
Service Manual

Model

VM200

DIGITAL RECORDING MIXER

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 CORRE-
SPONDANTE 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 MOIS-
TURE."

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.



An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

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NOTES

* Service mode, error code list, exploded view, PCB assembly, parts list and circuit diagrams are given in this manual to assist the service technician in maintaining the Model VM200.


* The following accessories are supplied with VM200 as the standard accessories.

Owner's manual	: 8288433100 (for export model)
	: 8288434100 (for domestic model)
Owner's manual supplement	: 8288671000 (for export model)

* Following is the packing material for the Model VM200.

Carton, inner, VM200	: 8228728000
Carton, outer, VM200	: 8228907000
Packing, side, L, VM200	: 8228453001
Packing, side, R, VM200	: 8228453002
Sheet, power cable	: 8228462000

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
Standard Input (Impedance)	
MIC	-60 dBV, -34 dBV (3 kΩ or more)
LINE	-10 dBV (10 kΩ or more)
INSERT	-10 dBV (20 kΩ or more)
2TRACK IN	-10 dBV (10 kΩ or more)
EFFECT RETURN	At 70 ~ 90 % position
DATA OUT	
S/P DIF IN	IEC 60958 (S/P DIF)
ADAT IN	Alesis Proprietary Multi Channel Digital Interface
Standard Output (Impedance)	
STEREO	-10 dBV (10 kΩ load or more)
MONITOR	-10 dBV (10 kΩ load or more)
AUX	-10 dBV (10 kΩ load or more)
REC BUSS	-10 dBV (10 kΩ load or more)
HEADPHONE	50 mW or more (33 Ω load)

STANDARD FADER POSITION

STEREO BUSS	Set the INPUT / MASTER faders at “0” position when -10 dBV / 1 kHz signal is fed to the INPUT (INSERT) jack (TRIM: MIN, PAN: L (R), EQ: OFF).
MONITOR	Set the MONITOR VR so that -10 dBV output is obtained at MONITOR OUT when -10 dBV / 1 kHz signal is fed to the INPUT (INSERT) jack.

OUTPUT LEVEL

INPUT (1 ~ 8) → STEREO	-10 dBV +2, -1 dB (Standard fader position)
INPUT (1 ~ 8) → MONITOR	-10 dBV +2, -1 dB (Standard fader position)

FREQUENCY RESPONSE

INPUT → MONITOR OUT	
Input: -60 dBV	20 ~ 20 kHz +1, -3 dB
Input: -10 dBV	20 ~ 20 kHz +1, -3 dB
INPUT → STEREO OUT	
Output: -10 dBV	20 ~ 20 kHz +1, -3 dB
INPUT → PHONES	
Output: 50 mW / 33 Ω	50 ~ 20 kHz +1, -3 dB

EQUALIZER

HI / HI MID / LOW MID / LOW	
+18	+18 dB ± 3 dB
-18	-18 dB ± 3 dB

S/N

Residual Noise	
AUX 1 ~ 4 → ST BUSS OUT	-88 dBV or less (All input / master faders: MIN) -75 dBV or less (All input / master faders: At 0 dB)
MIC → INSERT	-68 dBV or less (GAIN: MAX, PAD: OFF, Rs: 150Ω)
MONITOR OUT (VR: MIN)	-100 dBV or less
PHONES	-95 dBV or less (VR: MIN)

S/N**CH IN → AUX 1 ~ 4, ST BUSS OUT**

1 ~ 4 Ch (-4 dBV)	87 dBV or more (4 ChΣ: 82 dB or more)
1 ~ 4 Ch (-48 dBV)	70 dBV or more (4 ChΣ: 62 dB or more)
5 ~ 8 Ch (-4 dBV)	87 dBV or more (4 ChΣ: 82 dB or more)
5 ~ 8 Ch (-38 dBV)	76 dBV or more (4 ChΣ: 72 dB or more)

THD

CH IN → ST BUSS OUT	0.08 % or less (0 dBV output)
LINE IN → PHONES OUT	0.1 % or less (50 mW / 33 Ω output)

DYNAMIC RANGE

LINE IN → ST BUSS OUT	90 dB or more
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CROSSTALK

68 dB or more (1 kHz)

CLICK NOISE

Power On / Off	-20 dBVp-p or less
Other switching (except +48 V SW)	-30 dBVp-p or less

MIDI

Operation check by Test Mode when connecting MIDI IN and OUT

WORD

Operation check by Test Mode when connecting WORD IN and OUT

ADAT

Operation check by Test Mode when connecting ADAT IN and OUT

S/P DIF

Operation check by Test Mode when connecting S/P DIF IN and OUT

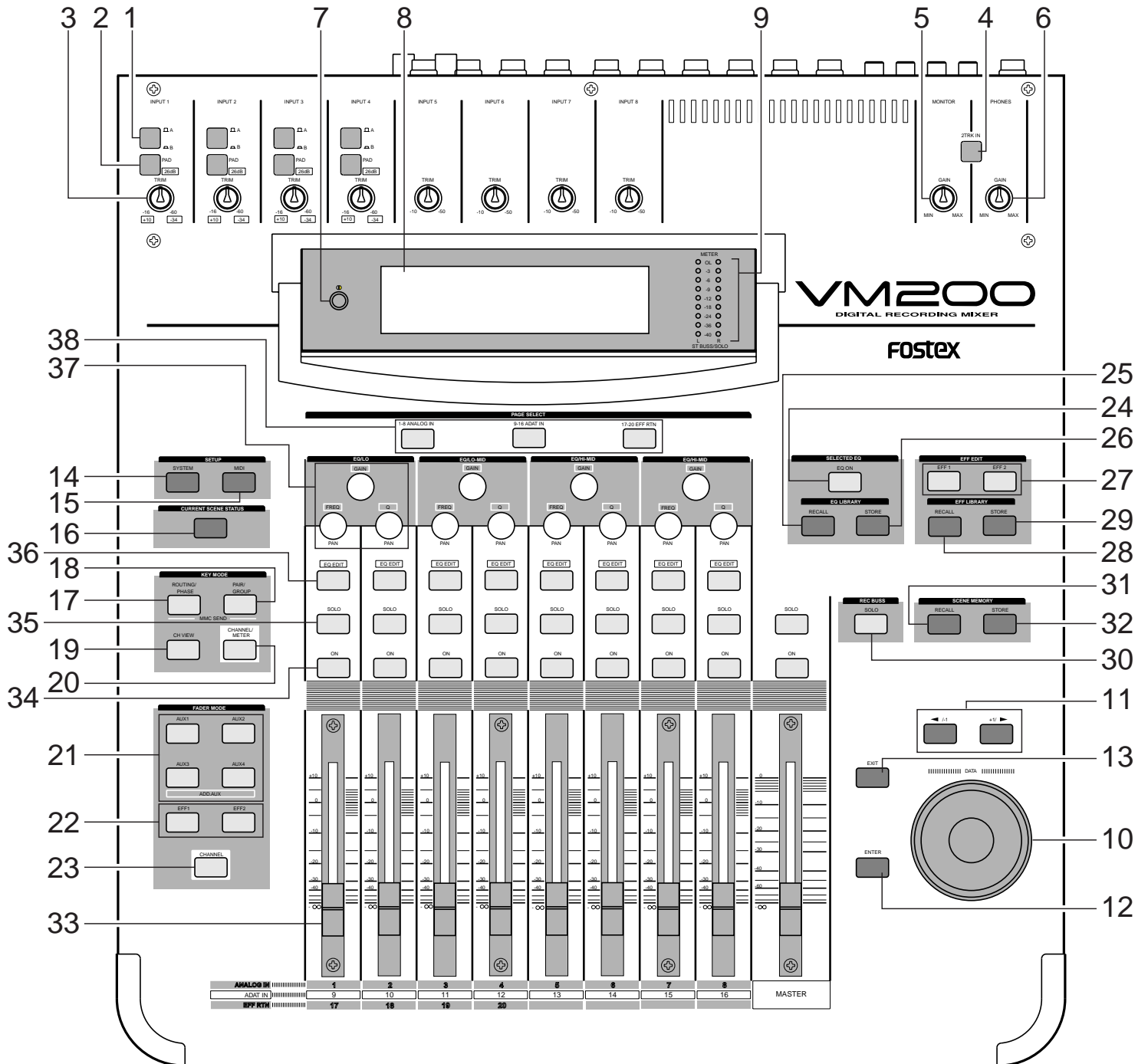
POWER CONSUMPTION

30 W

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

2. CONTROLS, INDICATORS & CONNECTORS

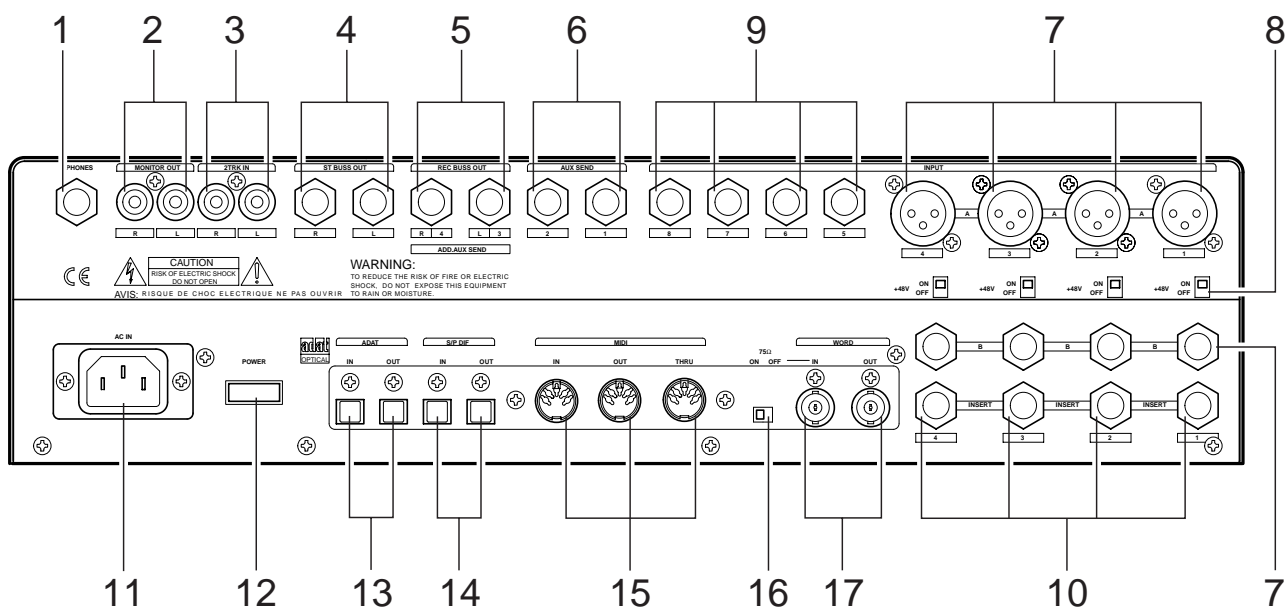
< TOP PANEL >



- | | |
|---|---|
| 1. A/B Input Selectors [<input type="checkbox"/> A / <input type="checkbox"/> B] | 9. Meters [METER, ST BUSS/SOLO] |
| 2. PAD (26dB) switches [PAD/26dB] | 10. Data wheel [DATA] |
| 3. TRIM control [TRIM] | 11. ◀/-1 and +1/▶ keys |
| 4. 2 TRK IN switch [2TRK IN] | 12. ENTER key [ENTER] |
| 5. Monitor Gain knob [MONITOR GAIN] | 13. EXIT key [EXIT] |
| 6. Phones Gain knob [PHONES GAIN] | 14. SYSTEM key [SYSTEM] |
| 7. Contrast dial | 15. MIDI key [MIDI] |
| 8. LCD Display | 16. Current Scene Status key [CURRENT SCENE STATUS] |

17. ROUTING/PHASE key [ROUTING/PHASE]
18. PAIR/GROUP key [PAIR/GROUP]
19. CH VIEW key [CH VIEW]
20. CHANNEL/METER key [CHANNEL/METER]
21. AUX1~ 4 keys [AUX1, AUX2, AUX3, AUX4]
22. EFF1 ~ 2 key [EFF1, EFF2]
23. CHANNEL key [CHANNEL]
24. EQ ON key [EQ ON]
25. EQ LIBRARY RECALL key [RECALL]
26. EQ LIBRARY STORE key [STORE]
27. EFF1 ~ 2 keys [EFF1, EFF2]
28. EFF LIBRARY RECALL key [RECALL]
29. EFF LIBRARY STORE key [STORE]
30. REC BUSS SOLO key [SOLO]
31. SCENE MEMORY RECALL key [RECALL]
32. SCENE MEMORY STORE key [STORE]
33. Faders
34. ON key [ON]
35. SOLO key [SOLO]
36. EQ EDIT key [EQ EDIT]
37. EQ Section Rotary Controls [GAIN, **FREQ**/PAN, **Q**/PAN]
38. Page Select keys [1-8 ANALOG IN, 9-16 ADAT IN, 17-20 EFF RTN]

< REAR PANEL >



1. PHONES [PHONES] (Phone jack)
2. MONITOR OUT [MONITOR OUT] (RCA jack)
3. 2 TRK IN [2TRK IN] (RCA jack)
4. ST BUSS OUT [ST BUSS OUT] (Phone jack)
5. REC BUSS OUT [REC BUSS OUT] (Phone jack)
6. AUX SEND [AUX SEND] (Phone jack)
7. Inputs 1 ~ 4: A, B [A, B] (A: XLR, B: Stereo phone jack)
8. +48V Phantom Power [+48V ON/OFF]
9. Inputs 5 ~ 8 (Phone jack)
10. Inserts 1 ~ 4 [INSERT] (Stereo phone jack)
11. AC Inlet [AC IN]
12. Power switch [POWER]
13. ADAT IN & OUT [ADAT IN/OUT] (Optical)
14. S/P DIF IN & OUT [S/P DIF IN/OUT] (Optical)
15. MIDI In/Out/Thru [MIDI IN/OUT/THRU] (MIDI)
16. 75Ω On/Off switch [75Ω ON/OFF]
17. WORD IN/OUT [WORD IN/OUT] (BNC)

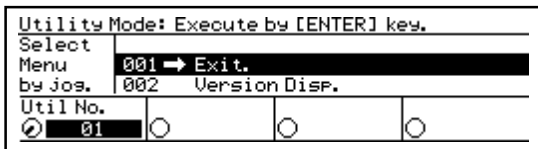
3. SOFTWARE UPDATE

3-1. Preparation

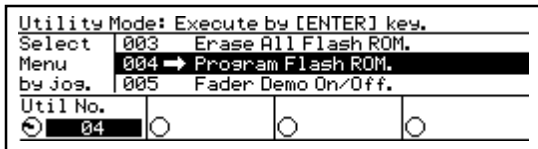
In order to update the VM200 software, the ROM CARD PCB (P/N: 8274219000) must be required. Mount the updated software (2 pcs. EPROMs) into the EPROM sockets (U1 and U2) on the PCB. When updating the software, make sure that the switch SW1 on the ROM CARD PCB is set to “EPROM” side.

3-2. Procedures

- 1) Loosen 4 x screws (BBT3 x 8 BZn) and remove 2 pcs. ROM Cover (P/N: 8221142000) on the VM200 bottom panel.
- 2) Plug the ROM CARD PCB into the J18 connector on the MAIN PCB Assy. When plugging the ROM CARD PCB, check if the EPROMs are facing the bottom side.
- 3) Turn on the power of VM200. On condition that the ROM CARD PCB is correctly plugged in, the LCD display indicates the following.



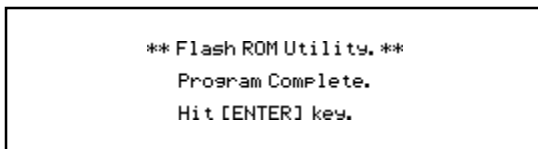
Turn the data wheel and select the menu “004 → Program_Flash_ROM”.



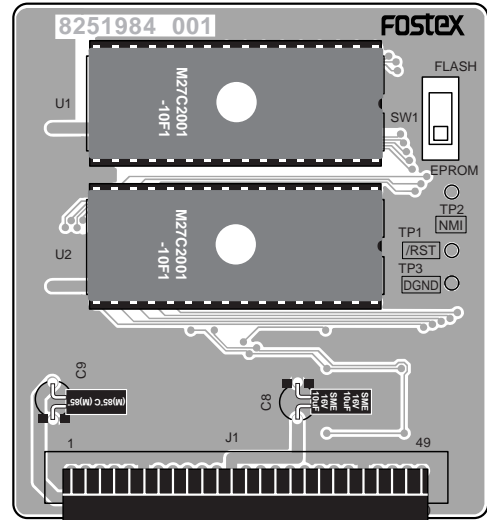
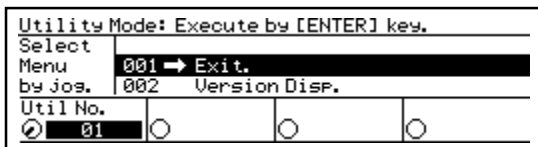
- 4) Press the ENTER key. The VM200 starts transferring the program data from the EPROM into the flash ROM on the MAIN PCB. The following is the LCD display while updating the software inside the flash ROM.



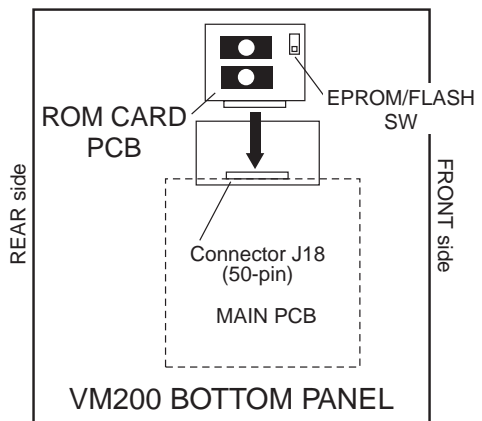
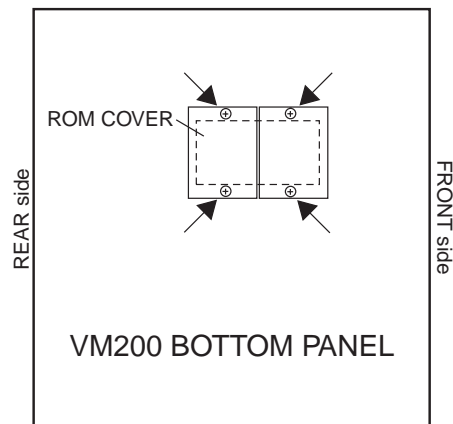
After transferring the software is completed, the following is displayed on the LCD display.



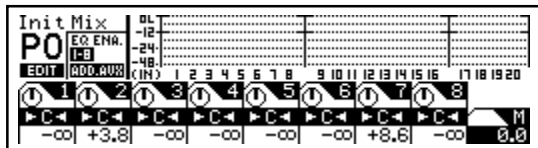
- 5) Press the ENTER key. The following is displayed on the LCD display.



ROM CARD PCB TOP VIEW



6) Press either the ENTER or EXIT key. The VM200 returns to the initial mix mode display.



7) Once turn off the power of VM200 and disconnect the ROM CARD PCB. Then, turn the power back on again. Next, put the VM200 into the Utility Mode by pressing the EXIT key while holding down the ◀/-1 and +1/▶ keys. Then, select the menu “002 ➡ Version_Disp.”



8) Press the ENTER key. Confirm that the flash ROM is correctly updated. The LCD display below indicates that the software version number is “V01.02” and its programming date is “990621 (June 21, 1999)”.



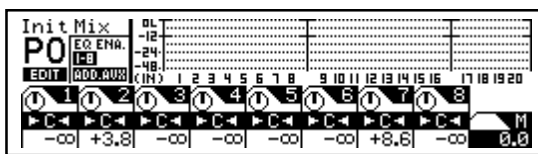
4. UTILITY MODE

There are various Utility Modes available in the VM200. Please utilize them when servicing the unit.

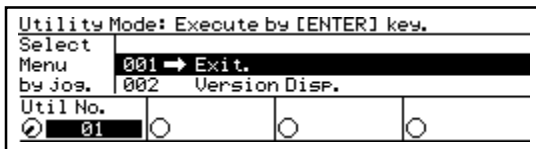
4-1. Putting VM200 into Utility Mode

The way of putting the VM200 into Utility Mode is as follow.

1) Turn on the power of VM200. The normal Init Mix display appears after the Fostex and VM200 banner scroll.



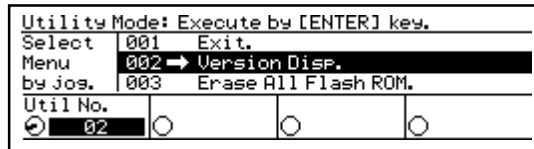
2) While holding down the EXIT key, press the ◀/-1 and +1/▶ keys. If the VM200 is correctly put into the Utility Mode, the following appears on the LCD display.



Rotate the data wheel to select a desired Utility Mode and press the ENTER key to execute. To exit from the Utility Mode, press either the ENTER or EXIT key in the above display condition.

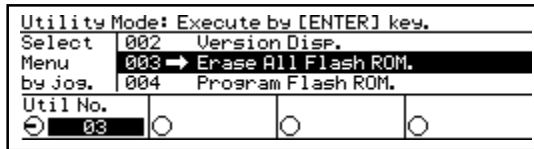
4-2. 002 Version Disp.

Please refer to the section “3-2. Procedures 7) and 8)” on page 9.



4-3. 003 Erase All Flash ROM.

This mode is prepared in case wrong data is somehow programmed into the Flash ROM. Please remember that the ROM CARD PCB must be plugged into the J18 (50-pin) connector on the MAIN PCB, so that all the data in the Flash ROM can be erased.

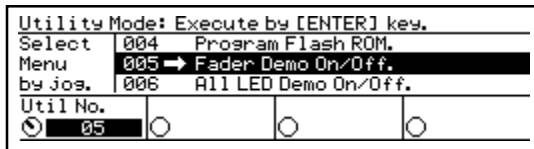


4-4. 004 Program Flash ROM.

Please refer to the section “3. SOFTWARE UPDATE” on page 8 ~ 9.

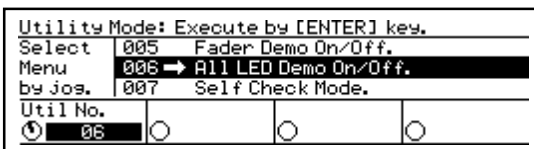
4-5. 005 Fader Demo On/Off.

This Utility Mode is prepared to demonstrate the movement of 9 motorized faders. By turning on this mode (pressing the ENTER key), these faders start moving in the shape of sine wave. The LCD display returns to the initial mix display by pressing the EXIT key while the faders are moving. To quit, press the ENTER key again when the “005 → Fader Demo On/Off.” is selected.



