 10K, 5%
R507~807	non	non
R508~808	8230510102	RES, ST, CARBON, 1/15W, 1K, 5%

CAPACITORS

ALU = Electrolytic

CER = Ceramic type

Ref. No.	Part No.	Description
C001, 002	8233515104	CAP, ST, CER, 25V, 0.1µF, +80, CC11F
C003, 004	8233512300	CAP, ST, CER, 50V, 30pF, 5%, CC11SL
C005, 006	8233515104	CAP, ST, CER, 25V, 0.1µF, +80, CC11F
C007~010	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C011	8233513471	CAP, ST, CER, 50V, 470pF, 15%, CC11R
C012	8232143477	CAP, VT, ALU, 16V, 470µF, 20%, SME-VB
C013~016	8232142107	CAP, VT, ALU, 10V, 100µF, 20%, SME-VB
C017	8232363127	CAP, VT, ALU, 6.3V, 120µF, 20%, LXV, DS
C018, 019	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB
C020	8232146105	CAP, VT, ALU, 50V, 1µF, 20%, SME-VB
C021	8232143107	CAP, VT, ALU, 16V, 100µF, 20%, SME-VB
C022~028	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C029	8232142107	CAP, VT, ALU, 10V, 100µF, 20%, SME-VB
C030~033	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C034	8232142476	CAP, VT, ALU, 10V, 47µF, 20%, SME-VB
C035, 036	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C037	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB
C040, 041	non	non
C043	non	non
C050	8232142227	CAP, VT, ALU, 10V, 220µF, 20%, SME-VB
C051, 052	8232142107	CAP, VT, ALU, 10V, 100µF, 20%, SME-VB
C053	8232142477	CAP, VT, ALU, 10V, 470µF, 20%, SME-VB
C054, 055	non	non
C060, 061	8233513152	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C070	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C076, 077	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C081	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C083~086	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB
C090~095	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C101~401	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB
C102~402	non	non
C103~403	8233513101	CAP, ST, CER, 50V, 100pF, 15%, CC11R
C104~404	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C105~405	8232142107	CAP, VT, ALU, 10V, 100µF, 20%, SME-VB
C106~406	non	non
C107~407	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB
C108	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C109	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C111, 211	8232143476	CAP, VT, ALU, 16V, 47µF, 20%, SME-VB
C112, 212	8232143476	CAP, VT, ALU, 16V, 47µF, 20%, SME-VB
C113, 213	8233513682	CAP, ST, CER, 50V, 0.0068µF, 15%, CC11R
C114, 214	8233513682	CAP, ST, CER, 50V, 0.0068µF, 15%, CC11R
C115, 215	8233513821	CAP, ST, CER, 50V, 820pF, 15%, CC11R
C116, 216	8233513821	CAP, ST, CER, 50V, 820pF, 15%, CC11R
C117, 217	8232143226	CAP, VT, ALU, 16V, 22µF, 20%, SME-VB
C118	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C119	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C120~420	non	non
C121~421	non	non
C122~422	non	non
C123~423	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB
C150~154	8233515104	CAP, ST, CER, 25V, 0.1µF, +80, CC11F
C155, 156	8233512220	CAP, ST, CER, 50V, 22pF, 5%, CC11SL
C157~163	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C167~170	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB
C172, 173	8233513152	CAP, ST, CER, 50V, 0.015µF, 15%, CC11R
C180~184	8233515104	CAP, ST, CER, 25V, 0.1µF, +80, CC11F
C185~191	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C192~195	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB
C197, 198	8233513152	CAP, ST, CER, 50V, 0.015µF, 15%, CC11R
C250~254	8233515104	CAP, ST, CER, 25V, 0.1µF, +80, CC11F
C255~261	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C262~266	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB
C268, 269	8233513152	CAP, ST, CER, 50V, 0.015µF, 15%, CC11R
C270	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C308, 309	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C501~801	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB
C502~802	non	non
C503~803	non	non
C504~804	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C505~805	non	non
C506~806	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB

8274230000 PCB ASSY, PHONES, VM08

MISCELLANEOUS		
Ref. No.	Part No.	Description
B101	8251989201	PLAIN PCB, MAIN, VM08
B001	8239120000	BATTERY, 3V, CR2032
B102	8239121000	HOLDER, BATTERY, BCR20H4
J001	8245544000	CONN, JACK, DC INLET, YKB31-0014
J002, 003	8245272017	CONN, PI, JACK, FPC, 17P
J004	8245339004	CONN, PL, JACK, PHONE, YKB21-5074
J005	8245272025	CONN, PI, JACK, FPC, 25P
J006	8245272008	CONN, PI, JACK, FPC, 8P
J007	8245317000	CONN, OPT, TOTX178
J101~401	8245339004	CONN, PL, JACK, PHONE, YKB21-5074
J111	8245339004	CONN, PL, JACK, PHONE, YKB21-5074
J501, 601	8245339009	CONN, PL, JACK, PHONE, YKB21-5006
L001	8242196223	COIL, PVT, 22µH, 5%, LF5.0S
L002	8242214037	COIL, PVT, 220µH, 5%, LF7.5
L003	8242501121	FILTER, ST, EMI, 120, 25%, MMZ2012S
L004	8242214037	COIL, PVT, 220µH, 5%, LF7.5
L005	8242501102	FILTER, ST, EMI, 1K, 25%, MMZ2012S
L101~801	8242501121	FILTER, ST, EMI, 120, 25%, MMZ2012S
L111, 211	8242501121	FILTER, ST, EMI, 120, 25%, MMZ2012S
S001	8253469000	SW, PLT, TACT, SKHVLH
X001	8256171001	RESONATOR, PT, CER, 20.00MHz, KBR
X002	8256170001	RESONATOR, ST, XTL, 22.579MHz, FUP-FBB3A
Y1601	8245340000	NUT, PHONEJACK
Y1602	8221328000	HEATSINK, VM08