4-6. 006 All LED Demo On/Off.

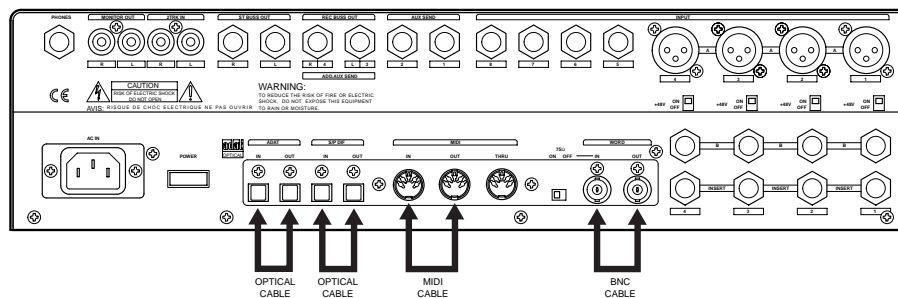
This Utility Mode checks if all the self-illuminating switches on the top panel as well as the LEDs used for stereo buss/solo meters are correctly working. To turn them on, press the ENTER key. To turn off, press the ENTER key again.



4-7. 007 Self Check Mode.

Before putting the VM200 into the Self Check Mode, connect the following terminal.

MIDI IN ↔ OUT
 S/P DIF IN ↔ OUT
 ADAT IN ↔ OUT
 WORD IN ↔ OUT



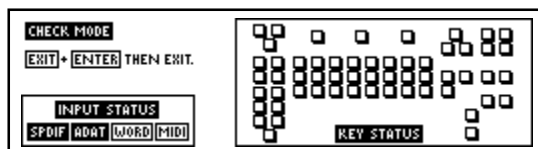
This mode checks the following points.

- Input status of MIDI , S/P DIF, ADAT and WORD circuitry.

If the above mentioned cable is not properly connected or something is wrong with a circuitry, indicators are light empty. Otherwise, indicators are highlighted, which means that the circuitry is working correctly. The drawing below indicates that the S/P DIF and ADAT circuitry are working correctly but something is wrong on the WORD and MIDI circuitry or the cable is not properly connected.

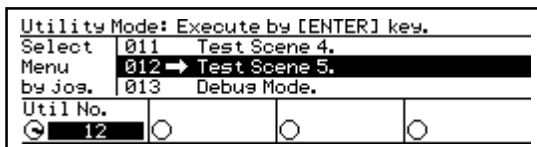
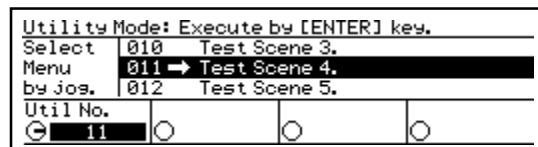
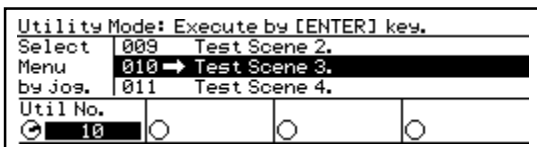
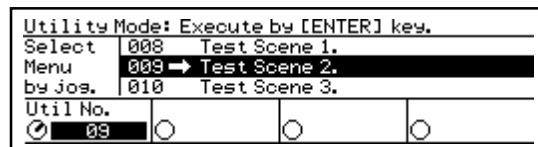
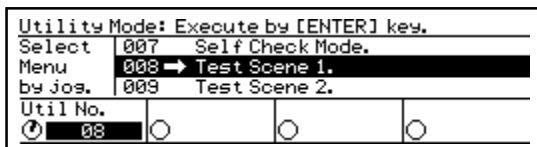
- Self-illuminating switches on the top panel

When pushing the key on the top panel, the corresponding square icon turns highlighted. If not, switch is not working correctly.



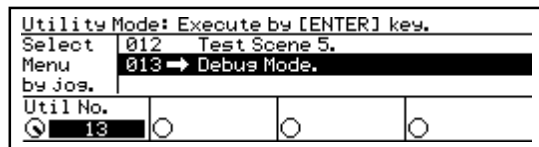
4-8. 008 ~ 012 Test Scene 1 ~ 5.

The Test Scenes 1 ~ 5 have nothing to do with servicing the VM200. This is exclusively designed for production purpose.



4-9. 0013 Debug Mode.

This mode has nothing to do with servicing the VM200.

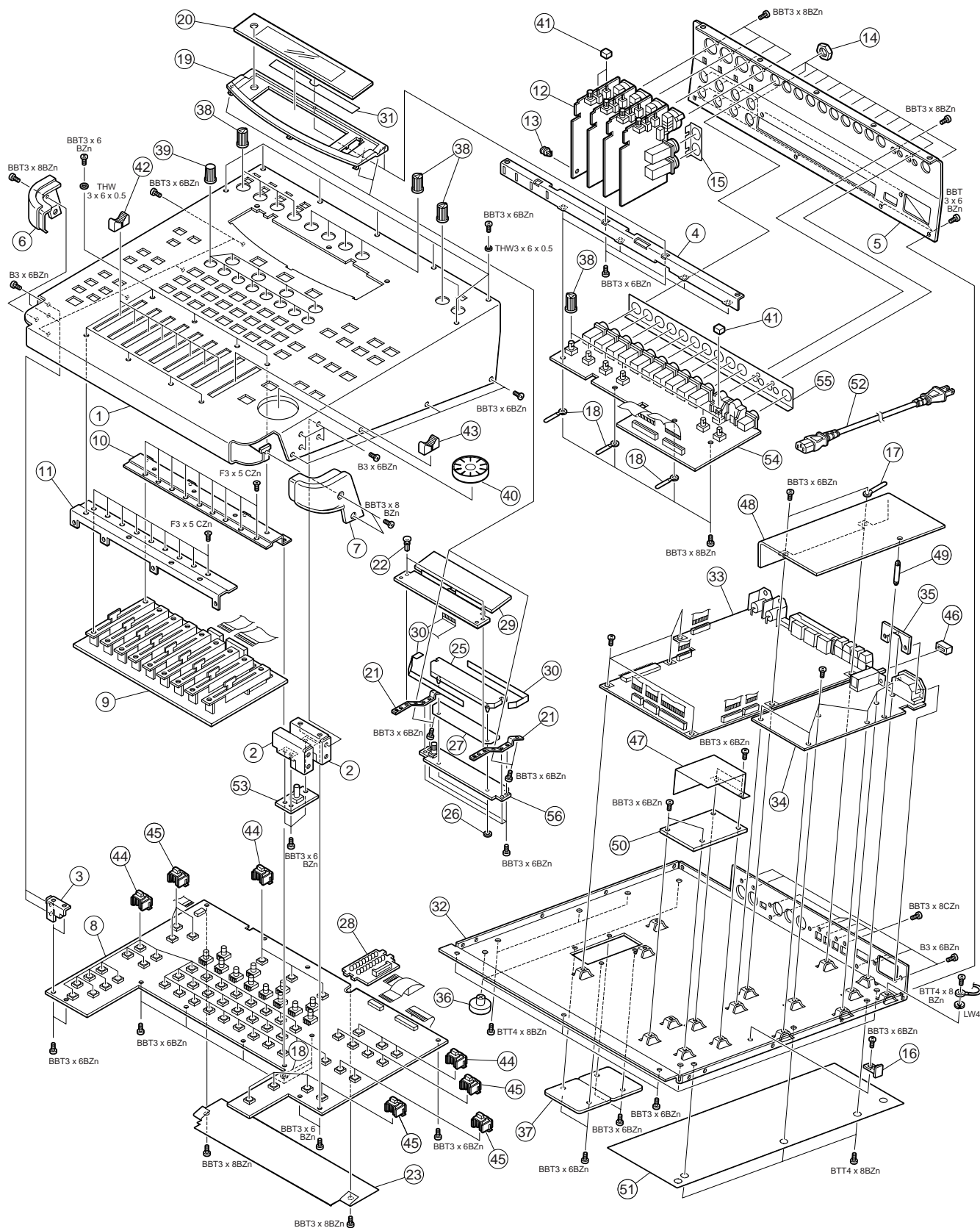


7. EXPLODED VIEW, PCB ASSEMBLY & PARTS LIST

● VM200 OVERALL EXPLODED VIEW

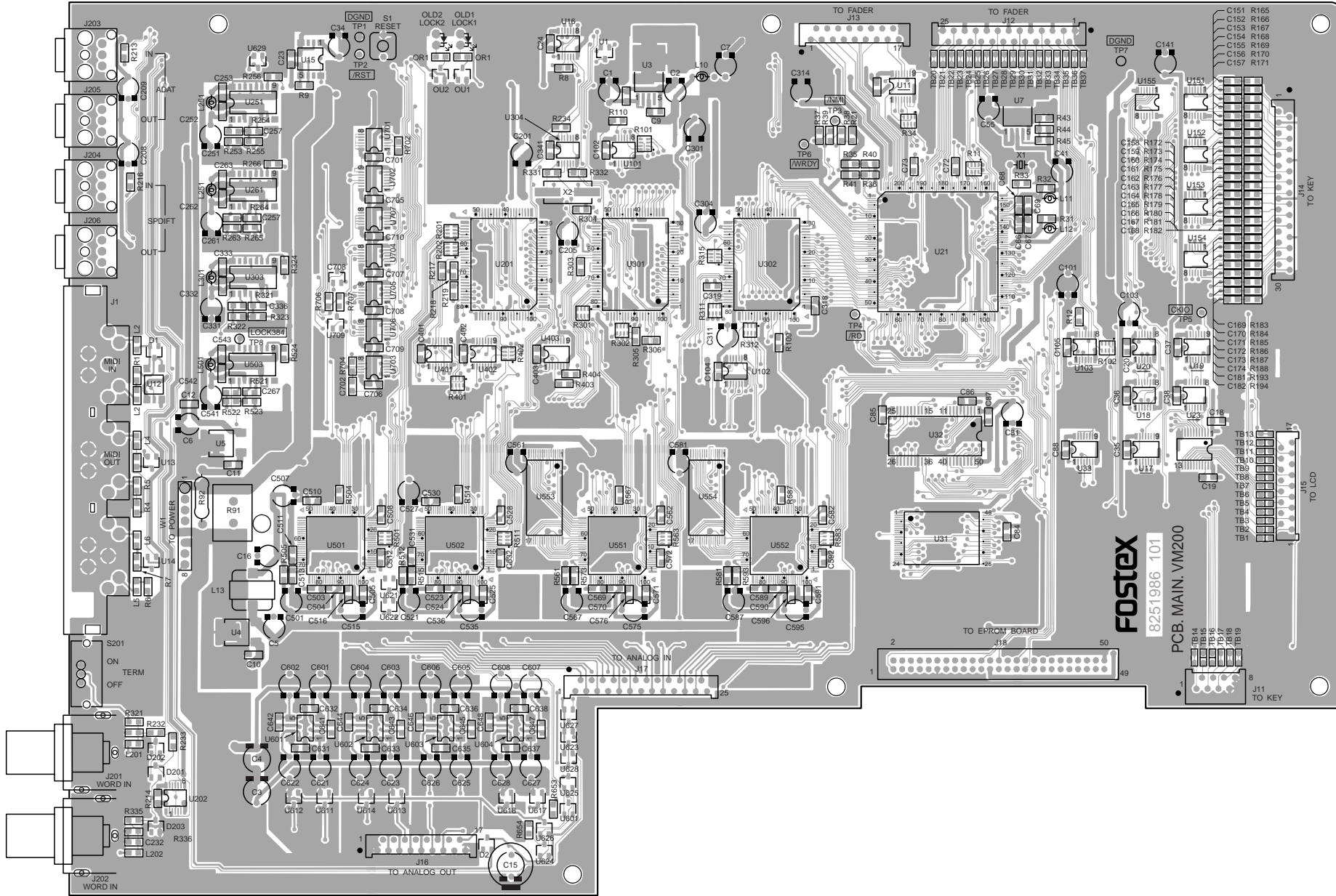
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	8221 2792 00	Panel, top, VM200	51	8216 7130 00	Sheet, bottom, VM200
2	8221 2820 00	Bracket, PCB, A, VM200	△ 52	8276 8000 00	Cord, power, VM1292-1298, JPN
3	8221 2830 00	Bracket, PCB, B, VM200		8276 8010 00	Cord, power, VM0033-0089, USA/CND
4	8221 2840 00	Bracket, PCB, C, VM200		8276 8021 00	Cord, power, CEE, 031013, EUR
5	8221 2811 00	Panel, rear, VM200		8276 9170 00	Cord, power, BS, 3C, KP610-KS31A, UK
6	8212 6590 01	Pad, side, L, VM200			
7	8212 6590 02	Pad, side, R, VM200			
8	8274 2060 00	PCB assy, Key, VM200	53	8274 1910 00	PCB assy, Jog, VM200
9	8274 1900 00	PCB assy, Fader, VM200	54	8274 1930 00	PCB assy, Ana-Out, VM200
10	8221 2860 01	Bracket, fader, VM200, A	55	8216 6970 00	Shield, Ana, VM200
11	8221 2860 02	Bracket, fader, VM200, B	56	8274 1850 00	PCB assy, LCD Back, VM200
12	8274 1920 00	PCB assy, Ana-In, VM200			
13	8207 0061 02	Spacer, MPS-04			
14	8245 3400 00	Nut, phone jack			
15	8216 7100 00	Shield, Ana-in, VM200			
16	8274 2170 00	PCB assy, Regulator, VM200			
17	8207 0117 01	Cord holder, CS-1-U			
18	8207 0117 04	Cord holder, CS-4-U			
19	8212 6600 00	Panel, LCD, VM200			
20	8212 6610 00	Window, LCD, VM200			
21	8221 2850 00	Bracket, LCD, VM200			
22	8207 0047 01	Plastic rivet, #1C18			
23	8216 6980 00	Shield, LCD, VM200			
24		N/A			
25	8212 6620 00	Plate, reflect, LCD, VM200			
26	8204 0370 01	Ring, CSTW-2			
27	8216 7080 00	Sheet, LCD, VM200			
28	8274 2050 00	PCB assy, LED Meter, VM200			
29	8260 5640 00	LCD assy, VM200			
30	8216 7110 00	Sheet, side, LCD, VM200			
31	8216 7150 00	Sheet, meter, LCD, VM200			
32	8221 2800 00	Panel, bottom, VM200			
33	8274 1840 00	PCB assy, Main, VM200			
△ 34	8274 1860 00	PCB assy, Power, VM200			
35	8221 2610 00	Bracket, AC-In, FD-8/VM200			
36	8207 0120 00	Foot, FF-822			
37	8221 1420 00	Cover, ROM, DMT-8/VM200			
38	8226 1430 06	Knob, VR, D, NW			
39	8226 2470 01	Knob, encoder			
40	8226 2380 00	Knob, jog, FD-4/8/VM200			
41	8226 2480 01	Knob, sw			
42	8226 2490 01	Knob, fader, N			
43	8226 2490 02	Knob, fader, R			
44	8226 2460 01	Button, 7 x 13, LED			
45	8226 2460 02	Button, 7 x 13, N4.5			
46	8326 0130 03	Button, push, N08			
47	8216 7090 00	Cover, isolation, VM200			
48	8221 2931 00	Shield, power, VM200			
49	8207 0009 10	Stay, PCB, support, KGLS-22S			
△ 50	8274 2181 00	PCB assy, Power-Fader			

VM200 OVERALL EXPLODED VIEW

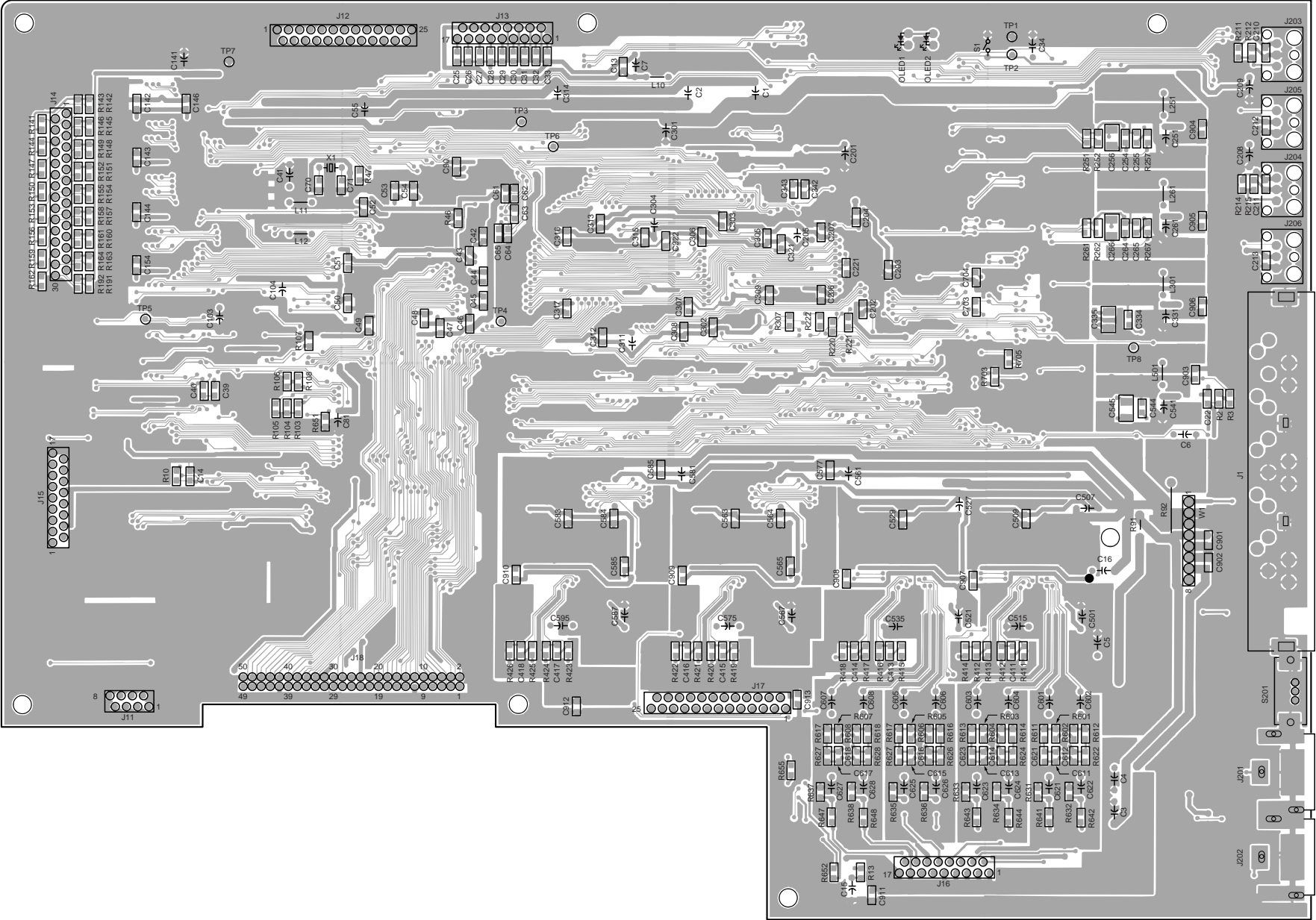


VM200 PCB PATTERN DRAWING

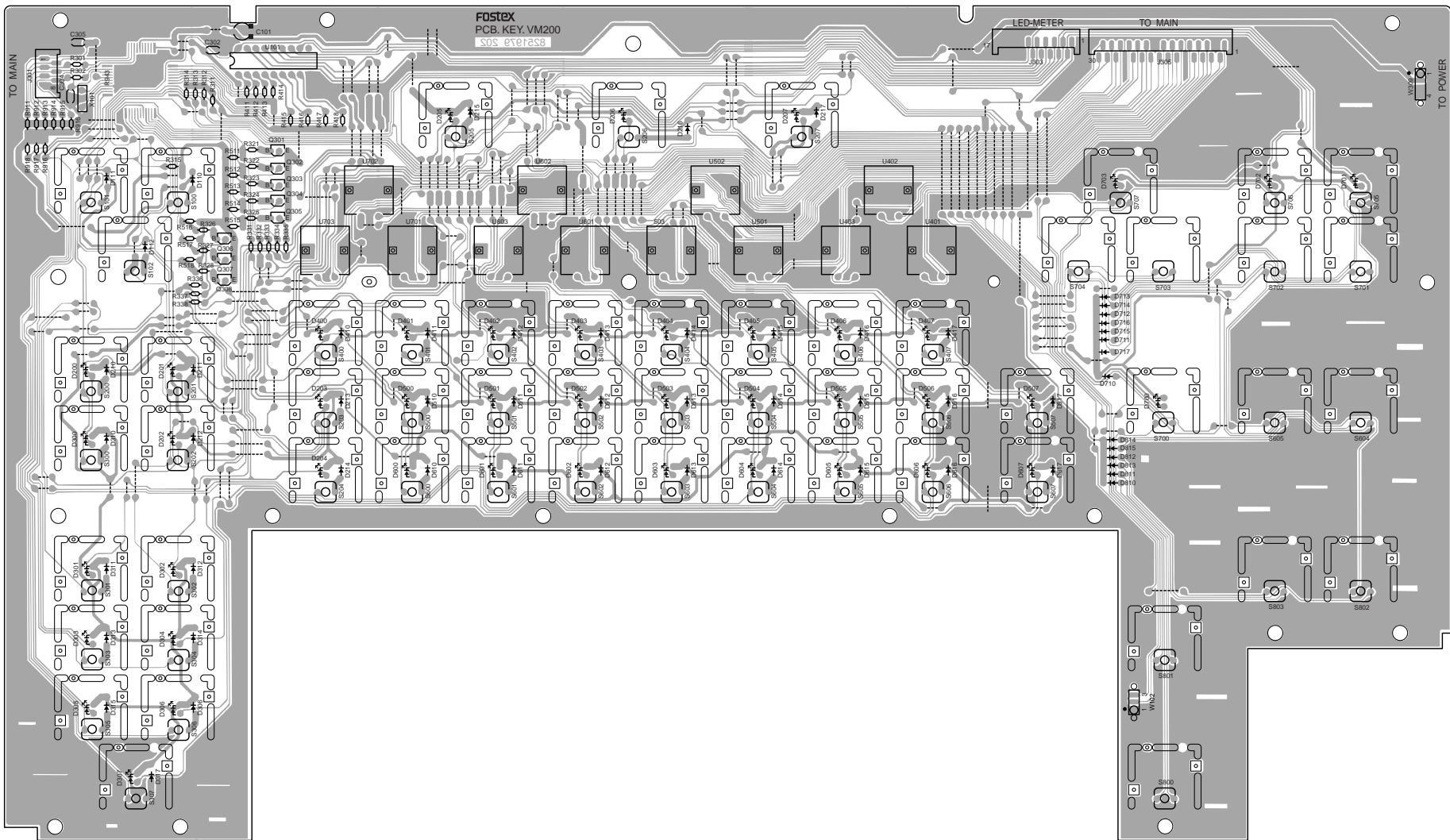
• Parts Side of MAIN PCB



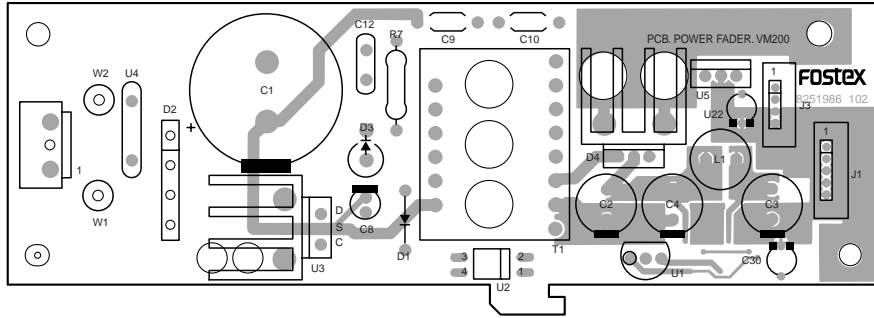
• Foil Side of MAIN PCB



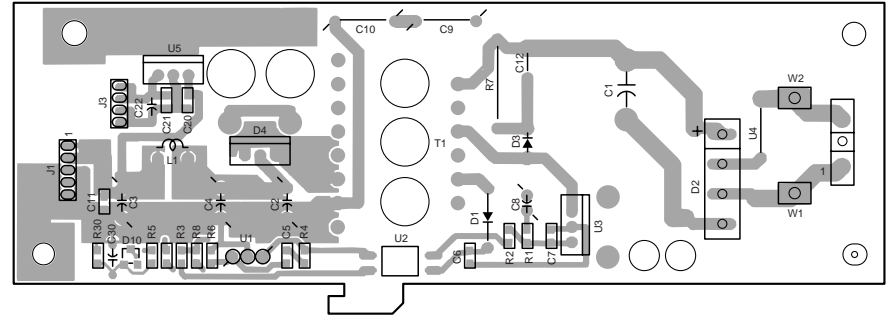
• KEY PCB



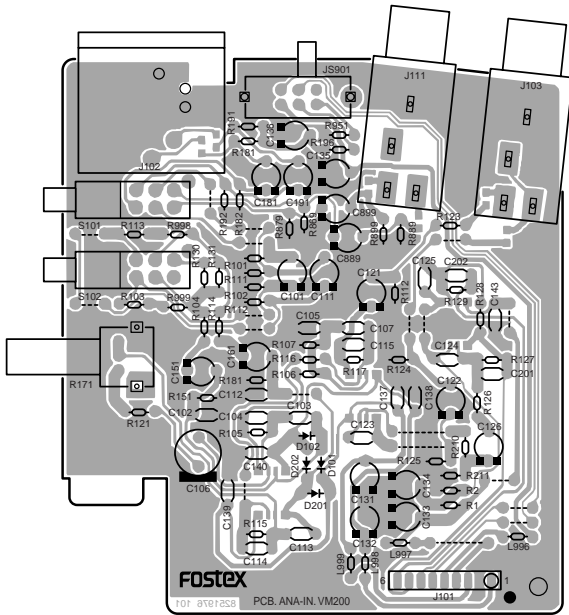
• Parts side of POWER FADER PCB



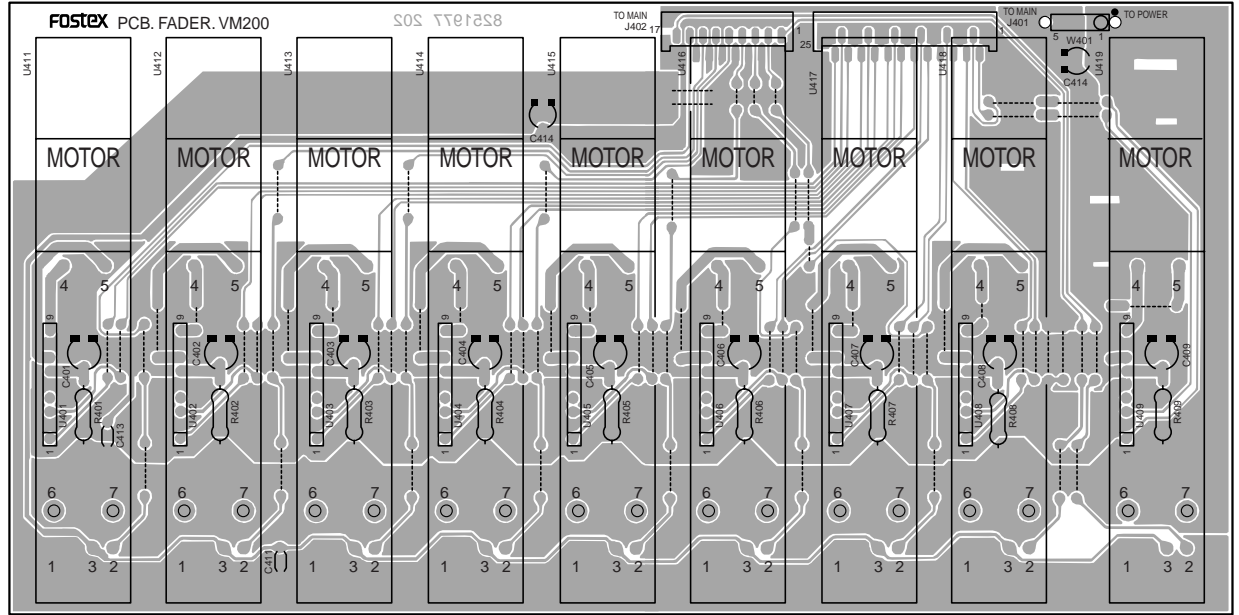
• Foil side of POWER FADER PCB



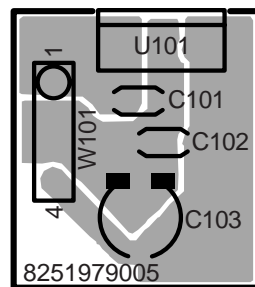
• ANA IN PCB



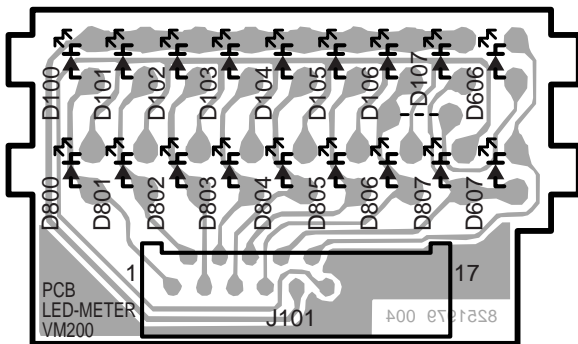
• FADER PCB



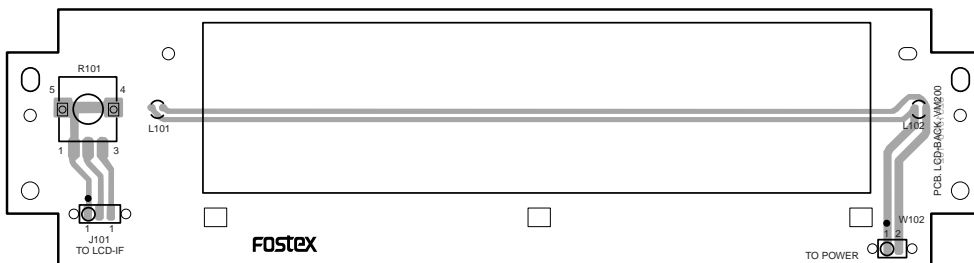
• REGULATOR PCB



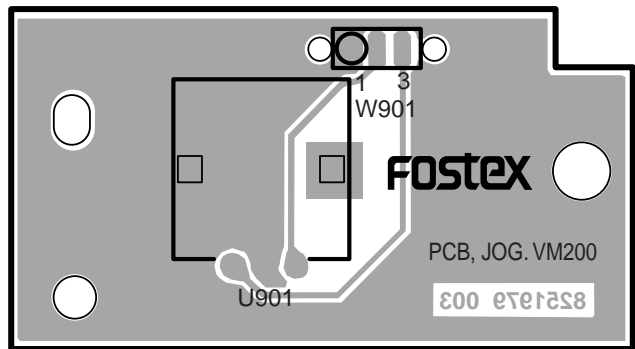
• LED METER PCB



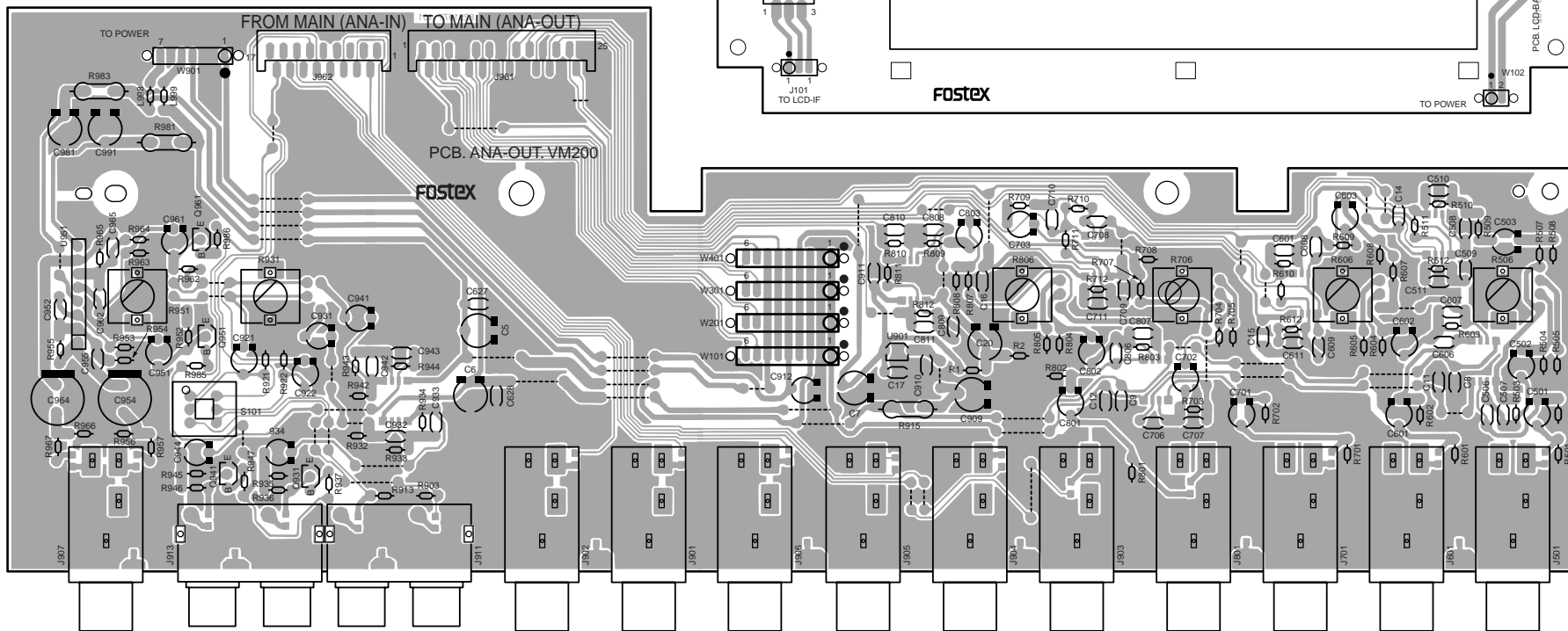
• LCD BACK PCB



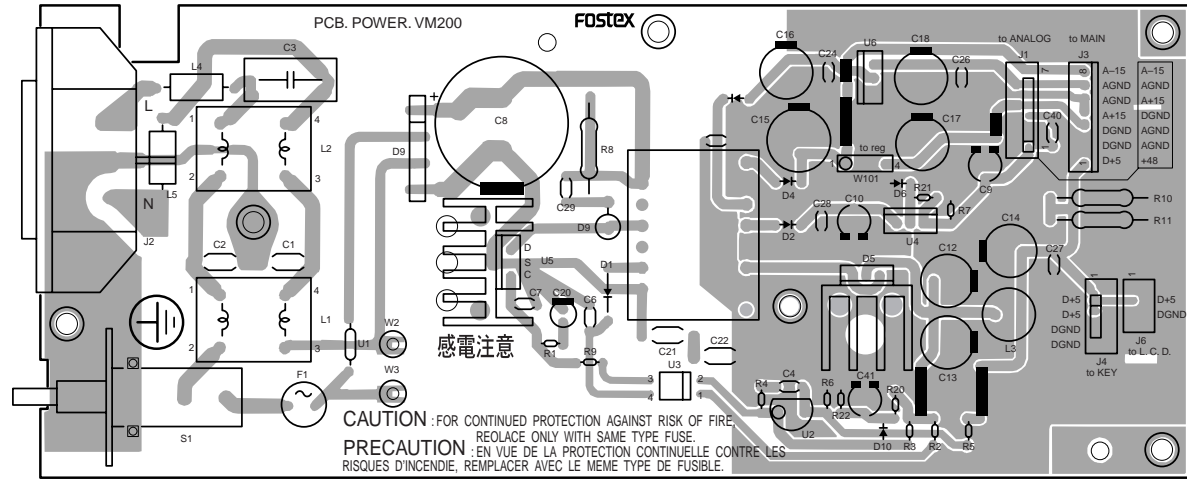
• JOG PCB



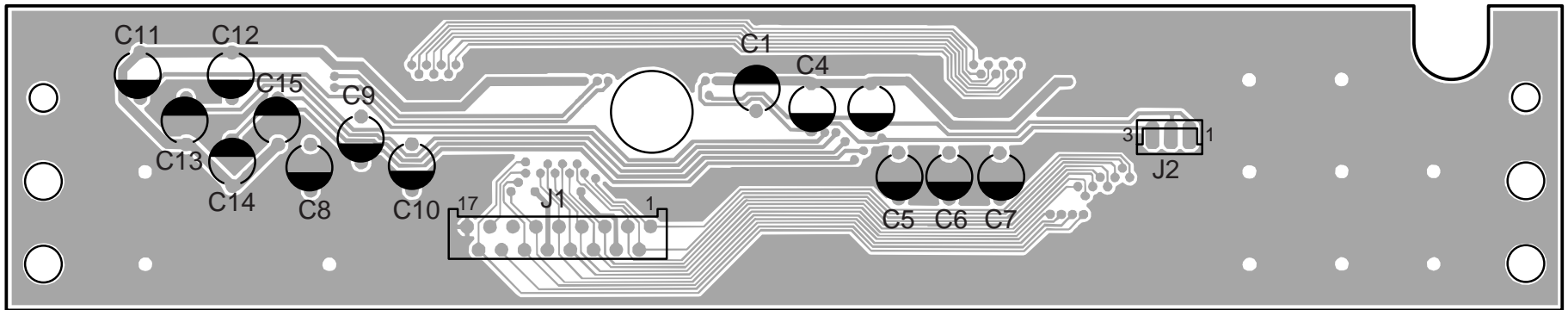
• ANA OUT PCB



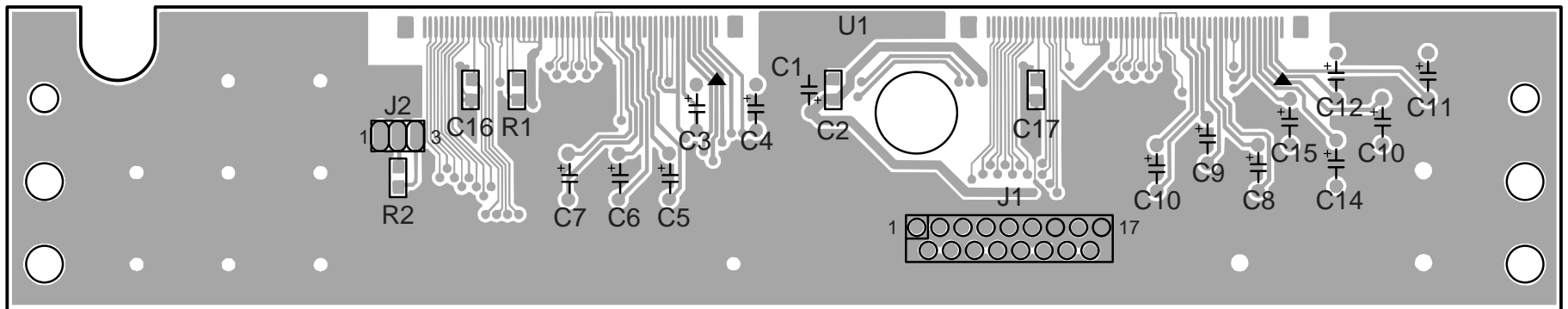
• POWER PCB



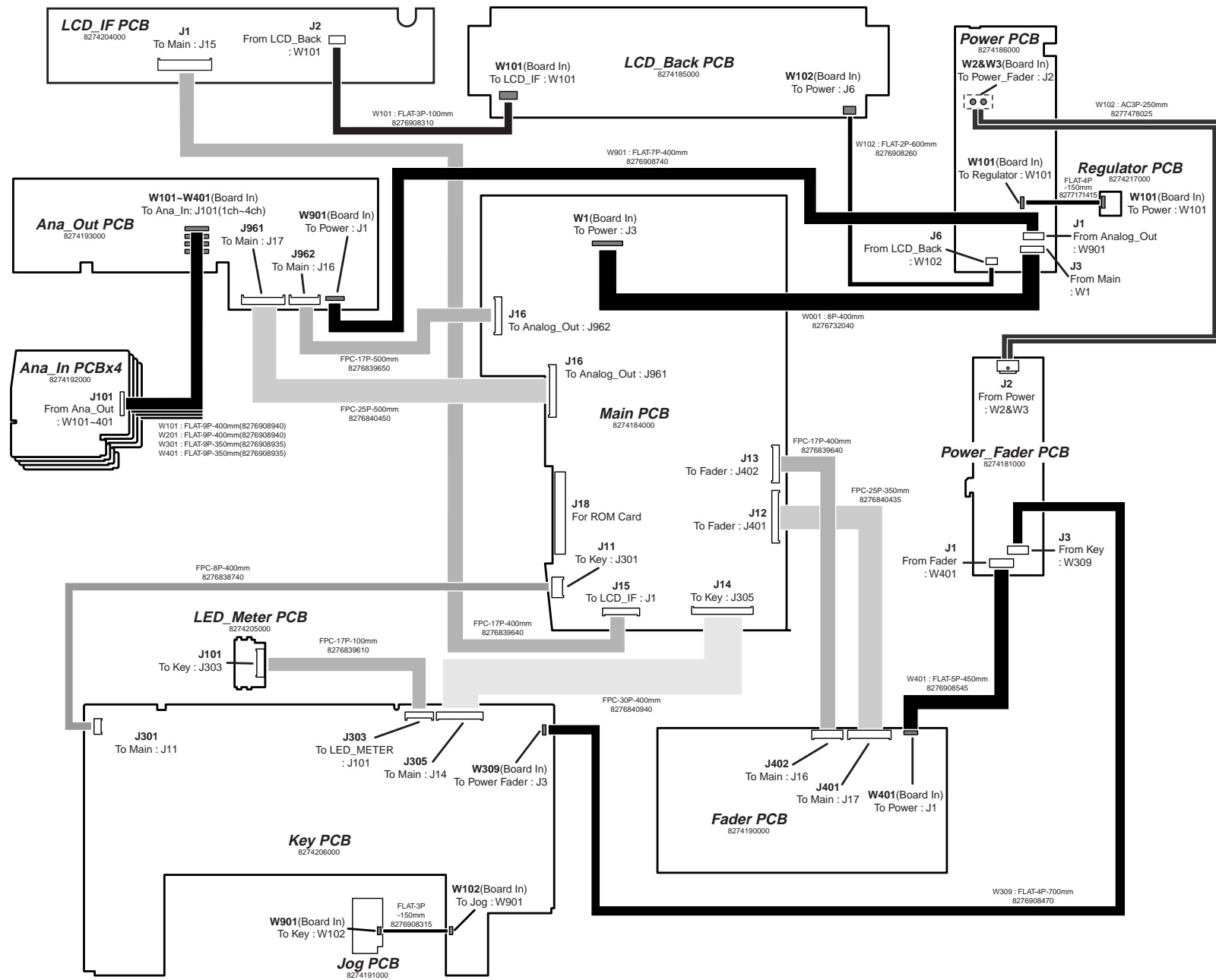
• Parts side of LCD-IF PCB



• Foil side of LCD-IF PCB



● VM200 PCB CONNECTION DIAGRAM



● VM200 Parts List

• Main PCB assy

Ref. No.	Part No.	Description
	8274 1840 00	PCB assy, Main, VM200
B101	8251 9861 01	Plain PCB, Main, VM200
ICs		
Ref. No.	Part No.	Description
U001	8236 5701 01	ST, DG, DRIVER, DTC114EK
U002		N/A
U003	8236 5414 00	PT, AN, REG, PQ3DZ53U
U004, 005	8236 5403 01	ST, AN, Regulator, L78M05T-TL
U006		N/A
U007	8236 5419 00	ST, AN, REG, PQ7VZ5U
U008~010		N/A
U011	8236 5640 53	ST, TSSOP, 74HC4053
U012	8234 5047 00	OPT, T, PHOTO, PC410T
U013, 014	8236 5701 01	ST, DG, DRIVER, DTC114EK
U015	8236 5025 00	ST, AN, RESET, NJM2103M
U016	8236 5440 14	ST, TSSOP, 74VHCT14AFT
U017	8236 5451 38	ST, TSSOP, 74VHC138FT
U018	8236 5450 00	ST, TSSOP, 74VHC00
U019	8236 5451 75	ST, TSSOP, 74VHC175FT
U020	8236 5440 04	ST, TSSOP, 74VHCT04AFT
U021	8236 0848 00	QFP, DG, CPU, SH7709, HD6417709
U022	8236 5641 00	ST, SSOP, 74LVXC3245FS
U023	8236 5450 00	ST, TSSOP, 74VHC00
U024~030		N/A
U031	8236 0847 00	TSOP, DG, FROM, M29W800T
U032	8236 0845 00	TSOP, DRAM, HY51V18164BSLTC-60
U033	8236 5451 57	ST, TSSOP, 74VHC157
U034~100		N/A
U101	8236 5450 04	ST, TSSOP, 74VHC04
U102, 103	8236 5440 04	ST, TSSOP, 74VHCT04AFT
U104~150		N/A
U151~155	8236 5450 14	ST, TSSOP, 74VHC14
U156~200		N/A
U201	8236 0850 00	QFP, DG, GATE ARRAY, DIF
U202	8236 5450 04	ST, TSSOP, 74VHC04
U203~250		N/A
U251	8236 5034 00	ST, DG, VCO, TC9246F
U252~260		N/A
U261	8236 5034 00	ST, DG, VCO, TC9246F
U262~300		N/A
U301, 302	8236 0851 00	QFP, DG, GATE-ARRAY, SPSS
U303	8236 5034 00	ST, DG, VCO, TC9246F
U304	8236 5459 04	ST, TSSOP, 74VHCU04
U305~400		N/A
U401~403	8236 5451 57	ST, TSSOP, 74VHC157