ICs		
Ref. No.	Part No.	Description
U210	8236541200	IC, ST, AN, OPAMP, NJM4565M
U410	8236046500	IC, ST, AN, OPAMP, NJM3414AMTE1
U411~414	8236570201	IC, ST, DG, DRIVER, DTC314TK

RESISTORS		
Ref. No.	Part No.	Description
R311, 411	8230510362	RES, ST, CARBON, 1/15W, 3.6K, 5%
R312, 412	8230510362	RES, ST, CARBON, 1/15W, 3.6K, 5%
R313, 413	8230510242	RES, ST, CARBON, 1/15W, 2.4K, 5%
R314, 414	8230510201	RES, ST, CARBON, 1/15W, 200, 5%
R315, 415	8230510201	RES, ST, CARBON, 1/15W, 200, 5%
R316, 416	8230510242	RES, ST, CARBON, 1/15W, 2.4K, 5%
R317, 417	8230510102	RES, ST, CARBON, 1/15W, 1K, 5%
R318, 418	8230510102	RES, ST, CARBON, 1/15W, 1K, 5%
R319, 419	8230510102	RES, ST, CARBON, 1/15W, 1K, 5%
R320, 420	8230510104	RES, ST, CARBON, 1/15W, 100K, 5%
R321, 421	8230510471	RES, ST, CARBON, 1/15W, 470, 5%
R322, 422	8230510472	RES, ST, CARBON, 1/15W, 4.7K, 5%
R323, 423	8230510100	RES, ST, CARBON, 1/15W, 10, 5%
R324, 424	8230510103	RES, ST, CARBON, 1/15W, 10K, 5%
R330	8230510103	RES, ST, CARBON, 1/15W, 10K, 5%
R331	8230510822	RES, ST, CARBON, 1/15W, 8.2K, 5%
R510	8240275004	POT, PI, RT9, 50KAA, KNOB, RK09K12C

CAPACITORS		
Ref. No.	Part No.	Description
C311, 411	8232143476	CAP, VT, ALU, 16V, 47µF, 20%, SME-VB
C312, 412	8232143476	CAP, VT, ALU, 16V, 47µF, 20%, SME-VB
C313, 413	8233513682	CAP, ST, CER, 50V, 0.0068µF, 15%, CC11R
C314, 414	8233513682	CAP, ST, CER, 50V, 0.0068µF, 15%, CC11R
C315, 415	8233513821	CAP, ST, CER, 50V, 820pF, 15%, CC11R
C316, 416	8233513821	CAP, ST, CER, 50V, 820pF, 15%, CC11R
C317, 417	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB
C318	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C319, 419	8232143106	CAP, VT, ALU, 16V, 10µF, 20%, SME-VB
C320, 420	8232142107	CAP, VT, ALU, 10V, 100µF, 20%, SME-VB non
C321, 421	non	non
C322, 422	8233512100	CAP, ST, CER, 50V, 10pF, 5%, CC11SL
C323, 423	8232142227	CAP, VT, ALU, 10V, 220µF, 20%, SME-VB
C324	8232142107	CAP, VT, ALU, 10V, 100µF, 20%, SME-VB
C325	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C326	non	non
C327, 427	non	non
C328	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C330	8233513103	CAP, ST, CER, 50V, 0.01µF, 15%, CC11R
C331	8232142107	CAP, VT, ALU, 10V, 100µF, 20%, SME-VB

MISCELLANEOUS		
Ref. No.	Part No.	Description
B104	8251989004	PLAIN PCB, PHONES, VM08
J411~413	8245339004	CONN, PL, JACK, PHONE, YKB21-5074
J451	8245272108	CONN, PL, JACK, FPC, 8P
L411~414	8242501121	FILTER, ST, EMI, 120, 25%, MMZ2012S

8274229000 PCB ASSY, FADER, VM08

RESISTORS		
Ref. No.	Part No.	Description
R251~255	8230510102	RES, ST, CARBON, 1/15W, 1K, 5%
R256	8230510224	RES, ST, CARBON, 1/15W, 220K, 5%
R257	8230510302	RES, ST, CARBON, 1/15W, 3K, 5%
R260	8240151005	POT, PI, RT9, 5KB, L20, KNOB, RK09K113 non
R261~270	8230510000	RES, ST, CARBON, 1/15W, 0, 5% non
R271	non	non
R272, 273	non	non