Ref. No.	Part No.	Description
U404~500		N/A
U501, 502	8236 0849 00	QFP, DG, DSP, AK7712AVT
U503	8236 5034 00	ST, DG, VCO, TC9246F
U504~550		N/A
U551, 552	8236 0849 00	QFP, DG, DSP, AK7712AVT
U553, 554	8236 0846 00	TSOP, DG, SRAM, TC551001CFT-70L
U555~600		N/A
U601~604	8236 5412 00	ST, AN, OPAMP, NJM4565M
U605~610		N/A
U611~614	8236 5702 01	ST, DG, DRIVER, DTC314TK
U615, 616		N/A
U617, 618	8236 5702 01	ST, DG, DRIVER, DTC314TK
U619~622		N/A
U623	8236 5701 01	ST, DG, DRIVER, DTC114EK
U624, 625		N/A
U626	8236 5704 01	ST, DG, DRIVER, DTA114EK
U627, 628	8236 5701 01	ST, DG, DRIVER, DTC114EK
U629	8236 5704 01	ST, DG, DRIVER, DTA114EK
U630~700		N/A
U701	8236 5450 86	ST, TSSOP, 74VHC86
U702	8236 5451 61	ST, TSSOP, 74VHC161
U703	8236 5450 74	ST, TSSOP, 74VHC74
U704	8236 5450 00	ST, TSSOP, 74VHC00
U705~707	8236 5450 74	ST, TSSOP, 74VHC74
U708	8236 5704 01	ST, DG, DRIVER, DTA114EK
U709	8236 5701 01	ST, DG, DRIVER, DTC114EK
U800, 801		N/A

DIODES

Ref. No.	Part No.	Description
D001, 002	8234502800	D, ST, DAN202K
D201~203	8234502800	D, ST, DAN202K
D601		N/A

RESISTORS

Ref. No.	Part No.	Description
R001	8230 5002 21	ST, carbon, 1/10W, 220Ω, 5%
R002	8230 5001 02	ST, carbon, 1/10W, 1kΩ, 5%
R003	8230 5001 01	ST, carbon, 1/10W, 100Ω, 5%
R004~007	8230 5002 21	ST, carbon, 1/10W, 220Ω, 5%
R008	8230 5001 01	ST, carbon, 1/10W, 100Ω, 5%
R009	8230 5001 03	ST, carbon, 1/10W, 10kΩ, 5%
R010	8230 5001 01	ST, carbon, 1/10W, 100Ω, 5%
R011	8230 5081 01	ST, array, 100Ω x 4, 5%, CN1J4
R012	8230 5001 03	ST, carbon, 1/10W, 10kΩ, 5%
R013	8230 5001 02	ST, carbon, 1/10W, 1kΩ, 5%
R014~020		N/A

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
R021	8230 5001 03	ST, carbon, 1/10W, 10k Ω , 5%	R255	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%
R022~030		N/A	R256	8230 5003 31	ST, carbon, 1/10W, 330 Ω , 5%
R031~033	8230 5000 00	ST, carbon, 1/10W, 0 Ω , 5%	R257	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%
R034	8230 5081 01	ST, array, 100 Ω x 4, 5%, CN1J4	R261	8230 5001 02	ST, carbon, 1/10W, 1k Ω , 5%
R035~037	8230 5001 03	ST, carbon, 1/10W, 10k Ω , 5%	R262		N/A
R038		N/A	R263	8230 5003 31	ST, carbon, 1/10W, 330 Ω , 5%
R039	8230 5000 00	ST, carbon, 1/10W, 0 Ω , 5%	R264	8230 5005 62	ST, carbon, 1/10W, 5.6k Ω , 5%
R040, 041		N/A	R265	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%
R042		N/A	R266	8230 5003 31	ST, carbon, 1/10W, 330 Ω , 5%
R043	8230 5001 02	ST, carbon, 1/10W, 1k Ω , 5%	R267	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%
R044	8230 5006 21	ST, carbon, 1/10W, 620 Ω , 5%	R268~300		N/A
R045		N/A	R301, 302	8230 5081 01	ST, array, 100 Ω x 4, 5%, CN1J4
R046	8230 5001 03	ST, carbon, 1/10W, 10k Ω , 5%	R303	8230 5000 00	ST, carbon, 1/10W, 0 Ω , 5%
R047	8242 5011 21	Filter, ST, EMI, 120, 25%, MMZ2012S	R304	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%
R048~090		N/A	R305	8230 5003 31	ST, carbon, 1/10W, 330 Ω , 5%
R091	8230 1262 20	H, cement, 5W, 22 Ω	R306	8230 5001 03	ST, carbon, 1/10W, 10k Ω , 5%
R092	8230 1118 20	H, metal, 1W, 82 Ω , 5%, F15	R307	8230 5001 02	ST, carbon, 1/10W, 1k Ω , 5%
R093~100		N/A	R308~310		N/A
R101, 102	8230 5081 01	ST, array, 100 Ω x 4, 5%, CN1J4	R311, 312	8230 5081 01	ST, array, 100 Ω x 4, 5%, CN1J4
R103~110	8230 5001 03	ST, carbon, 1/10W, 10k Ω , 5%	R313, 314		N/A
R112~140		N/A	R315	8230 5081 01	ST, array, 100 Ω x 4, 5%, CN1J4
R141~164	8230 5001 03	ST, carbon, 1/10W, 10k Ω , 5%	R316~320		N/A
R165~188	8230 5004 73	ST, carbon, 1/10W, 47k Ω , 5%	R321	8230 5001 52	ST, carbon, 1/10W, 1.5k Ω , 5%
R189, 190		N/A	R322	8230 5002 24	ST, carbon, 1/10W, 220k Ω , 5%
R191, 192	8230 5001 03	ST, carbon, 1/10W, 10k Ω , 5%	R323	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%
R193, 194	8230 5004 73	ST, carbon, 1/10W, 47k Ω , 5%	R324	8230 5003 31	ST, carbon, 1/10W, 330 Ω , 5%
R195~200		N/A	R325~330		N/A
R201, 202	8230 5081 01	ST, array, 100 Ω x 4, 5%, CN1J4	R331	8230 5001 05	ST, carbon, 1/10W, 1M Ω , 5%
R203~210		N/A	R332	8230 5003 31	ST, carbon, 1/10W, 330 Ω , 5%
R211	8230 5003 32	ST, carbon, 1/10W, 3.3k Ω , 5%	R333~400		N/A
R212	8230 5002 22	ST, carbon, 1/10W, 2.2k Ω , 5%	R401, 402	8230 5081 01	ST, array, 100 Ω x 4, 5%, CN1J4
R213	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%	R403, 404	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%
R214	8230 5003 32	ST, carbon, 1/10W, 3.3k Ω , 5%	R405~410		N/A
R215	8230 5002 22	ST, carbon, 1/10W, 2.2k Ω , 5%	R411~426	8230 5003 31	ST, carbon, 1/10W, 330 Ω , 5%
R216, 217	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%	R427~500		N/A
R218, 219	8230 5003 31	ST, carbon, 1/10W, 330 Ω , 5%	R501	8230 5081 01	ST, array, 100 Ω x 4, 5%, CN1J4
R220~222	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%	R502, 503		N/A
R223~230		N/A	R504	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%
R231	8230 5007 50	ST, carbon, 1/10W, 75 Ω , 5%	R505	8230 5001 00	ST, carbon, 1/10W, 10 Ω , 5%
R232	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%	R506~510		N/A
R233	8230 5001 03	ST, carbon, 1/10W, 10k Ω , 5%	R511	8230 5081 01	ST, array, 100 Ω x 4, 5%, CN1J4
R234	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%	R512, 513		N/A
R235	8230 5001 00	ST, carbon, 1/10W, 10 Ω , 5%	R514	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%
R236	8230 5001 02	ST, carbon, 1/10W, 1k Ω , 5%	R515	8230 5001 00	ST, carbon, 1/10W, 10 Ω , 5%
R237~250		N/A	R516~520		N/A
R251	8230 5001 02	ST, carbon, 1/10W, 1k Ω , 5%	R521	8230 5001 52	ST, carbon, 1/10W, 1.5k Ω , 5%
R252	8230 5002 23	ST, carbon, 1/10W, 22k Ω , 5%	R522	8230 5002 24	ST, carbon, 1/10W, 220k Ω , 5%
R253	8230 5003 31	ST, carbon, 1/10W, 330 Ω , 5%	R523	8230 5001 01	ST, carbon, 1/10W, 100 Ω , 5%
R254	8230 5008 22	ST, carbon, 1/10W, 8.2k Ω , 5%	R524	8230 5003 31	ST, carbon, 1/10W, 330 Ω , 5%

Ref. No.	Part No.	Description
R525~560		N/A
R561	8230 5001 00	ST, carbon, 1/10W, 10Ω, 5%
R562		N/A
R563	8230 5081 01	ST, array, 100Ω x 4, 5%, CN1J4
R564~566		N/A
R567	8230 5001 01	ST, carbon, 1/10W, 100Ω, 5%
R568~580		N/A
R581	8230 5001 00	ST, carbon, 1/10W, 10Ω, 5%
R582		N/A
R583	8230 5081 01	ST, array, 100Ω x 4, 5%, CN1J4
R584~586		N/A
R587	8230 5001 01	ST, carbon, 1/10W, 100Ω, 5%
R588~600		N/A
R601~608	8230 5001 03	ST, carbon, 1/10W, 10kΩ, 5%
R609, 610		N/A
R611~618	8230 5001 03	ST, carbon, 1/10W, 10kΩ, 5%
R619, 620		N/A
R621~628	8230 5002 72	ST, carbon, 1/10W, 2.7kΩ, 5%
R629, 630		N/A
R631~638	8230 5001 04	ST, carbon, 1/10W, 100kΩ, 5%
R639, 640		N/A
R641~644	8230 5001 01	ST, carbon, 1/10W, 100Ω, 5%
R645, 646		N/A
R647, 648	8230 5001 01	ST, carbon, 1/10W, 100Ω, 5%
R649, 650		N/A
R651, 652	8230 5001 03	ST, carbon, 1/10W, 10kΩ, 5%
R653, 654		N/A
R655	8230 5001 03	ST, carbon, 1/10W, 10kΩ, 5%
R656~701		N/A
R702, 703	8230 5001 01	ST, carbon, 1/10W, 100Ω, 5%
R704	8230 5002 22	ST, carbon, 1/10W, 2.2kΩ, 5%
R705	8230 5001 01	ST, carbon, 1/10W, 100Ω, 5%
R706, 707	8230 5001 03	ST, carbon, 1/10W, 10kΩ, 5%

CAPACITORS

Ref. No.	Part No.	Description
C001, 002	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C003, 004	8232 1431 07	VT, ALU, 16V, 100μF, 20%, SME-VB
C005~007	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C008, 009	8233 5021 04	ST, CER, 50V, 0.1μF, +80, CC20F
C010~013	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C014	8233 5001 01	ST, CER, 50V, 100pF, 5%, CC20SL
C015	8232 1444 77	VT, ALU, 25V, 470μF, 20%, SME-VB
C016	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C017		N/A
C018~024	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C025~033	8233 5001 01	ST, CER, 50V, 100pF, 5%, CC20SL
C034	8232 1464 75	VT, ALU, 50V, 4.7μF, 20%, SME-VB
C035~038	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R

Ref. No.	Part No.	Description
C041	8232 3631 27	VT, ALU, 6.3V, 120μF, 20%, LXV
C042~054	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C055	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C056~060		N/A
C061~065	8233 5001 01	ST, CER, 50V, 100pF, 5%, CC20SL
C066	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C067	8233 5004 71	ST, CER, 50V, 470pF, 5%, CC20SL
C068	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C069	8233 5004 71	ST, CER, 50V, 470pF, 5%, CC20SL
C070, 071	8233 5003 30	ST, CER, 50V, 33pF, 5%, CC20SL
C072, 073	8233 5001 01	ST, CER, 50V, 100pF, 5%, CC20SL
C074~080		N/A
C081	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C082, 083		N/A
C084~088	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C089		N/A
C090	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C091~100		N/A
C101	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C102	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C103	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C104, 105	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C106~140		N/A
C141	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C142~146	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C147~150		N/A
C151~174	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C175~180		N/A
C181, 182	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C183~200		N/A
C201	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C202~204	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C205	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C206, 207	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C208, 209	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C210~214	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C215~220		N/A
C221	8233 5001 01	ST, CER, 50V, 100pF, 5%, CC20SL
C222~230		N/A
C231, 232	8233 5004 70	ST, CER, 50V, 47pF, 5%, CC20SL
C233~250		N/A
C251, 261	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C252, 262	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C253, 263	8233 5021 04	ST, CER, 50V, 0.1μF, +80, CC20F
C254	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C255	8233 5001 50	ST, CER, 50V, 15pF, 5%, CC20SL
C256	8233 5094 74	ST, CER, 25V, 0.47μF, 20%, KC30E
C257	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C258~263		N/A

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
C264	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C536	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C265	8233 5001 50	ST, CER, 50V, 15pF, 5%, CC20SL	C537~540		N/A
C266	8233 5094 74	ST, CER, 25V, 0.47μF, 20%, KC30E	C541	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C267	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C542	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C268~300		N/A	C543	8233 5021 04	ST, CER, 50V, 0.1μF, +80, CC20F
C301	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB	C544	8233 5001 50	ST, CER, 50V, 15pF, 5%, CC20SL
C302, 303	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C545	8233 5094 74	ST, CER, 25V, 0.47μF, 20%, KC30E
C304	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB	C546	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C305~309	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C547~560		N/A
C310		N/A	C561	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C311	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB	C562~565	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C312, 313	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C566		N/A
C314	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB	C567, 587	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C315~319	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C568		N/A
C320		N/A	C569~571	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C321, 322	8233 5001 01	ST, CER, 50V, 100pF, 5%, CC20SL	C572, 573	8233 5021 04	ST, CER, 50V, 0.1μF, +80, CC20F
C323~330		N/A	C574		N/A
C331	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB	C575, 595	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C332	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C576, 577	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C333	8233 5021 04	ST, CER, 50V, 0.1μF, +80, CC20F	C578~580		N/A
C334	8233 5001 50	ST, CER, 50V, 15pF, 5%, CC20SL	C581	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C335	8233 5094 74	ST, CER, 25V, 0.47μF, 20%, KC30E	C582~585	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C336	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C586, 588		N/A
C337~340		N/A	C589~591	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C341	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C592, 593	8233 5021 04	ST, CER, 50V, 0.1μF, +80, CC20F
C342, 343	8233 5002 20	ST, CER, 50V, 22pF, 5%, CC20SL	C594		N/A
C344~400		N/A	C596, 597	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C401~403	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C598~600		N/A
C404~410		N/A	C601~608	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C411~418	8233 5001 52	ST, CER, 50V, 0.0015μF, 5%, CC20R	C609, 610		N/A
C419~500		N/A	C611~618	8233 5006 81	ST, CER, 50V, 680pF, 5%, CC20SL
C501, 521	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB	C619, 620		N/A
C502		N/A	C621~628	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C503~505	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C629, 630		N/A
C506		N/A	C631~638	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C507	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB	C639, 640		N/A
C508~511	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C641~648		N/A
C512, 513	8233 5021 04	ST, CER, 50V, 0.1μF, +80, CC20F	C649~700		N/A
C514		N/A	C701	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C515, 535	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB	C702~704	8233 5001 01	ST, CER, 50V, 100pF, 5%, CC20SL
C516	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R	C705~710	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C517~520		N/A	C901~906	8233 5021 04	ST, CER, 50V, 0.1μF, +80, CC20F
C522		N/A	C907~913		N/A
C523~525	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R			
C526		N/A			
C527	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB			
C528~531	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R			
C532, 533	8233 5021 04	ST, CER, 50V, 0.1μF, +80, CC20F			
C534		N/A			

MISCELLANEOUS

Ref. No.	Part No.	Description
J001	8245 2970 00	Connector, jack, DIN 5P, YKF51-5040
J011	8245 2721 08	Connector, PL, jack, FPC, 8P
J012	8245 2720 25	Connector, PI, jack, FPC, 25P

Ref. No.	Part No.	Description
J013	8245 2720 17	Connector, PI, jack, FPC, 17P
J014	8245 2720 30	Connector, PI, jack, FPC, 30P
J015, 016	8245 2720 17	Connector, PI, jack, FPC, 17P
J017	8245 2720 25	Connector, PI, jack, FPC, 25P
J018	8245 3221 50	Connector, PI, header, 50P, P2.0, 9210B-L
J201, 202	8245 3250 00	Connector, PL, jack, BNC, YKS11-011
J203	8245 5530 10	Connector, opt, GPIF37R1
J204	8245 3180 00	Connector, opt, TORX178A
J205	8245 5520 10	Connector, opt, GPIF38T2
J206	8245 3170 00	Connector, opt, TOTX178
L001~006	8242 5011 21	Filter, ST, EMI, 120, 25%, MMZ2012S
L010	8242 1962 23	Coil, PVT, 22 μ H, 5%, LF5.0S
L011, 012		N/A
L013	8242 5025 60	Core, ST, CRDH104, 56 μ H
L201, 202	8242 5011 21	Filter, ST, EMI, 120, 25%, MMZ2012S
L251, 261	8242 1962 23	Coil, PVT, 22 μ H, 5%, LF5.0S
L301	8242 1962 23	Coil, PVT, 22 μ H, 5%, LF5.0S
L501	8242 1962 23	Coil, PVT, 22 μ H, 5%, LF5.0S
W001	8276 7320 40	Cable assy, 8P, 8263WHT-5395, #22, L400
X001	8256 1790 03	Resonator, PT, CER, 8.30MHz, F5, EFOMN
X002	8256 1700 01	Resonator, ST, XTL, 22.579MHz, FUP-FBB3A
S001		N/A
S201	8253 6550 04	SW, PI, slide, 1-2, non-shortening, SSSF1
E1501	N/A	Pin, header
TB001~012	8230 5001 01	Resistor, ST, carbon, 1/10W, 100 Ω , 5%
TB015	8230 5001 01	Resistor, ST, carbon, 1/10W, 100 Ω , 5%
TB016	8230 5001 01	Resistor, ST, carbon, 1/10W, 100 Ω , 5%

• Ana In PCB assy

Ref. No.	Part No.	Description
	8274 1920 00	PCB assy, Ana In, VM200
B101	8251 9761 01	Plain PCB, Ana In, VM200

ICs

Ref. No.	Part No.	Description
U101	8236 5405 00	ST, AN, NJM2068MD (TEI)
U102	8236 5412 00	ST, AN, OPAMP, NJM4565M
U103	8236 5050 11	ST, AN, OPAMP, NJM2115M (TEI)

DIODEs

Ref. No.	Part No.	Description
D101, 102	8234 5007 00	D, HT, 1SS136
D201, 202	8234 5007 00	D, HT, 1SS136

RESISTORs

Ref. No.	Part No.	Description
R001, 002	8230 1382 02	HT, carbon, 1/4W, 2k Ω , 5%
R101	8230 1381 53	HT, carbon, 1/4W, 15k Ω , 5%
R102	8230 1381 04	HT, carbon, 1/4W, 100k Ω , 5%
R103	8230 1381 23	HT, carbon, 1/4W, 12k Ω , 5%
R104	8230 1381 01	HT, carbon, 1/4W, 100 Ω , 5%
R105	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%
R106	8230 1381 13	HT, carbon, 1/4W, 11k Ω , 5%
R107	8230 1381 53	HT, carbon, 1/4W, 15k Ω , 5%
R111	8230 1381 53	HT, carbon, 1/4W, 15k Ω , 5%
R112	8230 1381 04	HT, carbon, 1/4W, 100k Ω , 5%
R113	8230 1381 23	HT, carbon, 1/4W, 12k Ω , 5%
R114	8230 1381 01	HT, carbon, 1/4W, 100 Ω , 5%
R115	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%
R116	8230 1381 13	HT, carbon, 1/4W, 11k Ω , 5%
R117	8230 1381 53	HT, carbon, 1/4W, 15k Ω , 5%
R121	8230 1387 50	HT, carbon, 1/4W, 75 Ω , 5%
R122	8230 1381 04	HT, carbon, 1/4W, 100k Ω , 5%
R123	8230 1381 01	HT, carbon, 1/4W, 100 Ω , 5%
R124	8230 1381 04	HT, carbon, 1/4W, 100k Ω , 5%
R125	8230 1382 43	HT, carbon, 1/4W, 24k Ω , 5%
R126	8230 1381 13	HT, carbon, 1/4W, 11k Ω , 5%
R127	8230 1381 33	HT, carbon, 1/4W, 13k Ω , 5%
R128, 129	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%
R130	8230 1381 22	HT, carbon, 1/4W, 1.2k Ω , 5%
R131	8230 1382 43	HT, carbon, 1/4W, 24k Ω , 5%
R151, 161	8230 1381 04	HT, carbon, 1/4W, 100k Ω , 5%
R171	8240 2900 02	POT, PI, RT9, 50k Ω RP, RK09111
R181	8230 1466 82	HT, carbon, 1/4W, 6.8k Ω , 2%
R182	8230 1383 92	HT, carbon, 1/4W, 3.9k Ω , 5%
R191	8230 1466 82	HT, carbon, 1/4W, 6.8k Ω , 2%
R192	8230 1383 92	HT, carbon, 1/4W, 3.9k Ω , 5%
R196	8230 1381 00	HT, carbon, 1/4W, 10 Ω , 5%

Ref. No.	Part No.	Description
R210, 211	8230 1382 02	HT, carbon, 1/4W, 2kΩ, 5%
R869, 879		N/A
R889, 890		N/A
R951	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R998, 999	N/A	Wire, jumper, IPS-1041-2, F5

CAPACITORS

Ref. No.	Part No.	Description
C101	8232 1501 06	VT, ALU, 16V, 10μF, 20%, SME-VB-BP
C102	8232 8012 21	VT, CER, 50V, 220pF, 5%, SL
C103		N/A
C104, 105	8232 8011 01	VT, CER, 50V, 100pF, 5%, SL
C106	8232 1424 77	VT, ALU, 10V, 470μF, 20%, SME-VB
C107		N/A
C111	8232 1501 06	VT, ALU, 16V, 10μF, 20%, SME-VB-BP
C112	8232 8012 21	VT, CER, 50V, 220pF, 5%, SL
C113		N/A
C114, 115	8232 8011 01	VT, CER, 50V, 100pF, 5%, SL
C121, 122	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C123~125		N/A
C126	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C131~134	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C135	8232 1461 05	VT, ALU, 50V, 1μF, 20%, SME-VB
C136		N/A
C137~140	8232 8031 03	VT, CER, 50V, 0.01μF, +80-20%, YF
C141, 142		N/A
C143	8232 8031 03	VT, CER, 50V, 0.01μF, +80-20%, YF
C151	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C161	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C181	8232 2961 06	VT, ALU, 50V, 10μF, 20%, LLA
C182		N/A
C191	8232 2961 06	VT, ALU, 50V, 10μF, 20%, LLA
C192		N/A
C201, 202		N/A
C889, 890	N/A	Wire, jumper, IPS-1041-2, F5

MISCELLANEOUS

Ref. No.	Part No.	Description
J101	8245 3081 09	Connector, PL, jack, 9P, SBRK9R-4
J102	8245 2680 05	Connector, PL, Jack, XLR31, NC3FAHR20
J103	8245 3390 04	Connector, PL, jack, phone, YKB21-5074
J111	8245 3390 04	Connector, PL, jack, phone, YKB21-5074
L101~106	8242 5011 21	Filter, ST, EMI, 120, 25%, MMZ2012S
L996~999	N/A	Wire, jumper, IPS-1041-2, F5
S101, 102	8253 4680 00	SW, push, SPPJ2
S901	8253 6520 04	SW, PL, slide, 2-2, non-shortening, SSSU1, L06

Ref. No.	Part No.	Description
E001	N/A	Wire, jumper, IPS-1041-2, F5
E002	N/A	Wire, jumper, IPS-1041-2, F10

• LCD assy

Ref. No.	Part No.	Description
A101	8260 5600 00	LCD, module, 256 x 64 dots
A102	8274 2040 00	PCB assy, LCD-IF, VM200

• LCD IF PCB assy

Ref. No.	Part No.	Description
	8274 2040 00	PCB assy, LCD IF, VM200
B101	8251 9850 01	Plain PCB, LCD IF, VM200

RESISTORS

Ref. No.	Part No.	Description
R001	8230 5006 83	RES, ST, CARBON, 1/10W, 68K, 5%
R002~006		N/A

CAPACITORS

Ref. No.	Part No.	Description
C001	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C002	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C003		N/A
C004~010	8232 1462 25	VT, ALU, 50V, 2.2μF, 20%, SME-VB
C011~015	8232 1461 05	VT, ALU, 50V, 1μF, 20%, SME-VB

MISCELLANEOUS

Ref. No.	Part No.	Description
J001	8245 2720 17	Connector, PI, jack, FPC, 17P
J002	8245 3080 03	Connector, PI, jack, 3P, SBRK3S-4

• Ana Out PCB assy

Ref. No.	Part No.	Description
	8274 1930 00	PCB assy, Ana Out, VM200
B101	8251 9771 01	Plain PCB, Ana Out, VM200

ICs

Ref. No.	Part No.	Description
U501	8236 5050 11	ST, AN, op amp, NJM2115M (TEI)
U561	8236 5412 00	ST, AN, op amp, NJM4565M
U601, 701	8236 5050 11	ST, AN, op amp, NJM2115M (TEI)
U781	8236 5412 00	ST, AN, op amp, NJM4565M
U801	8236 5050 11	ST, AN, op amp, NJM2115M (TEI)
U901	8236 0220 00	92, AN, regulator, NJM78L05A
U951	8236 0352 03	SIP, AN, op amp, NJM4556AL
U963	8236 5412 00	ST, AN, op amp, NJM4565M

TRANSISTORS

Ref. No.	Part No.	Description
Q931, 941	8234 1434 03	TR, VT, NPN, 2SC2878-A/B
Q951, 961	8234 1434 03	TR, VT, NPN, 2SC2878-A/B

RESISTORS

Ref. No.	Part No.	Description
R001, 002	8230 1381 02	HT, carbon, 1/4W, 1kΩ, 5%
R501	8230 1382 43	HT, carbon, 1/4W, 24kΩ, 5%
R502~504	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R505	8230 1381 51	HT, carbon, 1/4W, 150Ω, 5%
R506	8240 2890 02	POT, PI, RT9, 20kΩRD, RK09K113
R507, 508	8230 1382 02	HT, carbon, 1/4W, 2kΩ, 5%
R509	8230 1381 13	HT, carbon, 1/4W, 11kΩ, 5%
R510	8230 1381 33	HT, carbon, 1/4W, 13kΩ, 5%
R511, 512	8230 1381 03	HT, carbon, 1/4W, 10kΩ, 5%
R601	8230 1382 43	HT, carbon, 1/4W, 24kΩ, 5%
R602~604	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R605	8230 1381 51	HT, carbon, 1/4W, 150Ω, 5%
R606	8240 2890 02	POT, PI, RT9, 20kΩRD, RK09K113
R607, 608	8230 1382 02	HT, carbon, 1/4W, 2kΩ, 5%
R609	8230 1381 13	HT, carbon, 1/4W, 11kΩ, 5%
R610	8230 1381 33	HT, carbon, 1/4W, 13kΩ, 5%
R611, 612	8230 1381 03	HT, carbon, 1/4W, 10kΩ, 5%
R701	8230 1382 43	HT, carbon, 1/4W, 24kΩ, 5%
R702~704	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R705	8230 1381 51	HT, carbon, 1/4W, 150Ω, 5%
R706	8240 2890 02	POT, PI, RT9, 20kΩRD, RK09K113
R707, 708	8230 1382 02	HT, carbon, 1/4W, 2kΩ, 5%
R709	8230 1381 13	HT, carbon, 1/4W, 11kΩ, 5%
R710	8230 1381 33	HT, carbon, 1/4W, 13kΩ, 5%
R711, 712	8230 1381 03	HT, carbon, 1/4W, 10kΩ, 5%
R801	8230 1382 43	HT, carbon, 1/4W, 24kΩ, 5%

Ref. No.	Part No.	Description
R802~804	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R805	8230 1381 51	HT, carbon, 1/4W, 150Ω, 5%
R806	8240 2890 02	POT, PI, RT9, 20kΩRD, RK09K113
R807, 808	8230 1382 02	HT, carbon, 1/4W, 2kΩ, 5%
R809	8230 1381 13	HT, carbon, 1/4W, 11kΩ, 5%
R810	8230 1381 33	HT, carbon, 1/4W, 13kΩ, 5%
R811, 812	8230 1381 03	HT, carbon, 1/4W, 10kΩ, 5%
R903	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R913	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R915	8230 1111 01	H, metal, 1W, 100Ω, 5%, F15
R921, 922	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R931	8240 2750 03	POT, PI, RT9, 50kΩAA, RK09K12C
R932	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R933	8230 1381 03	HT, carbon, 1/4W, 10kΩ, 5%
R934	8230 1382 23	HT, carbon, 1/4W, 22kΩ, 5%
R935	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R936, 937	8230 1381 02	HT, carbon, 1/4W, 1kΩ, 5%
R942	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R943	8230 1381 03	HT, carbon, 1/4W, 10kΩ, 5%
R944	8230 1382 23	HT, carbon, 1/4W, 22kΩ, 5%
R945	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R946, 947	8230 1381 02	HT, carbon, 1/4W, 1kΩ, 5%
R951	8240 2750 03	POT, PI, RT9, 50kΩAA, RK09K12C
R952	8230 1381 02	HT, carbon, 1/4W, 1kΩ, 5%
R953	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R954	8230 1381 12	HT, carbon, 1/4W, 1.1kΩ, 5%
R955, 956	8230 1381 03	HT, carbon, 1/4W, 10kΩ, 5%
R957	8230 1382 00	HT, carbon, 1/4W, 20Ω, 5%
R962	8230 1381 02	HT, carbon, 1/4W, 1kΩ, 5%
R963	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
R964	8230 1381 12	HT, carbon, 1/4W, 1.1kΩ, 5%
R965, 966	8230 1381 03	HT, carbon, 1/4W, 10kΩ, 5%
R967	8230 1382 00	HT, carbon, 1/4W, 20Ω, 5%
R981	N/A	Wire, jumper, IPS-1024-2, F5
R983	N/A	Wire, jumper, IPS-1024-2, F5
R985, 986	8230 1381 02	HT, carbon, 1/4W, 1kΩ, 5%

CAPACITORS

Ref. No.	Part No.	Description
C005~007	8232 1431 07	VT, ALU, 16V, 100μF, 20%, SME-VB
C008, 009	8232 8031 03	VT, CER, 50V, 0.01μF, +80-20%, YF
C011, 012	8232 8031 03	VT, CER, 50V, 0.01μF, +80-20%, YF
C014~017	8232 8031 03	VT, CER, 50V, 0.01μF, +80-20%, YF
C020	8232 1431 07	VT, ALU, 16V, 100μF, 20%, SME-VB
C501	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C502	8232 1432 26	VT, ALU, 16V, 22μF, 20%, SME-VB
C503	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C506		N/A
C507	8232 8012 20	VT, CER, 50V, 22pF, 5%, SL

Ref. No.	Part No.	Description
C508~511		N/A
C601	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C602	8232 1432 26	VT, ALU, 16V, 22μF, 20%, SME-VB
C603	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C606		N/A
C607	8232 8012 20	VT, CER, 50V, 22pF, 5%, SL
C608~611		N/A
C627, 628	8232 8031 03	VT, CER, 50V, 0.01μF, +80-20%, YF
C701	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C702	8232 1432 26	VT, ALU, 16V, 22μF, 20%, SME-VB
C703	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C706		N/A
C707	8232 8012 20	VT, CER, 50V, 22pF, 5%, SL
C708~711		N/A
C801	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C802	8232 1432 26	VT, ALU, 16V, 22μF, 20%, SME-VB
C803	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C806		N/A
C807	8232 8012 20	VT, CER, 50V, 22pF, 5%, SL
C808~811		N/A
C909	8232 1431 07	VT, ALU, 16V, 100μF, 20%, SME-VB
C910, 911	8232 8031 03	VT, CER, 50V, 0.01μF, +80-20%, YF
C912	8232 1462 26	VT, ALU, 50V, 22μF, 20%, SME-VB
C921, 922	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C931	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C932		N/A
C933	8232 8012 20	VT, CER, 50V, 22pF, 5%, SL
C934	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C941	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C942		N/A
C943	8232 8012 20	VT, CER, 50V, 22pF, 5%, SL
C944	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C951	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C952		N/A
C954	8232 1434 77	VT, ALU, 16V, 470μF, 20%, SME-VB
C955	8232 8012 20	VT, CER, 50V, 22PF, 5%, SL
C961	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C962		N/A
C964	8232 1434 77	VT, ALU, 16V, 470μF, 20%, SME-VB
C965	8232 8012 20	VT, CER, 50V, 22pF, 5%, SL
C981	8232 1431 07	VT, ALU, 16V, 100μF, 20%, SME-VB
C982~984		N/A
C986~990		N/A
C991	8232 1431 07	VT, ALU, 16V, 100μF, 20%, SME-VB

MISCELLANEOUS

Ref. No.	Part No.	Description
J501, 601	8245 3390 04	Connector, PL, jack, phone, YKB21-5074
J701, 801	8245 3390 04	Connector, PL, jack, phone, YKB21-5074

Ref. No.	Part No.	Description
J901~907	8245 3390 04	Connector, PL, jack, phone, YKB21-5074
J911	8245 2620 01	Connector, PL, jack, RCA, 2P, BLK
J913	8245 2620 01	Connector, PL, jack, RCA, 2P, BLK
J961	8245 2721 25	Connector, PL, jack, FPC, 25P
J962	8245 2721 17	Connector, PL, jack, FPC, 17P
L501~801	8242 5011 21	Filter, ST, EMI, 120, 25%, MMZ2012S
L901, 902	8242 5011 21	Filter, ST, EMI, 120, 25%, MMZ2012S
L905~914	8242 5011 21	Filter, ST, EMI, 120, 25%, MMZ2012S
L998, 999	N/A	Wire, jumper, IPS-104-2, F5
S101	8253 1250 00	SW, PI, push, SPEC12311A
W101, 201	8276 9089 40	Cable, flat, 9P, L400
W301, 401	8276 9089 35	Cable, flat, 9P, L350
W901	8276 9087 40	Cable, flat, 7P, L400
Y001-004	8207 0122 09	Holder, cable, 9P, 51048
Y005	8207 0122 07	Holder, cable, 7P, 51048
E901	N/A	Wire, jumper, IPS-104-2, F5
E902	N/A	Wire, jumper, IPS-104-4, F10

• LCD Back PCB assy

Ref. No.	Part No.	Description
	8274 1850 00	PCB assy, LCD Back, VM200
B101	8251 9761 02	Plain PCB, LCD Back, VM200

Ref. No.	Part No.	Description
R101	8240 2870 08	POT, PI, RK09, 500kΩB, XV092, L20
L101, 102	8239 1160 00	Lamp, 5V, 78mA
L103~105		N/A
W101	8276 9083 10	Cable, flat, 3P, L100
W102	8276 9082 60	Cable, flat, 2P, L600
Y001	8207 0122 02	Holder, cable, 2P, 51048
Y002	8207 0122 03	Holder, cable, 3P, 51048

• Key PCB assy

Ref. No.	Part No.	Description
	8274 2060 00	PCB assy, Key, VM200
B101	8251 9792 02	Plain PCB, Key, VM200

ICs

Ref. No.	Part No.	Description
U101	8236 0857 01	DIP, DG, driver, TD62083AP
U301	8236 0860 01	QFP, DG, CPU, VM200, TMP47C200BF
U401~403	8253 4660 00	SW, PI, encoder, EC12E
U501~503	8253 4660 00	SW, PI, encoder, EC12E
U601~603	8253 4660 00	SW, PI, encoder, EC12E
U701~703	8253 4660 00	SW, PI, encoder, EC12E

TRANSISTORS

Ref. No.	Part No.	Description
Q301~308	8234 1006 01	VT, PNP, 2SA1015GR

DIODEs

Ref. No.	Part No.	Description
D110~112	8234 5007 00	HT, 1SS136
D200, 201	8234 5040 01	Opt, VT, LED, RED, LT3D31W
D202	8234 5040 04	Opt, VT, LED, GRN, LT3E31W
D203	8234 5040 01	Opt, VT, LED, RED, LT3D31W
D204	8234 5040 04	Opt, VT, LED, GRN, LT3E31W
D205~207	8234 5040 01	Opt, VT, LED, RED, LT3D31W
D210~217	8234 5007 00	HT, 1SS136
D300~304	8234 5040 01	Opt, VT, LED, RED, LT3D31W
D305, 306	8234 5040 03	Opt, VT, LED, YLW, LT3H31W
D307	8234 5040 04	Opt, VT, LED, GRN, LT3E31W
D310~317	8234 5007 00	HT, 1SS136
D400~407	8234 5040 03	Opt, VT, LED, YLW, LT3H31W
D410~417	8234 5007 00	HT, 1SS136
D500~507	8234 5040 01	Opt, VT, LED, RED, LT3D31W
D510~517	8234 5007 00	HT, 1SS136
D600~607	8234 5040 04	Opt, VT, LED, GRN, LT3E31W
D610~617	8234 5007 00	HT, 1SS136
D700	8234 5040 01	OPT, VT, LED, RED, LT3D31W
D701, 702	8234 5040 03	OPT, VT, LED, YLW, LT3H31W
D703	8234 5040 04	OPT, VT, LED, GRN, LT3E31W
D710~717	8234 5007 00	HT, 1SS136
D810~815	8234 5007 00	HT, 1SS136

RESISTORS

Ref. No.	Part No.	Description
R301, 302	8230 1381 01	HT, carbon, 1/4W, 100Ω, 5%
R311~318	8230 1381 03	HT, carbon, 1/4W, 10kΩ, 5%
R321~328	8230 1381 02	HT, carbon, 1/4W, 1kΩ, 5%

Ref. No.	Part No.	Description
R331~338	8230 1387 50	HT, carbon, 1/4W, 75Ω, 5%
R411~418	8230 1382 02	HT, carbon, 1/4W, 2kΩ, 5%
R511~518	8230 1382 02	HT, carbon, 1/4W, 2kΩ, 5%
R911~916	8230 1381 03	HT, carbon, 1/4W, 10kΩ, 5%

CAPACITORS

Ref. No.	Part No.	Description
C101	8232 1431 07	VT, ALU, 16V, 100μF, 20%, SME-VB
C302	8232 8031 03	VT, CER, 50V, 0.01μF, +80-20%, YF
C304, 305	8232 8011 01	VT, CER, 50V, 100pF, 5%, SL

MISCELLANEOUS

Ref. No.	Part No.	Description
J301	8245 2721 08	Connector, PL, jack, FPC, 8P
J303	8245 2721 17	Connector, PL, jack, FPC, 17P
J305	8245 2721 30	Connector, PL, jack, FPC, 30P
S100~102	8253 1350 02	SW, PT, tact, SOR-112HS
S200~207	8253 1350 02	SW, PT, tact, SOR-112HS
S300~307	8253 1350 02	SW, PT, tact, SOR-112HS
S400~407	8253 1350 02	SW, PT, tact, SOR-112HS
S500~507	8253 1350 02	SW, PT, tact, SOR-112HS
S600~607	8253 1350 02	SW, PT, tact, SOR-112HS
S700~707	8253 1350 02	SW, PT, tact, SOR-112HS
S800~805	8253 1350 02	SW, PT, tact, SOR-112HS
W309	8276 9084 70	Cable, flat, 4P, L700
X101	8256 0980 00	Resonator, P, CER, 4MHz, EFO
Y001	8207 0122 03	Holder, cable, 3P, 51048
Y002	8207 0122 04	Holder, cable, 4P, 51048

• Power PCB assy

Ref. No.	Part No.	Description
	8274 1860 00	PCB assy, Power, VM200
B101	8251 9792 01	Plain PCB, Power, VM200

ICs

Ref. No.	Part No.	Description
U001	8234 1095 00	D, V, thermistor, NTH18D8R0LA
U002	8236 5409 00	VT, AN, regulator, AN1431T
U003	8234 1081 00	Opt, H, photo coupler, ON3171
U004	8236 0321 09	220, AN, regulator, NJM7824FA
U005	8236 5410 06	V, AN, power, MIP166
U006	8236 0348 06	220, AN, regulator, 7915FA
U007		N/A

DIODES

Ref. No.	Part No.	Description
D001	8234 1079 00	HT, 80V, 0.2A, MA171
D002~004	8234 1085 00	HT, fast recovery, D1NL40
D005	8234 1080 00	V, 200V, 5.0A, MA649
D006	8234 5039 76	HT, zener, MTZJ24
D007		N/A
D008	8234 5052 00	VT, 600V, 1.7A, S2V60-4002
D009	8234 1077 00	Stack, 600VAC, 1.5A, D2SBA60
D010	8234 5007 00	HT, 1SS136

RESISTORS

Ref. No.	Part No.	Description
R001	8230 1386 29	HT, carbon, 1/4W, 6.2Ω, 5%
R002	8230 1387 50	HT, carbon, 1/4W, 75Ω, 5%
R003	8230 1381 03	HT, carbon, 1/4W, 10kΩ, 5%
R004	8230 1381 01	HT, carbon, 1/4W, 100Ω, 5%
R005, 006	8230 1381 02	HT, carbon, 1/4W, 1kΩ, 5%
R007	8230 1384 73	HT, carbon, 1/4W, 47kΩ, 5%
R008	8230 1251 04	H, metal, 2W, 100kΩ, 5%, F20, RSS
R009	8230 1386 29	HT, carbon, 1/4W, 6.2Ω, 5%
R010, 011	8230 1253 30	H, metal, 2W, 33Ω, 5%, F20, RSS
R020	8230 1381 03	HT, carbon, 1/4W, 10kΩ, 5%
R021, 022		N/A

CAPACITORS

Ref. No.	Part No.	Description
C001, 002	8232 3542 22	VT, CER, 250V, 0.0022μF, 20%, ECK-ZNS
C003	8232 3521 04	VT, PES, 250V, 0.1μF, 20%, ECQ-EKF
C004	8232 2214 74	VT, ALU, 50V, 0.47μF, 20%, SRE
C005		N/A
C006, 007	8232 8181 04	VT, CER, 25V, 0.1μF, +80-20%, YF
C008	8232 3241 07	V, ALU, 400V, 100μF, 20%, SMH-VNSN, D2

Ref. No.	Part No.	Description
C009, 010	8232 3824 76	VT, ALU, 63V, 47μF, 20%, LXV
C012~014	8232 3574 77	VT, ALU, 16V, 470μF, 20%, LXV, D10
C015	8232 3588 27	V, ALU, 25V, 820μF, 20%, LXV, D10
C016	8232 3584 77	VT, ALU, 25V, 470μF, 20%, LXV, D10
C017, 018	8232 3574 77	VT, ALU, 16V, 470μF, 20%, LXV, D10
C019		N/A
C020	8232 0964 76	V, ALU, 25V, 47μF, 20%, SME
C021, 022	8232 3542 22	VT, CER, 250V, 0.0022μF, 20%, ECK-ZNS
C023		N/A
C024	8232 8031 03	VT, CER, 50V, 0.01μF, +80-20%, YF
C025		N/A
C026, 027	8232 8031 03	VT, CER, 50V, 0.01μF, +80-20%, YF
C028		N/A
C029	8232 3491 03	VT, PES, 630V, 0.01μF, 10%, ECQ-EKF
C030	8232 8181 04	VT, CER, 25V, 0.1μF, +80-20%, YF
C040	8232 8181 04	VT, CER, 25V, 0.1μF, +80-20%, YF
C041	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB