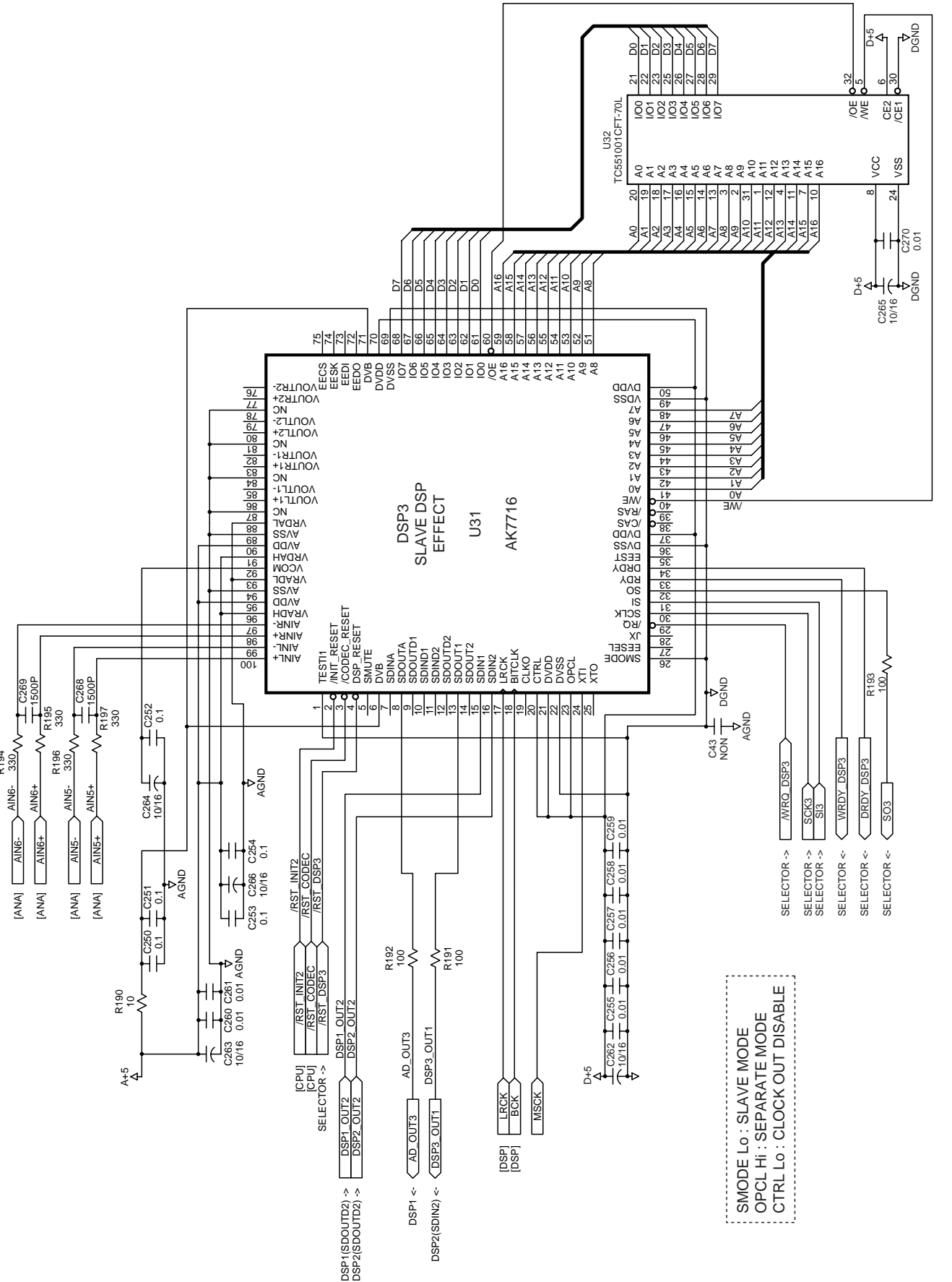
ICs		
Ref. No.	Part No.	Description
U351	8253466000	SW, PI, ENCODER, EC12E24404

RESISTORS		
Ref. No.	Part No.	Description
R351~357	8240274005	POT, PI, SL30, 10KB, RS30H111