MISCELLANEOUS

Ref. No.	Part No.	Description
△ F001	8239 8010 08	Fuse, VT, SEMKO, TLAG, 0.8A, 250V, TR5-T
J001	8245 3080 07	Connector, PI, jack, 7P, SBRK8S-4
J002	8245 3210 00	Connector, PL, jack, AC Inlet, 3P, 0714-FR7
J003	8245 0530 08	Connector, PI, jack, 8263, 8P, WHT
J004, 005		N/A
J006	8245 3080 02	Connector, PI, jack, 2P, SBRK2S-4
L001	8242 2491 93	Filter, line, 19mH, 0.5A, ELFI5N005A
L002	8242 2491 02	Filter, line, 1mH, 2.2A, ELFI5N022A
L003	8242 2501 03	Coil, PV, 10μH, 2A, ELC
L004, 005	8242 1340 01	Filter, EMI, 6 hole
L006		N/A
S001	8253 4610 02	SW, P, push, power, SDDL1-B1-F2
△ T001	8242 2650 00	Transformer, SW, power, ER2810, 5-53-18
W102	8277 4780 25	Cable assy, VH, AC3P, L250
W103	8277 4790 10	Cable assy, earth lug, L100
Y501	8207 0126 02	Heatsink, 17PB23, L25, B
Y502	8207 0015 00	Heatsink, OSH-1625-SP
Y503	N/A	Screw, B3 x 6CZn
E001	N/A	Wire, jumper, IPS-1041-2, F10
E002	N/A	Wire, jumper, IPS-1042-2, F5

• POWER FADER PCB assy

Ref. No.	Part No.	Description
	8274 2180 00	PCB assy, Power Fader, VM200
B101	8251 9861 02	Plain PCB, Power Fader, VM200

ICs

Ref. No.	Part No.	Description
U001	8236 5409 00	VT, AN, regulator, AN1431T
U002	8234 1081 00	Opt, H, photo coupler, ON3171
U003	8236 5410 03	V, AN, power, MIP163
U004	8234 1095 00	D, V, thermistor, NTH18D8ROLA
U005	8236 0321 01	220, AN, regulator, NJM7805FA

DIODES

Ref. No.	Part No.	Description
D001	8234 1079 00	HT, 80V, 0.2A, MA171
D002	8234 1077 00	Stack, 600VAC, 1.5A, D2SBA60
D003	8234 5052 00	V, 600V, 1.7A, S2V60-4002
D004	8234 1080 00	V, 200V, 5.0A, MA649
D010	8234 5029 00	ST, DAP202X

RESISTORS

Ref. No.	Part No.	Description
R001, 002	8230 5005 69	ST, carbon, 1/10W, 5.6Ω, 5%
R003	8230 5007 50	ST, carbon, 1/10W, 75Ω, 5%
R004	8230 5001 01	ST, carbon, 1/10W, 100Ω, 5%
R005	8230 5002 22	ST, carbon, 1/10W, 2.2kΩ, 5%
R006	8230 5001 02	ST, carbon, 1/10W, 1kΩ, 5%
R007	8230 1251 04	H, metal, 2W, 100kΩ, 5%, F20, RSS
R008	8230 5001 03	ST, carbon, 1/10W, 10kΩ, 5%
R031	8230 5001 03	ST, carbon, 1/10W, 10kΩ, 5%

CAPACITORS

Ref. No.	Part No.	Description
C001	8232 3241 07	V, ALU, 400V, 100μF, 20%, SMH-VNSN, D2
C002~004	8232 3574 77	VT, ALU, 16V, 470μF, 20%, LXV, D10
C005~007	8233 5021 04	ST, CER, 50V, 0.1μF, +80, CC20F
C008	8232 0964 76	V, ALU, 25V, 47μF, 20%, SME-VB
C009, 010	8232 3542 22	VT, CER, 250V, 0.0022μF, 20%, ECK-ZNS
C011	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C012	8232 3491 03	VT, PES, 630V, 0.01μF, 10%, ECQ-EKF
C020, 021	8233 5041 03	ST, CER, 25V, 0.01μF, 10%, CC20R
C022	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB
C030	8232 1431 06	VT, ALU, 16V, 10μF, 20%, SME-VB

MISCELLANEOUS

Ref. No.	Part No.	Description
J001	8245 3080 05	Connector, PI, jack, 5P, SBRK5S-4
J002	8245 3050 03	Connector, PI, jack, VH, 3P, WHT

Ref. No.	Part No.	Description
J003	8245 3080 04	Connector, PI, jack, 4P, SBRK4S-4
L001	8242 2501 03	Coil, PV, 10μH, 2A, ELC
△T001	8242 2630 00	Transformer, sw power, ER2810, 8-18-53
Y501, 502	8207 0015 00	Heatsink, OSH-1625-SP Screw, B3 x 6CZn

• Fader PCB assy

Ref. No.	Part No.	Description
	8274 1900 00	PCB assy, Fader, VM200
B101	8251 9772 02	Plain PCB, Fader, VM200

ICs

Ref. No.	Part No.	Description
U401~409	8236 0844 00	SIP, AN, motor driver, BA6218
U411~419	8240 2910 00	POT, PI, SL60, 10KΩB, RS60N11M9

RESISTORS

Ref. No.	Part No.	Description
R401~409	8230 1121 00	H, metal, 1W, 10Ω, 5%, F12.5

CAPACITORS

Ref. No.	Part No.	Description
C401~409	8232 1422 27	VT, ALU, 10V, 220μF, 20%, SME-VB
C411	8232 8031 03	VT, CER, 50V, 0.01μF, +80-20%, YF
C412		N/A
C413	8232 8031 03	VT, CER, 50V, 0.01μF, +80-20%, YF
C414		N/A

MISCELLANEOUS

Ref. No.	Part No.	Description
J401	8245 2721 25	Connector, PL, jack, FPC, 25P
J402	8245 2721 17	Connector, PL, jack, FPC, 17P
W401	8276 9085 45	Cable, flat, 5P, L450
Y001	8207 0122 05	Holder, cable, 5P, 51048
E001	N/A	Wire, jumper, IPS-1041-2, F5
E002	N/A	Wire, jumper, IPS-1042-2, F10

• Regulator PCB assy

Ref. No.	Part No.	Description
	8274 2170 00	PCB assy, Regulator, VM200
B101	8251 9790 05	Plain PCB, Regulator, VM200

Ref. No.	Part No.	Description
U101	8236 0321 06	IC, 220, AN, regulator, 7824FA
C101, 102	8232 8031 03	Capacitor, VT, CER, 50V, 0.01 μ F, +80-20%, YF
C103	8232 1441 06	Capacitor, VT, ALU, 25V, 10 μ F, 20%, SME-VB
W101	8277 1714 15	Cable assy, 4P, WHT5395/BS-5395/BS, L150

• LED Meter PCB assy

Ref. No.	Part No.	Description
	8274 2050 00	PCB assy, LED Meter, VM200
B101	8251 9790 04	Plain PCB, LED Meter, VM200

Ref. No.	Part No.	Description
D100~103	8234 5040 04	Diode, opt, VT, LED, GRN, LT3E31W
D104~107	8234 5040 03	Diode, opt, VT, LED, YLW, LT3H31W
D606, 607	8234 5040 01	Diode, opt, VT, LED, RED, LT3D31W
D800~803	8234 5040 04	Diode, opt, VT, LED, GRN, LT3E31W
D804~807	8234 5040 03	Diode, opt, VT, LED, YLW, LT3H31W
J101	8245 2721 17	Connector, PL, jack, FPC, 17P
E001	N/A	Wire, jumper, IPS-1-41-2, F5

• Jog PCB assy

Ref. No.	Part No.	Description
	8274 1910 00	PCB assy, Jog, VM200
B101	8251 9790 03	Plain PCB, Jog, VM200

Ref. No.	Part No.	Description
U901	8253 4660 01	SW, PI, encoder, EC12E, 24404A2
W901	8276 9083 15	Cable, flat, 3P, L150
Y001	8207 0122 03	Holder, cable, 3P, 51048

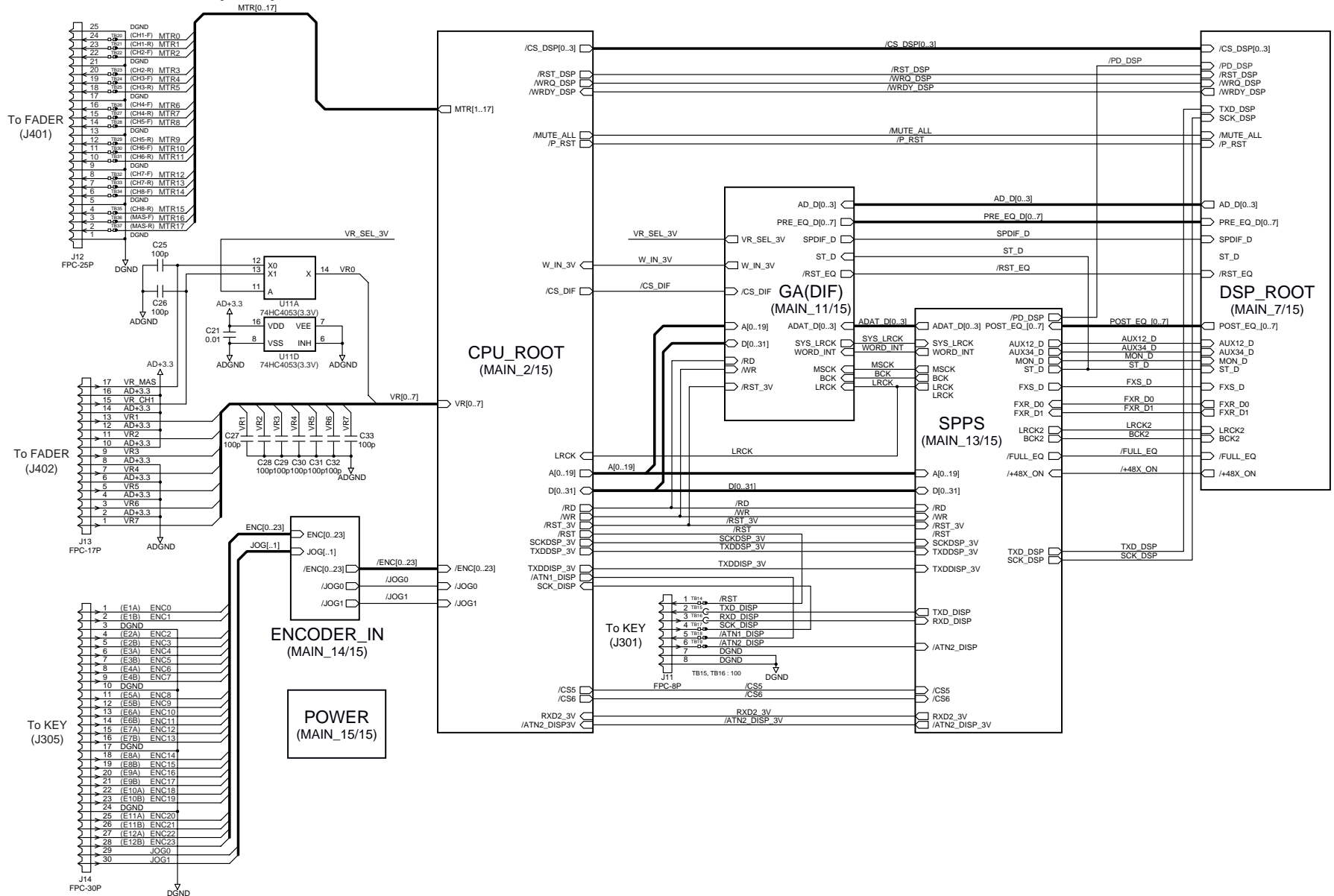
● Abbreviation

S:	Surface mount
T:	Taping device
F:	Forming device
P:	Penetrate mount
V:	Vertical mount
H:	Horizontal mount
I:	I form
L:	L form
QFP:	Quad Flat Package
SOP:	Small Outline Package
SSOP:	Shrink Small Outline Package
TSSOP:	Thin Shrink Small Outline Package
DIP:	Dual In-line Package
220:	TO-220 type
DG:	Digital
AN:	Analog

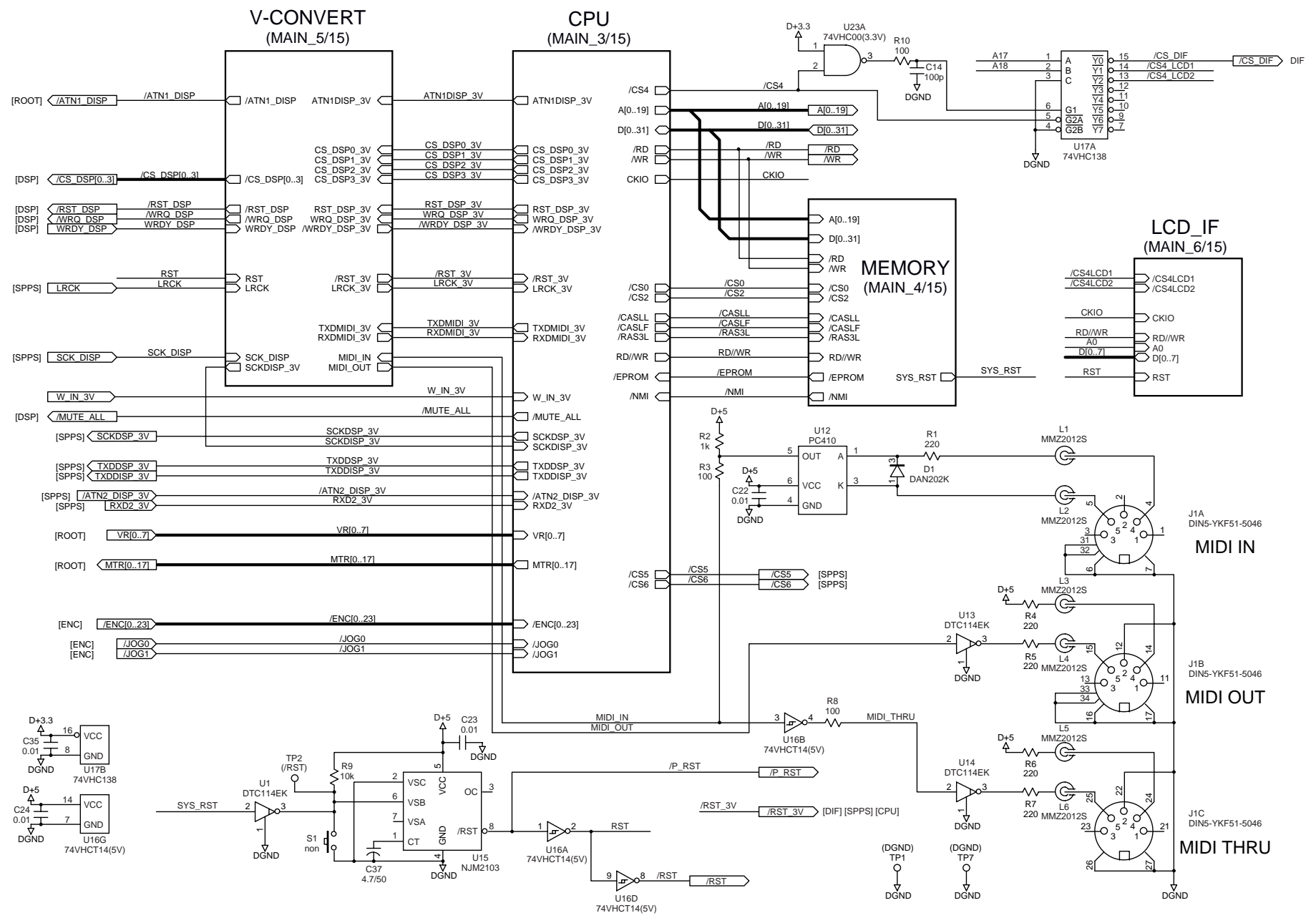
6. CIRCUIT DIAGRAMS

6-1. MAIN, VM200

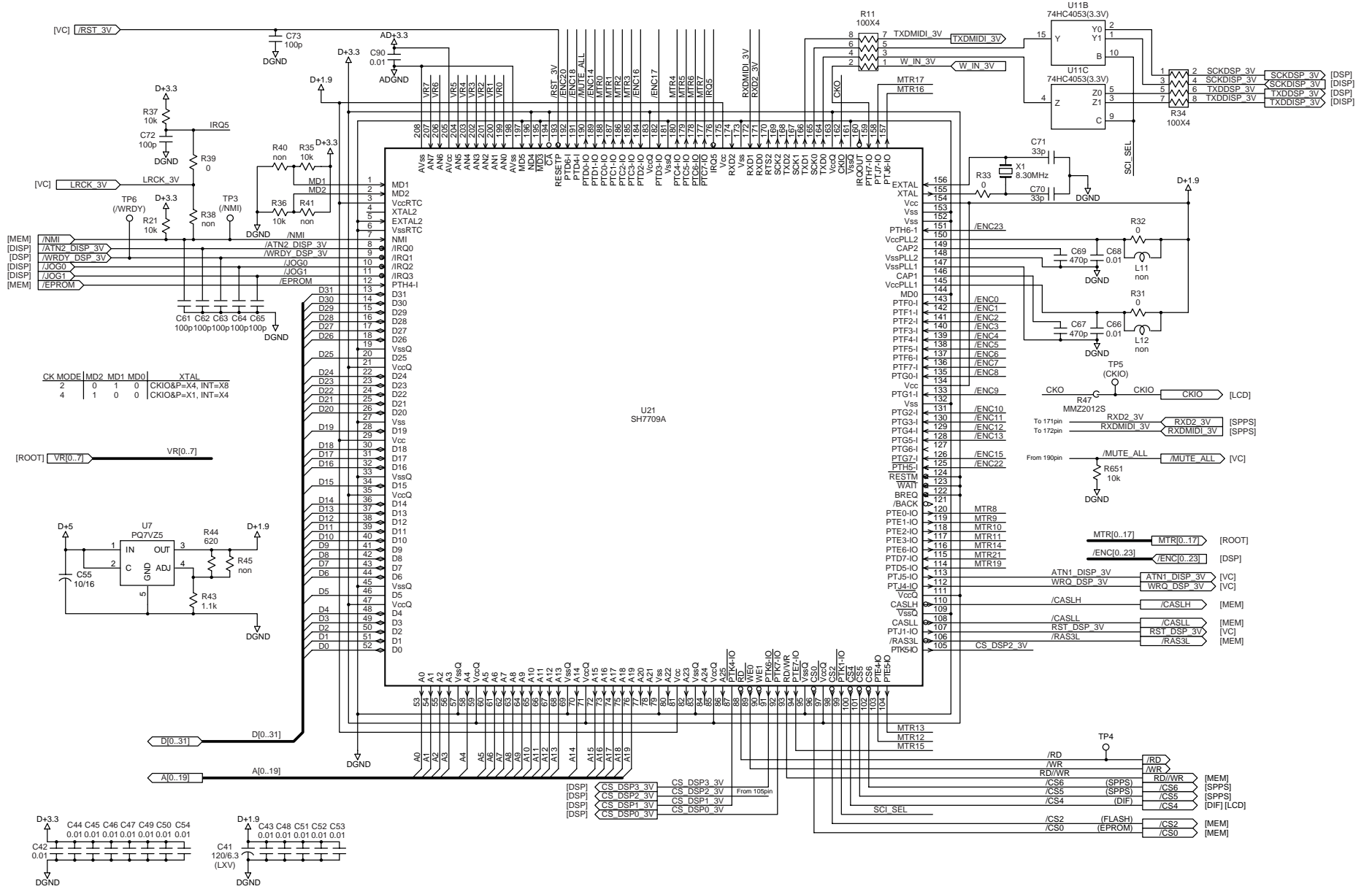
6-1-1. MAIN, ROOT (1/15)



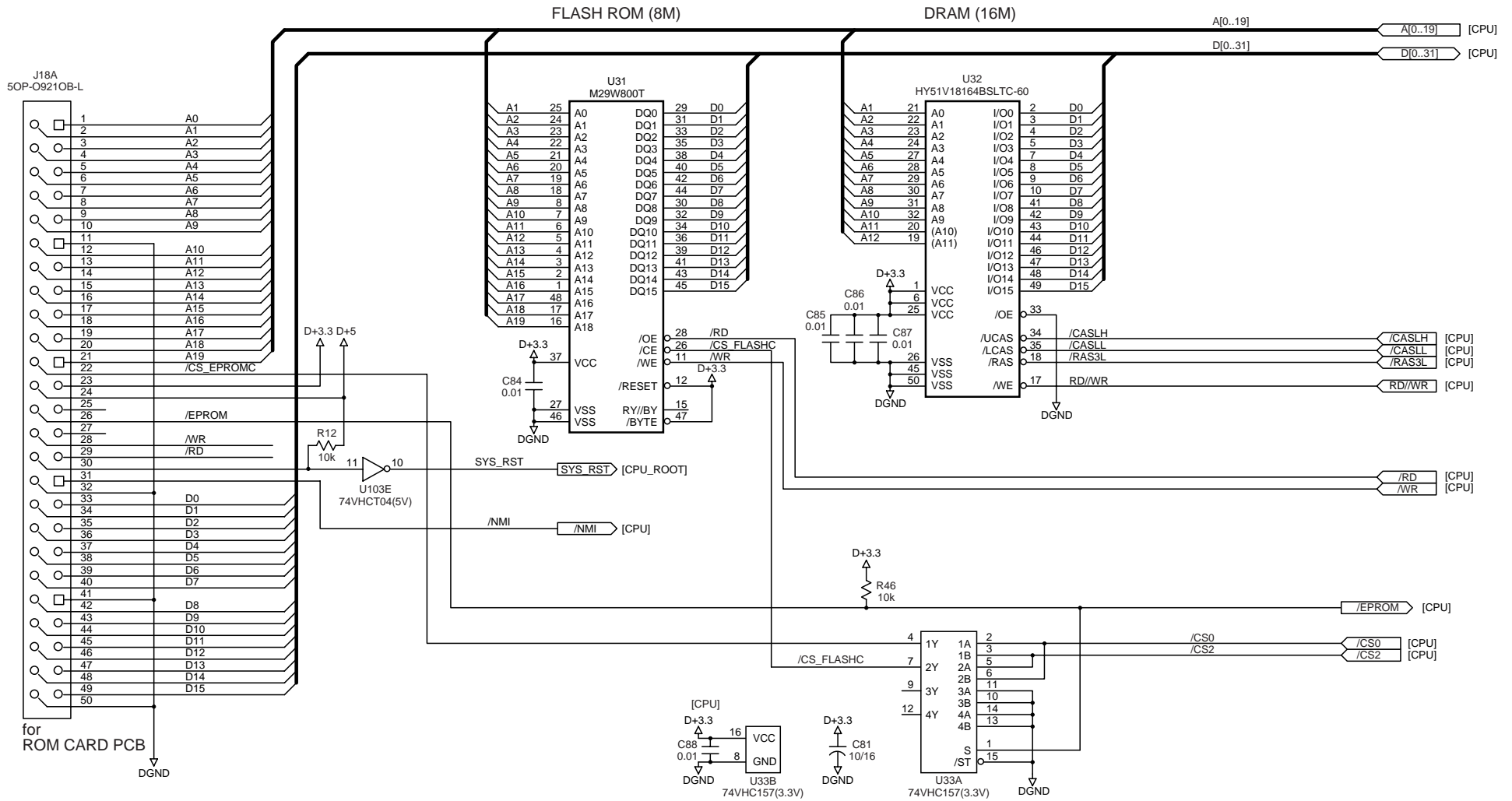
6-1-2. MAIN, CPU, ROOT, VM200 (2/15)