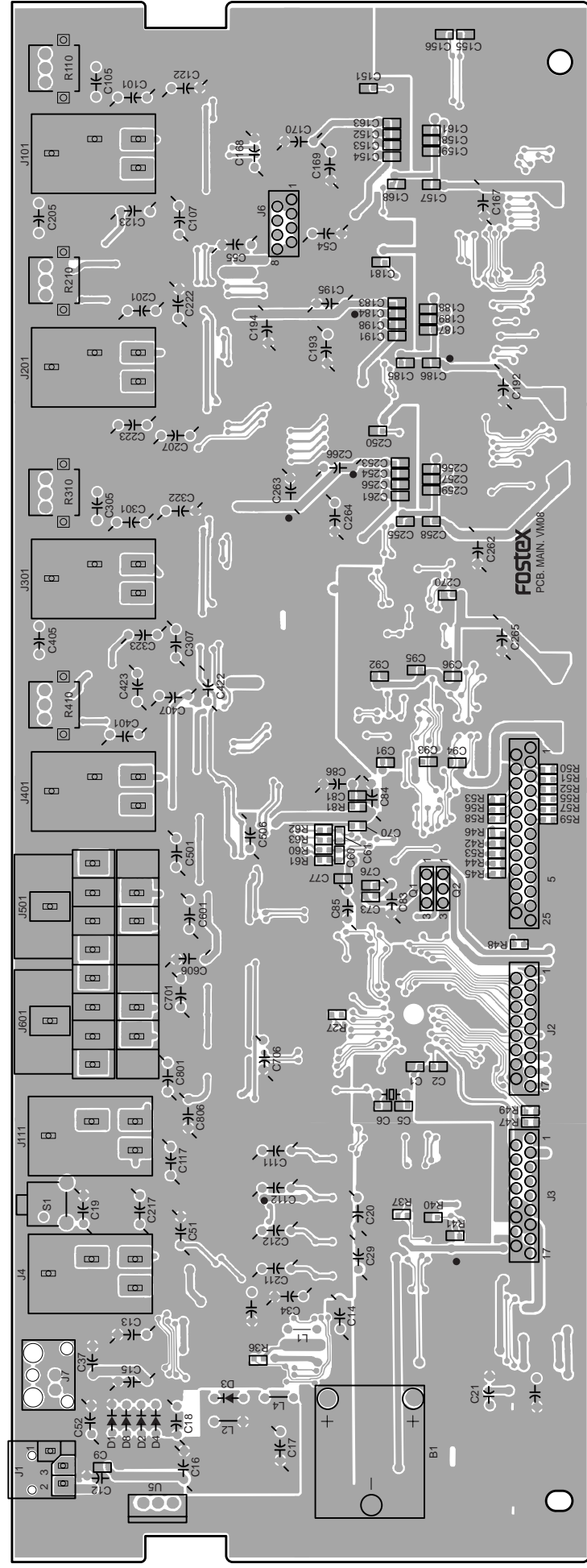
MISCELLANEOUS		
Ref. No.	Part No.	Description
B103	8251989004	PLAIN PCB, FADER, VM08
J351	8245272117	CONN, PL, JACK, FPC, 17P

MISCELLANEOUS		
Ref. No.	Part No.	Description
B102	8251989202	PLAIN PCB, DISPLAY, VM08
J251	8245272117	CONN, PL, JACK, FPC, 17P
J252	8245272125	CONN, PL, JACK, FPC, 25P
L201, 202	8239116000	LAMP, 5V, 75MA
S201~217	8253135002	SW, PT, TACT, SKQNA8
W201	8276629010	CABLE ASSY, 5395-5395, 2P, 100
Y101	8212611000	PLATE, REFLECT, LCD, FD-4
Y102	8216705000	SHEET, LCD, A, VR800
Y103	8216706000	SHEET, LCD, B, VR800

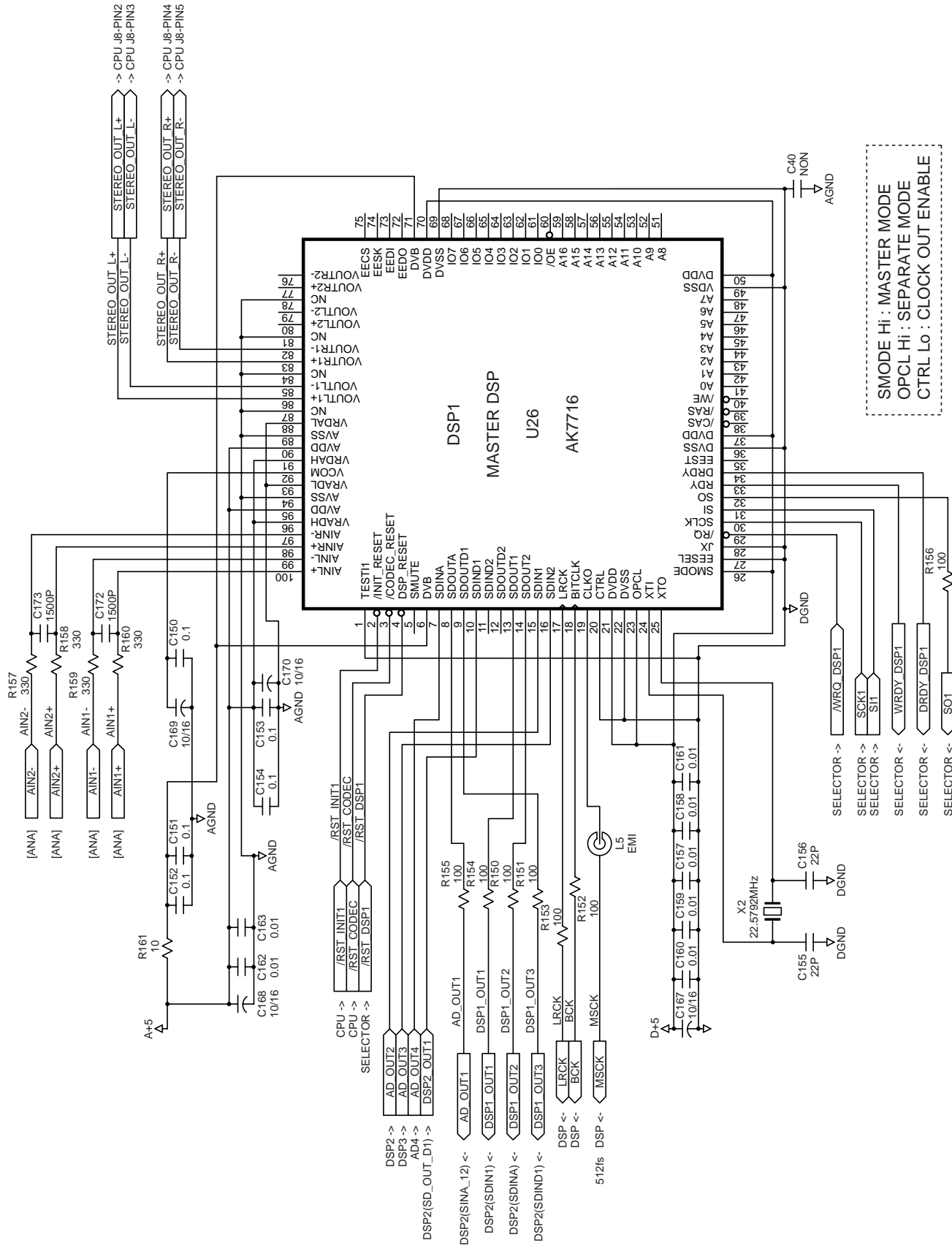
MAIN (6/9) : DSP 3



MAIN PCB (Foil Side)