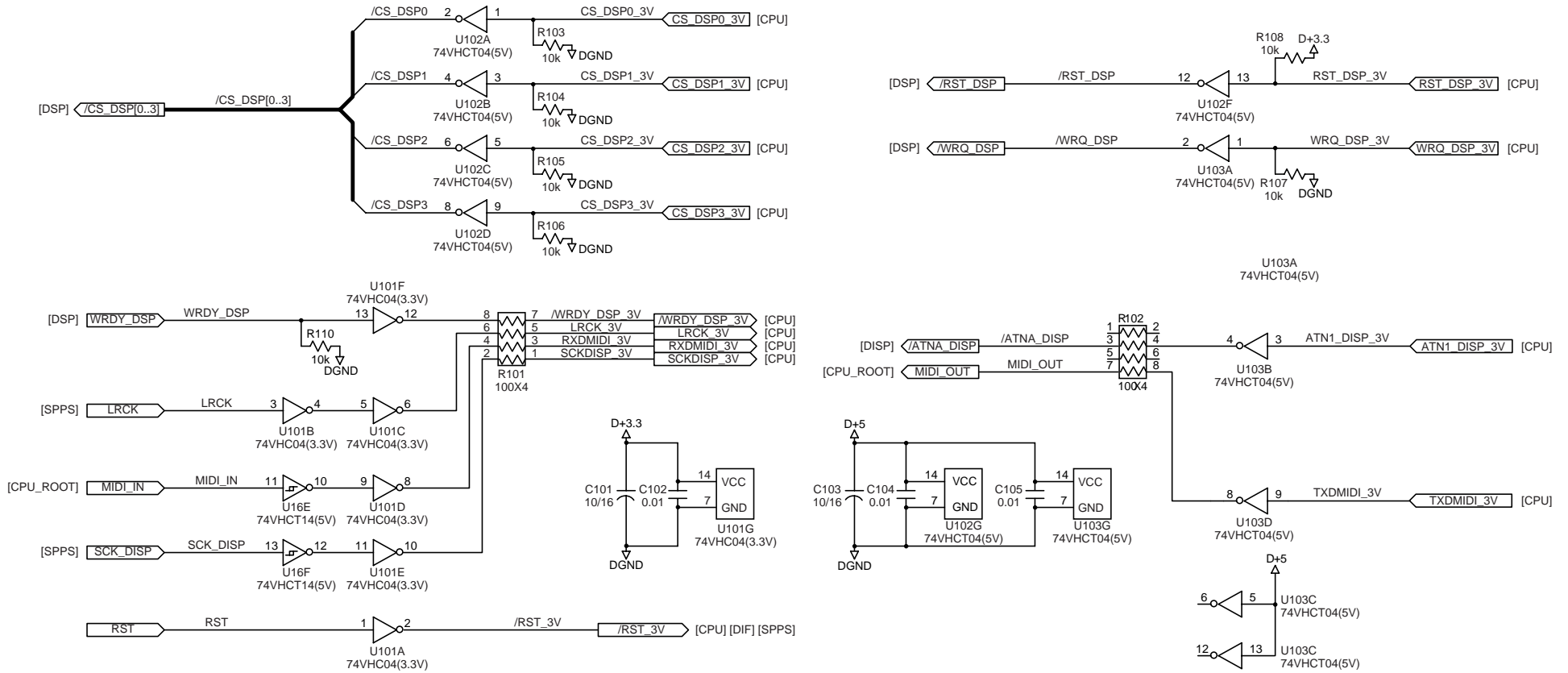
6-1-3. MAIN, CPU, VM200 (3/15)



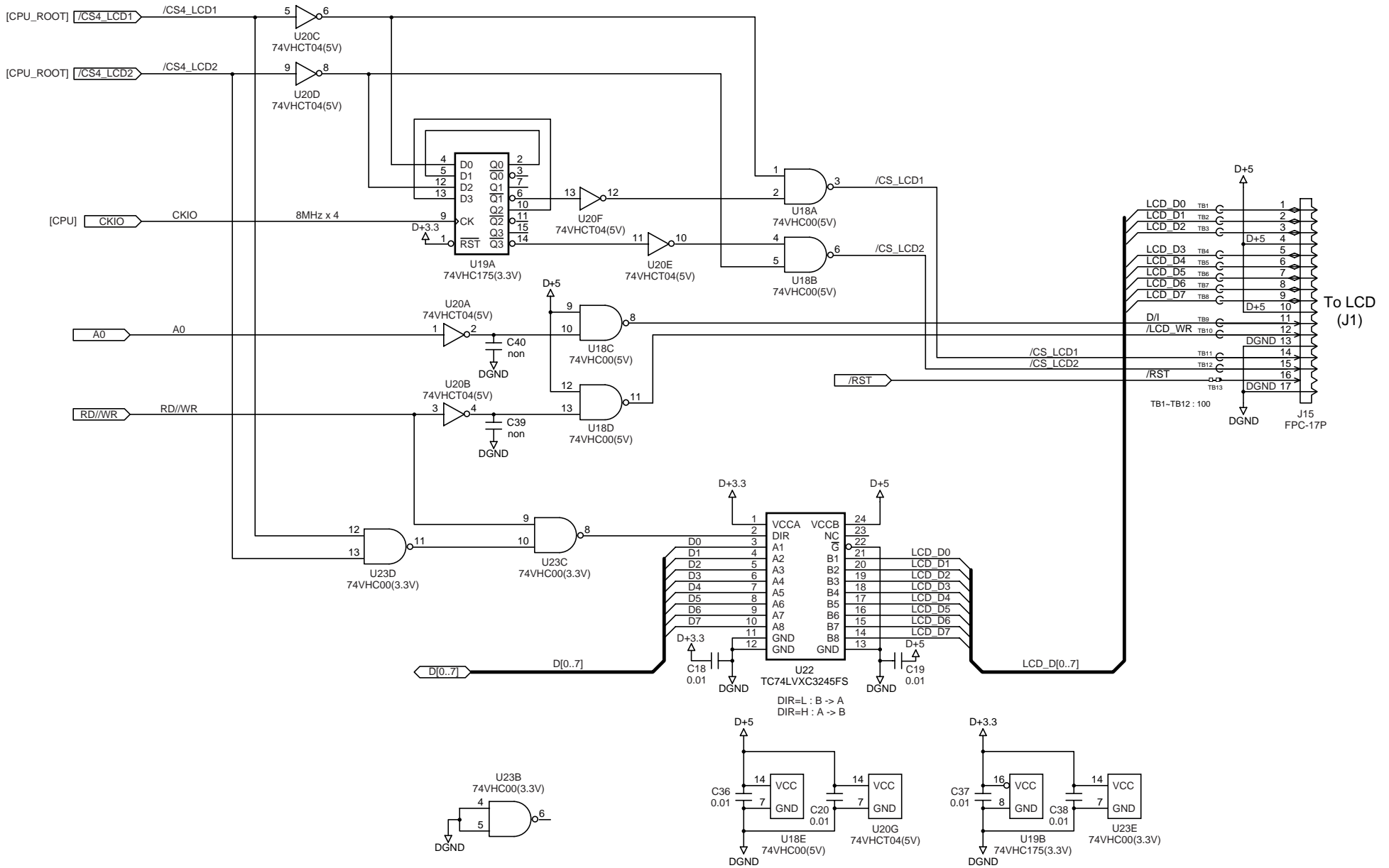
6-1-4. MAIN, MEMORY, VM200 (4/15)



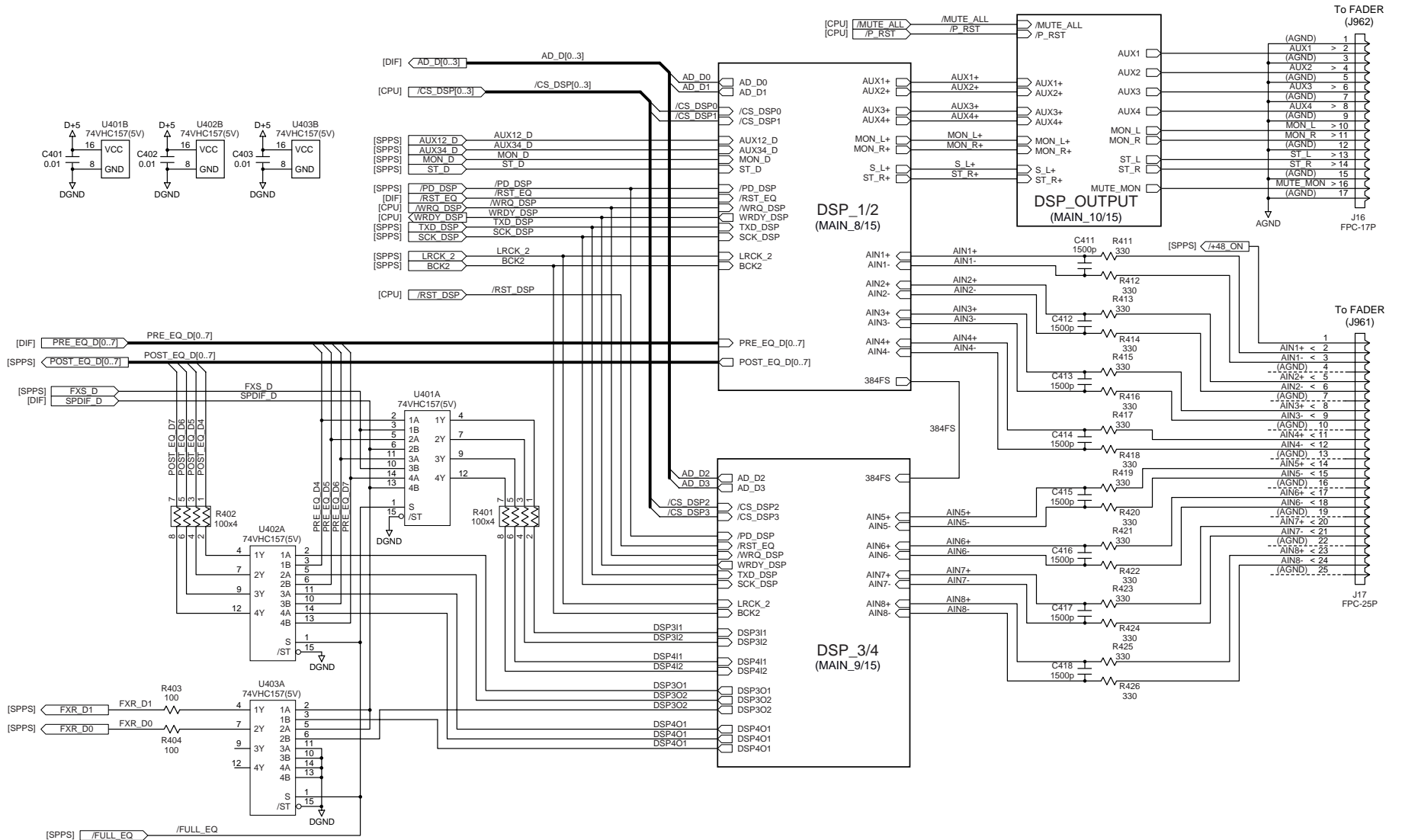
6-1-5. MAIN, V-CONVERT, VM200 (5/15)



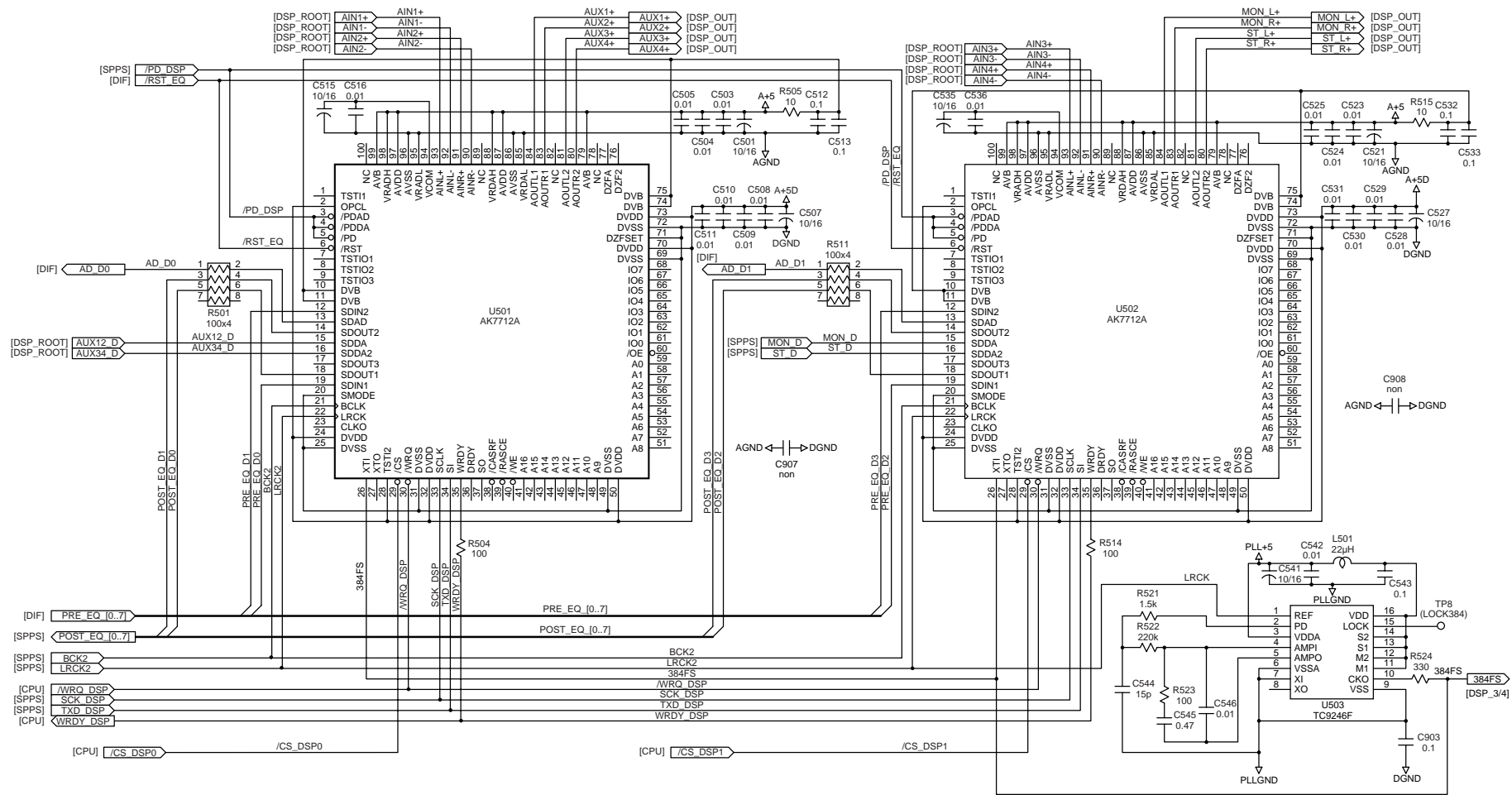
6-1-6. MAIN, LCD INTERFACE, VM200 (6/15)



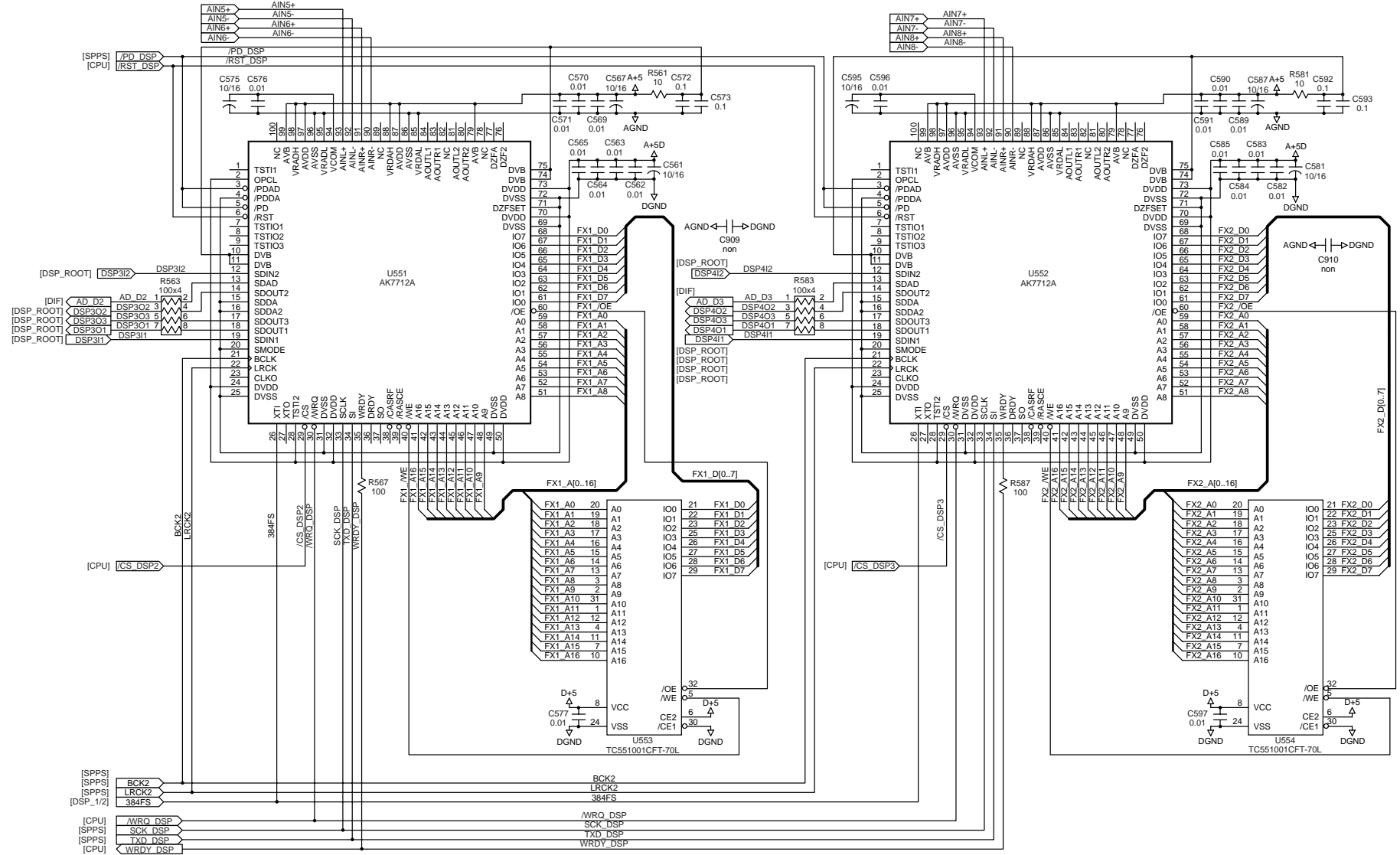
6-1-7. MAIN, DSP, ROOT, VM200 (7/15)



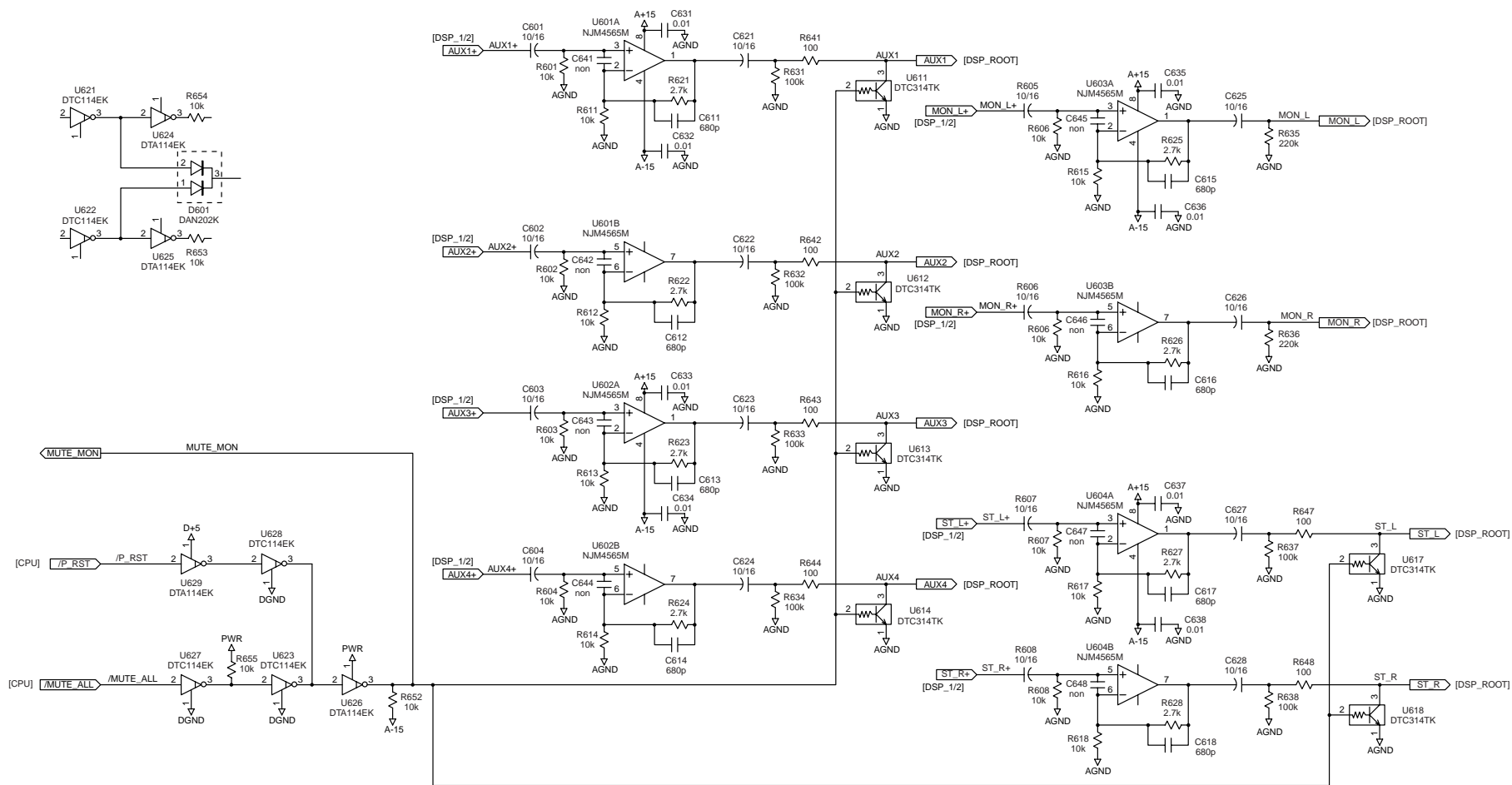
6-1-8. MAIN, DSP 1/2, VM200 (8/15)