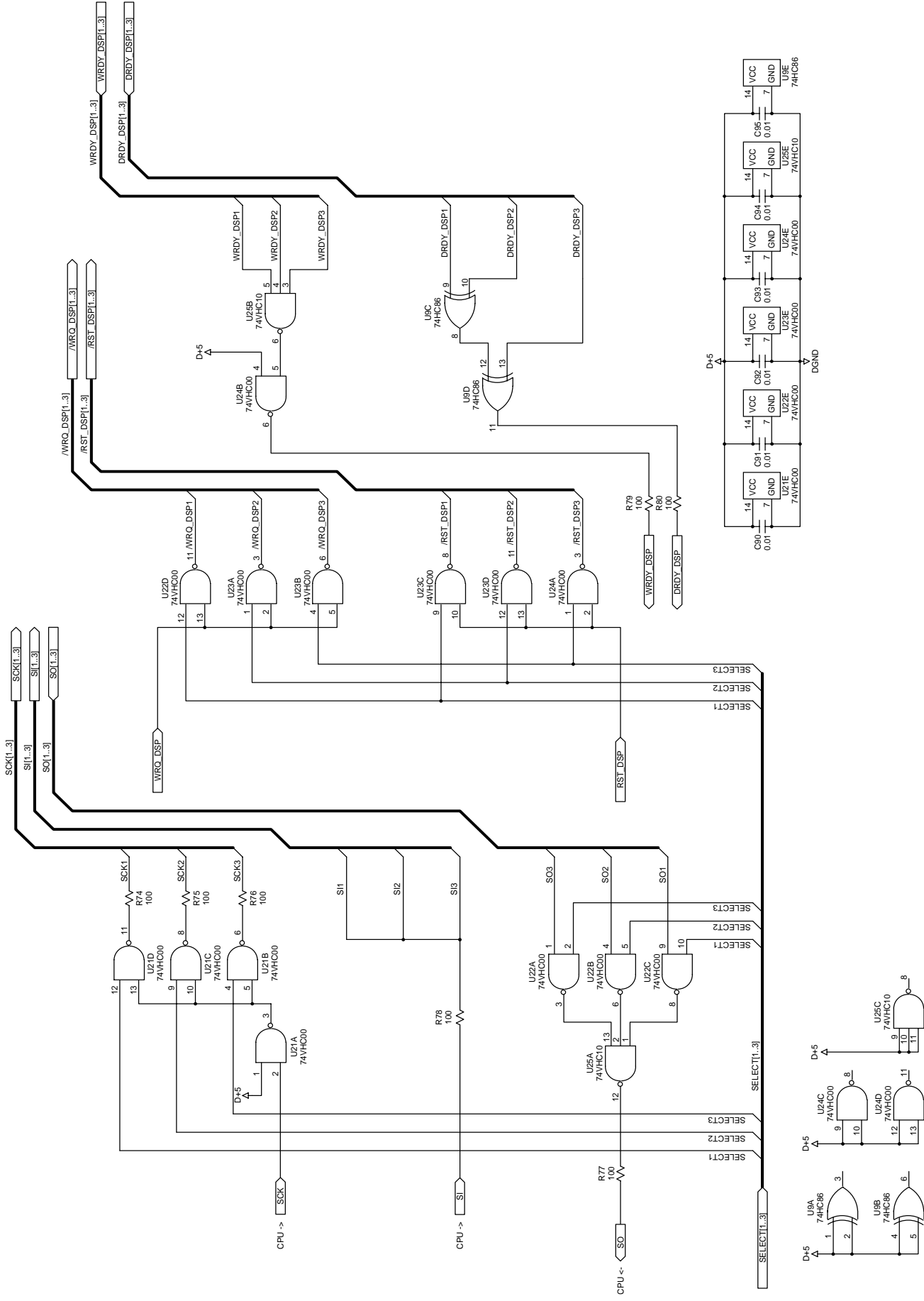


MAIN (4/9) : DSP 1

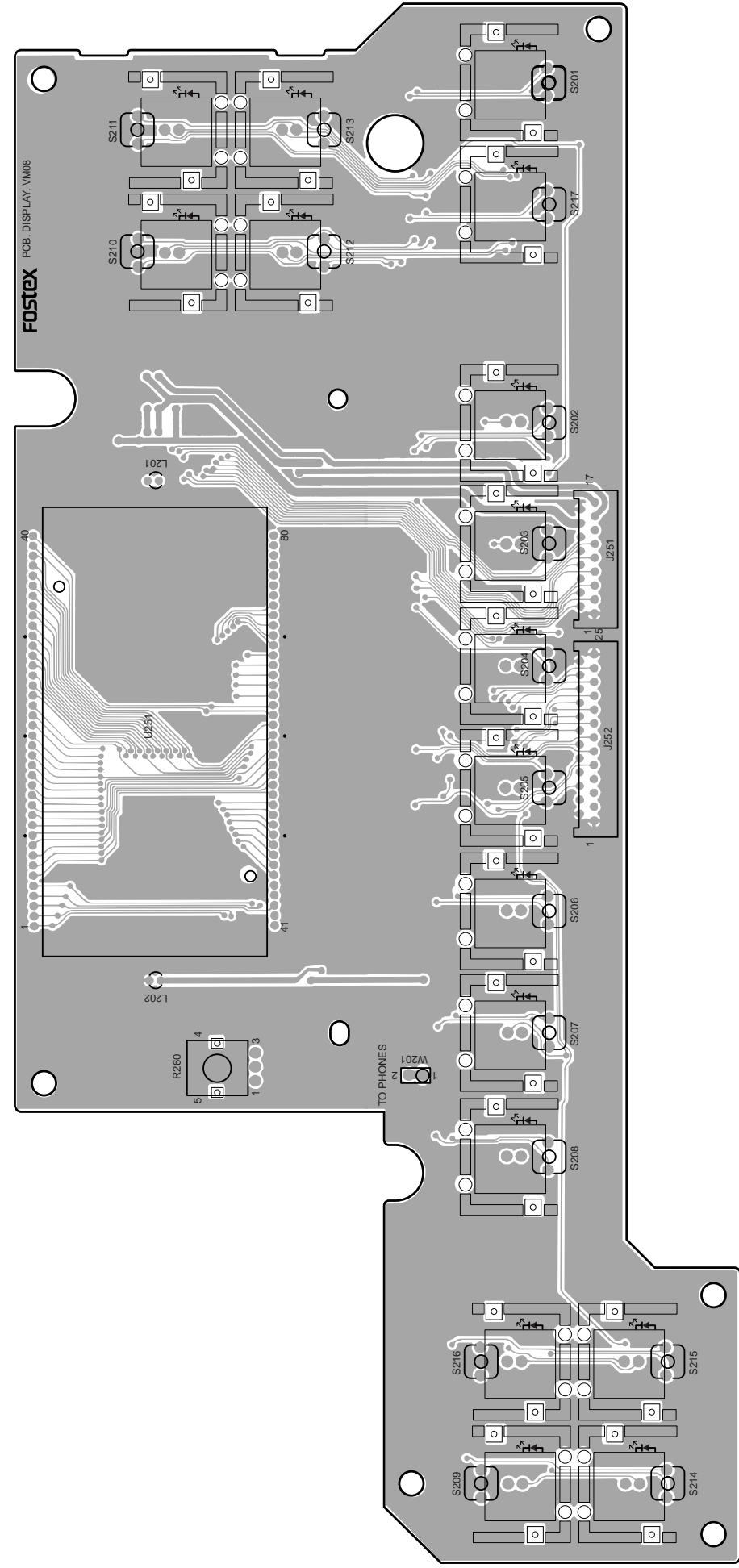


SMODE Hi : MASTER MODE
 OPCL Hi : SEPARATE MODE
 CTRL Lo : CLOCK OUT ENABLE

MAIN (3/9) : SELECTOR

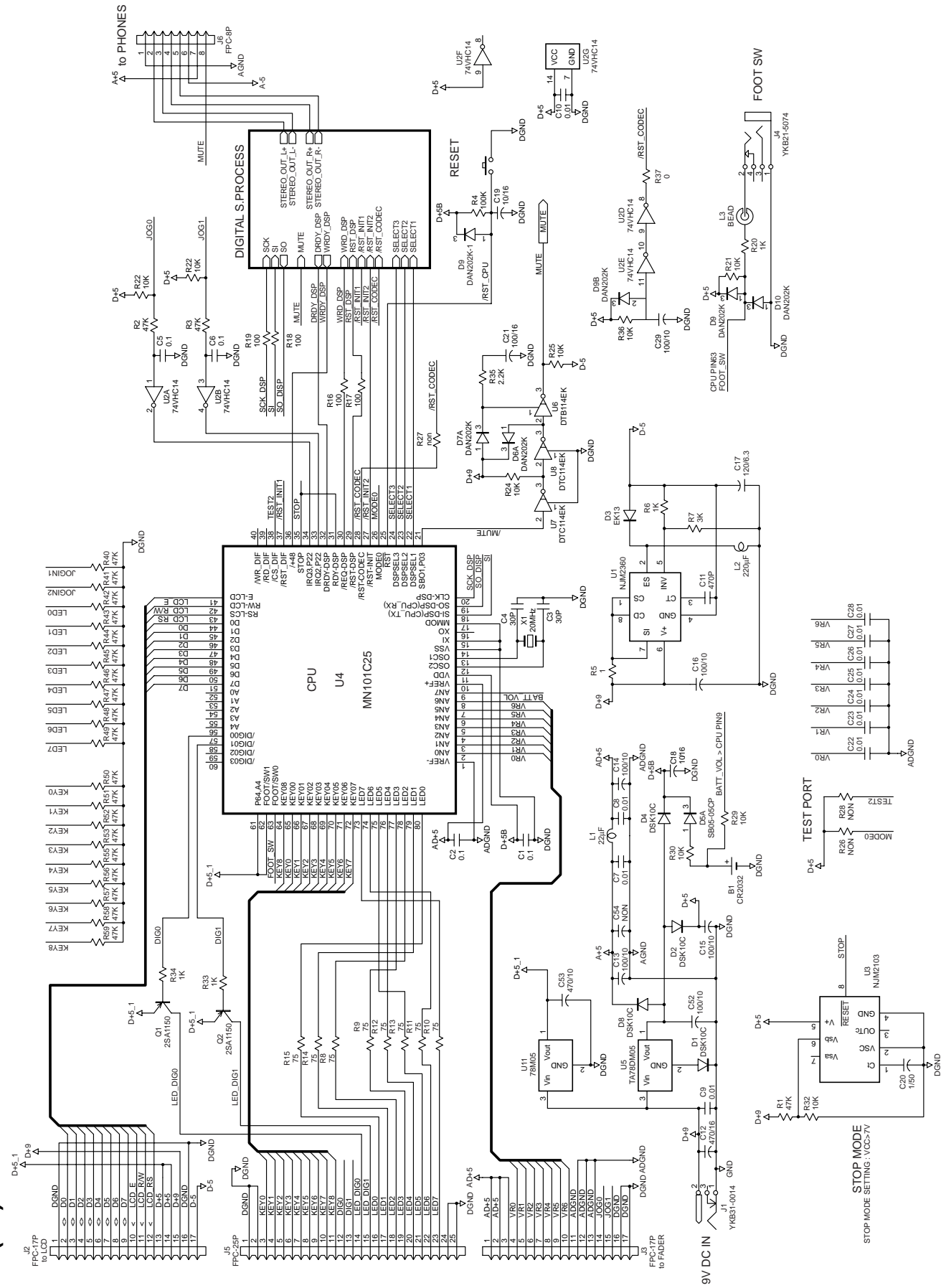


DISPLAY PCB (Parts Side)

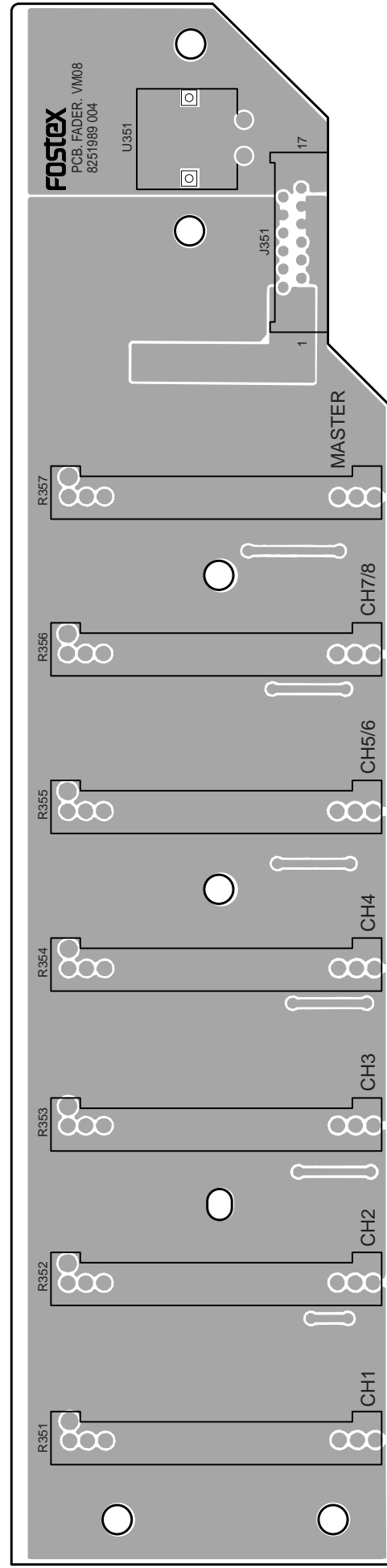


7. CIRCUIT DIAGRAMS

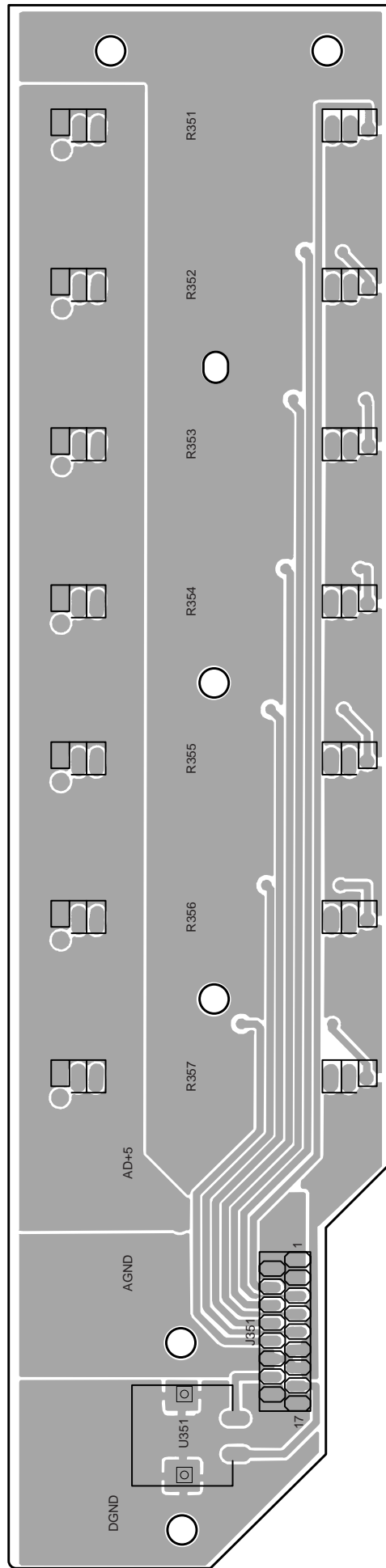
MAIN (1/9) : CPU



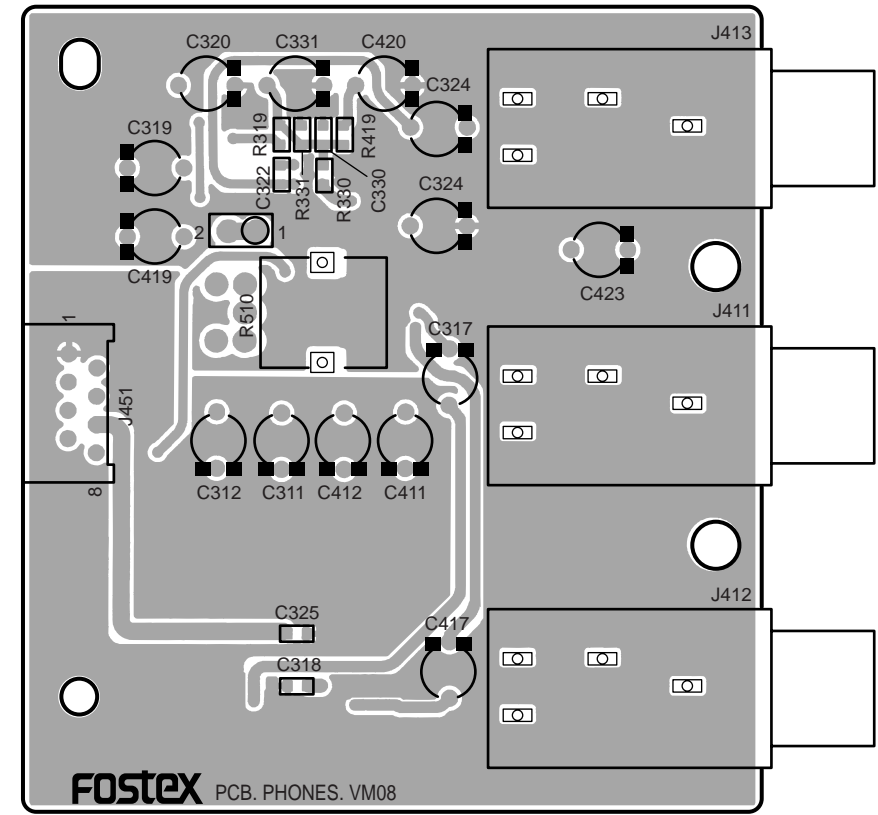
FADER PCB (Parts Side)



FADER PCB (Foil Side)



PHONES PCB (Parts Side)



PHONES PCB (Foil Side)