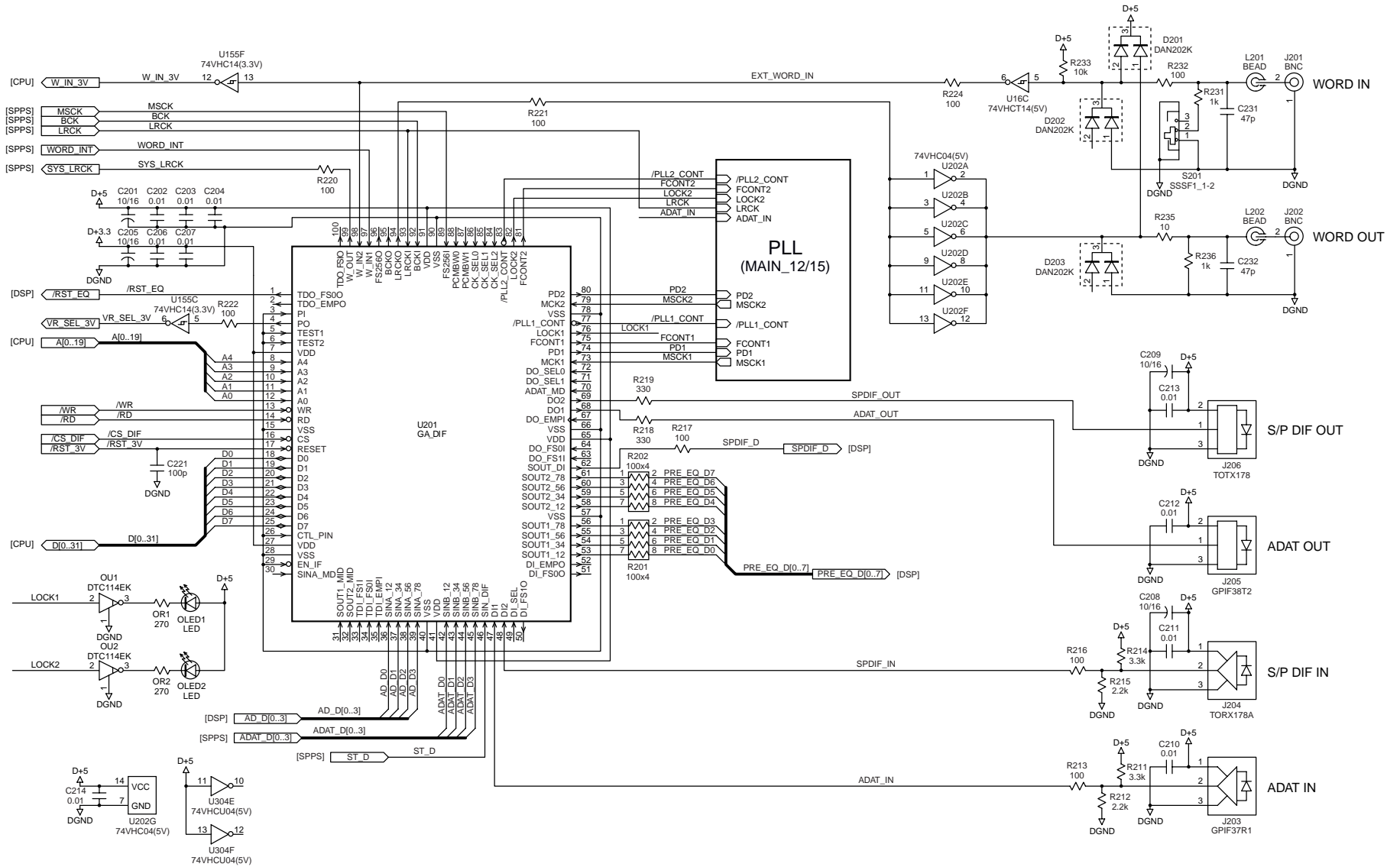
6-1-9. MAIN, DSP 3/4, VM200 (9/15)



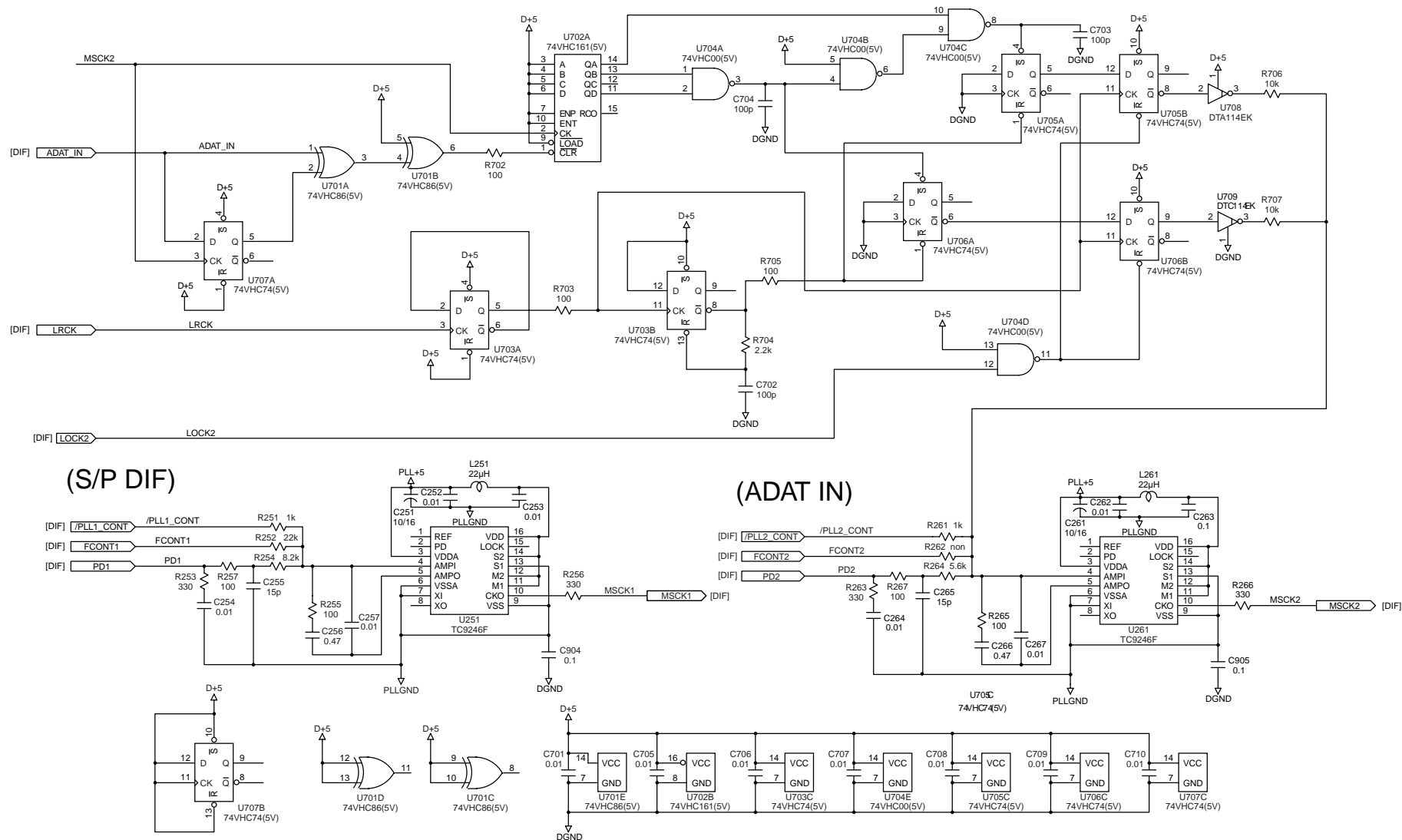
6-1-10. MAIN, DSP OUT, VM200 (10/15)



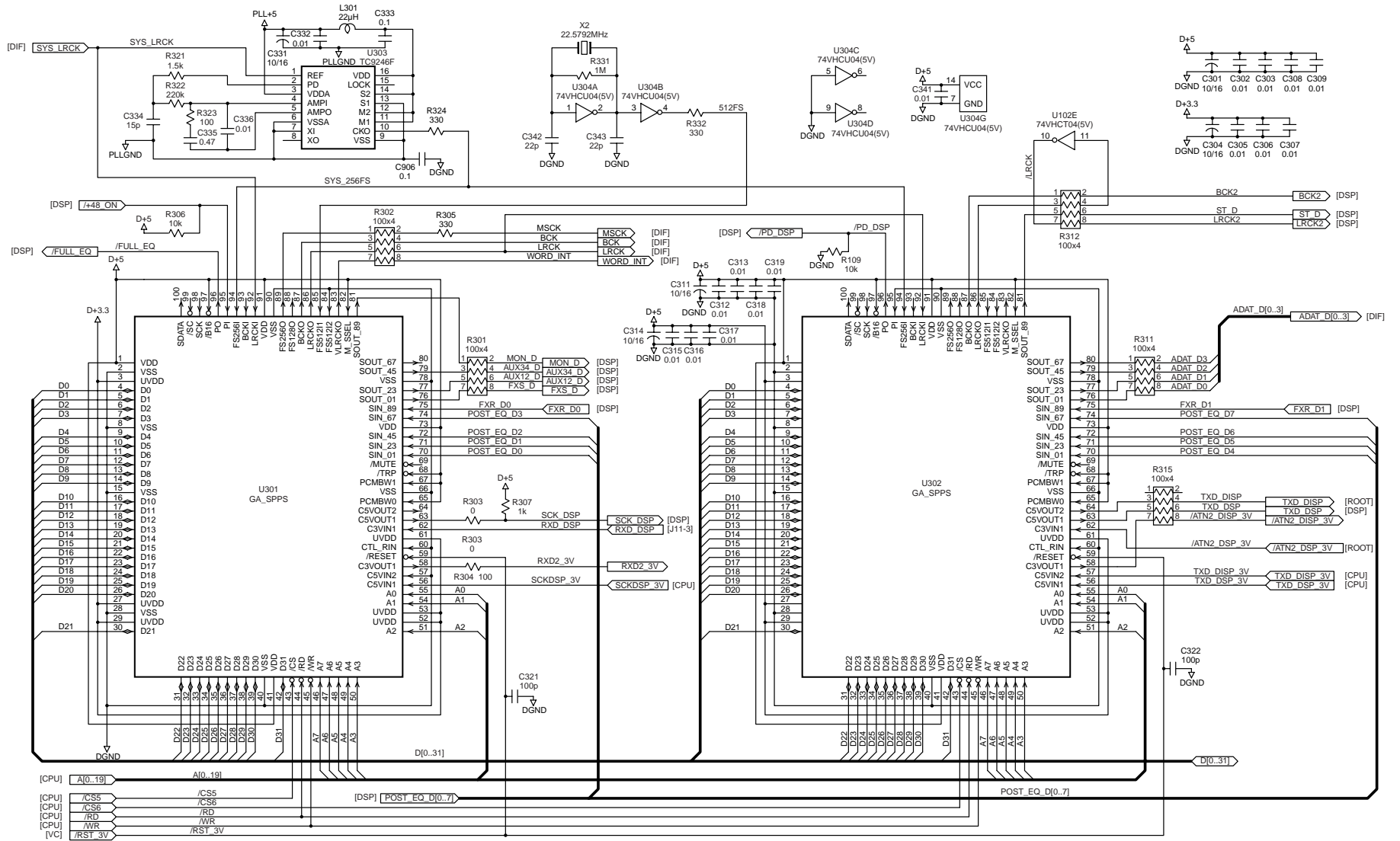
6-1-11. MAIN, GATE ARRAY DIGITAL INTERFACE, VM200 (11/15)



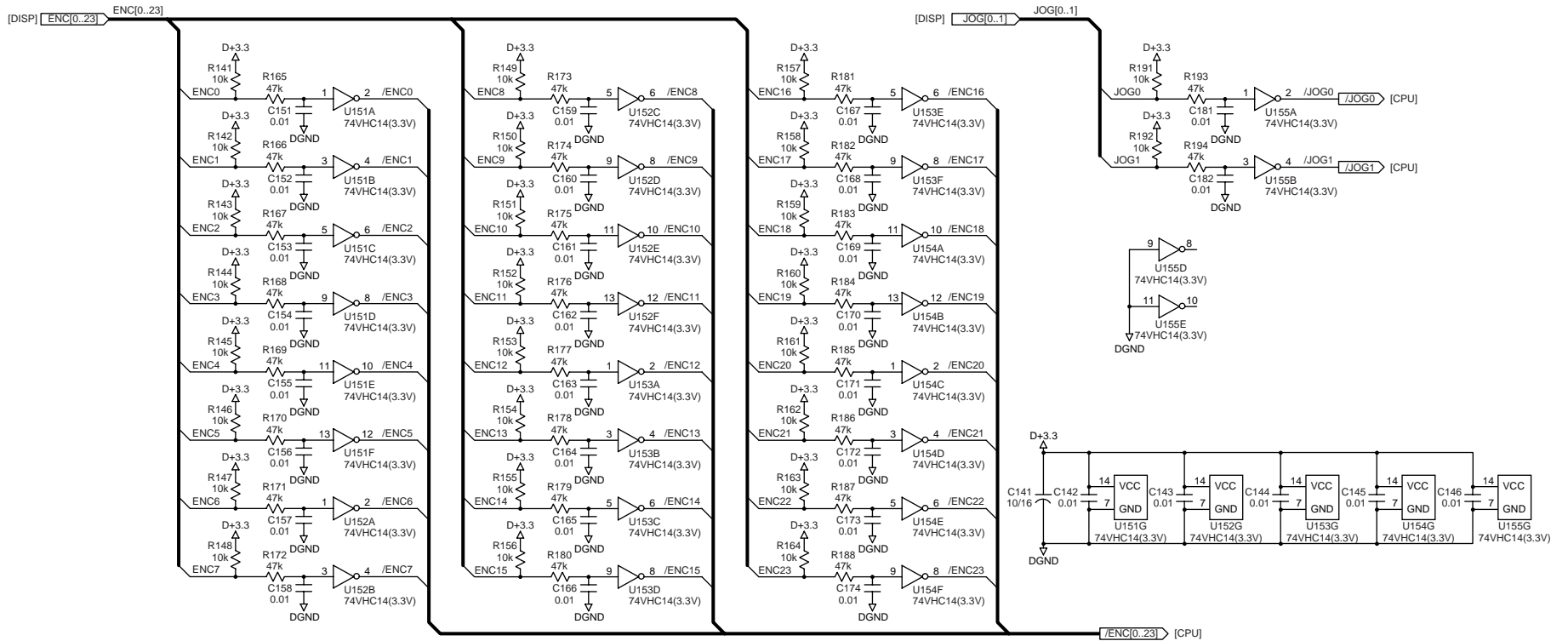
6-1-12. MAIN, PLL, VM200 (12/15)



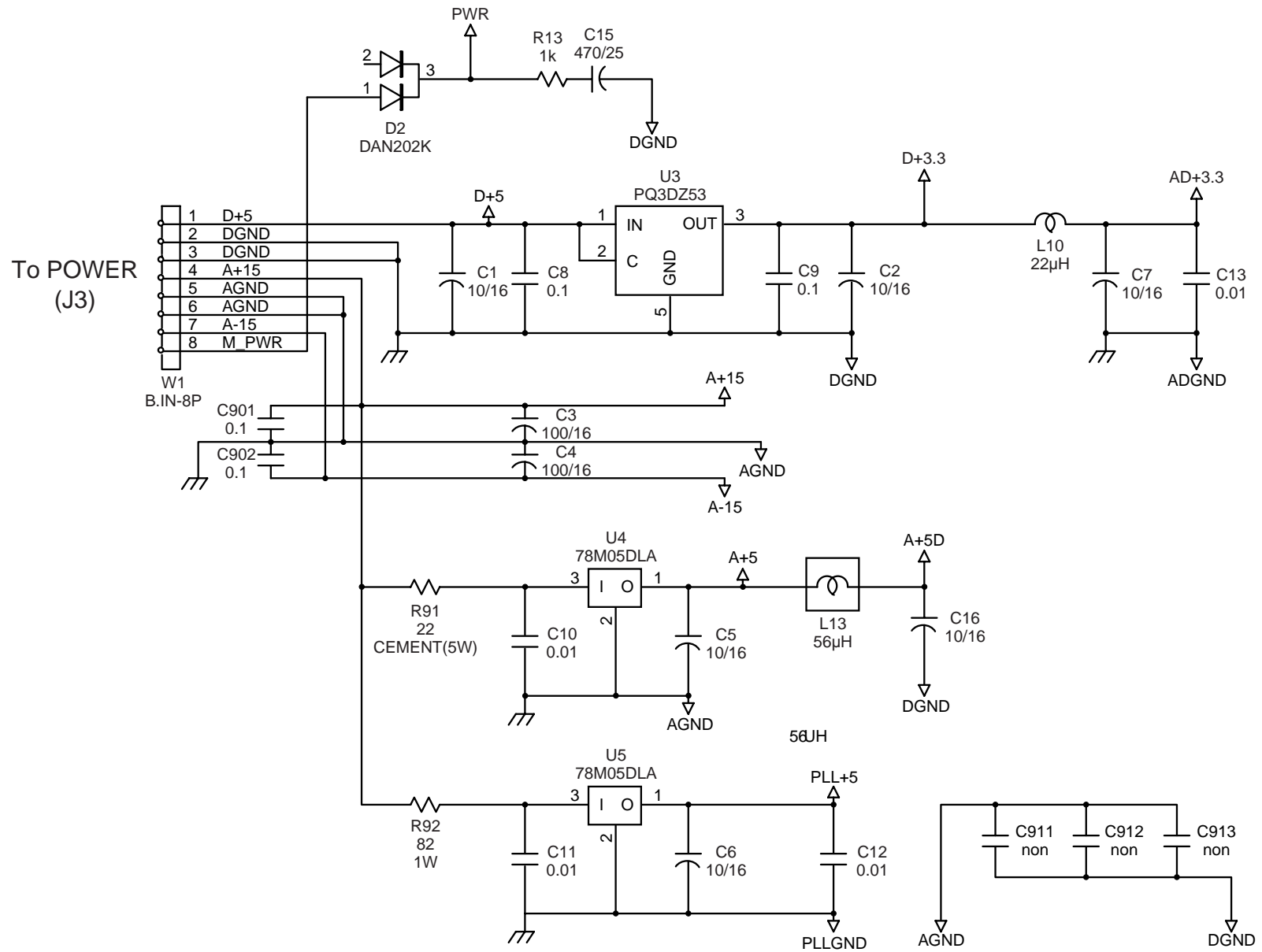
6-1-13. MAIN, GATE ARRAY SPPS, VM200 (13/15)



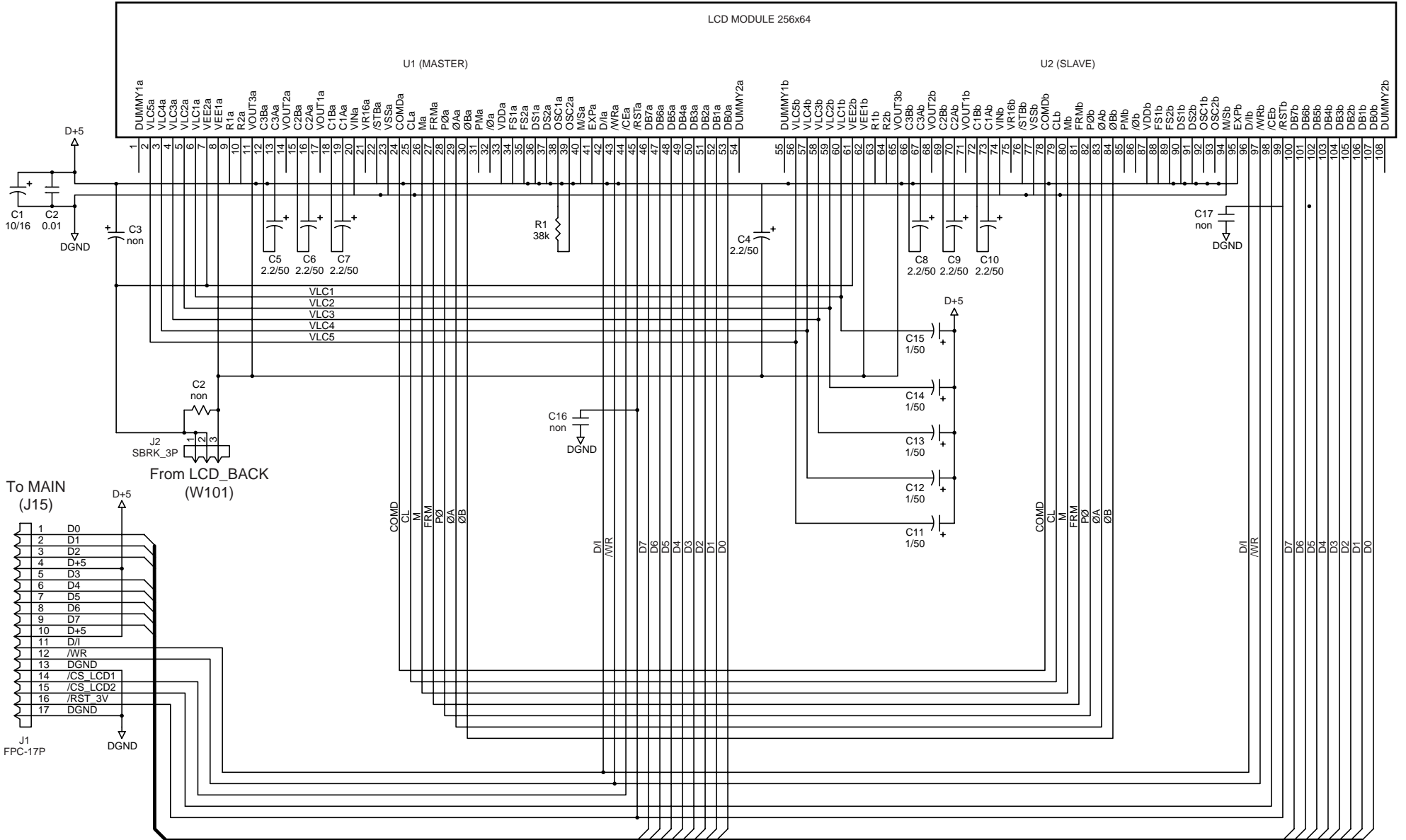
6-1-14. MAIN, ENCODER IN, VM200 (14/15)



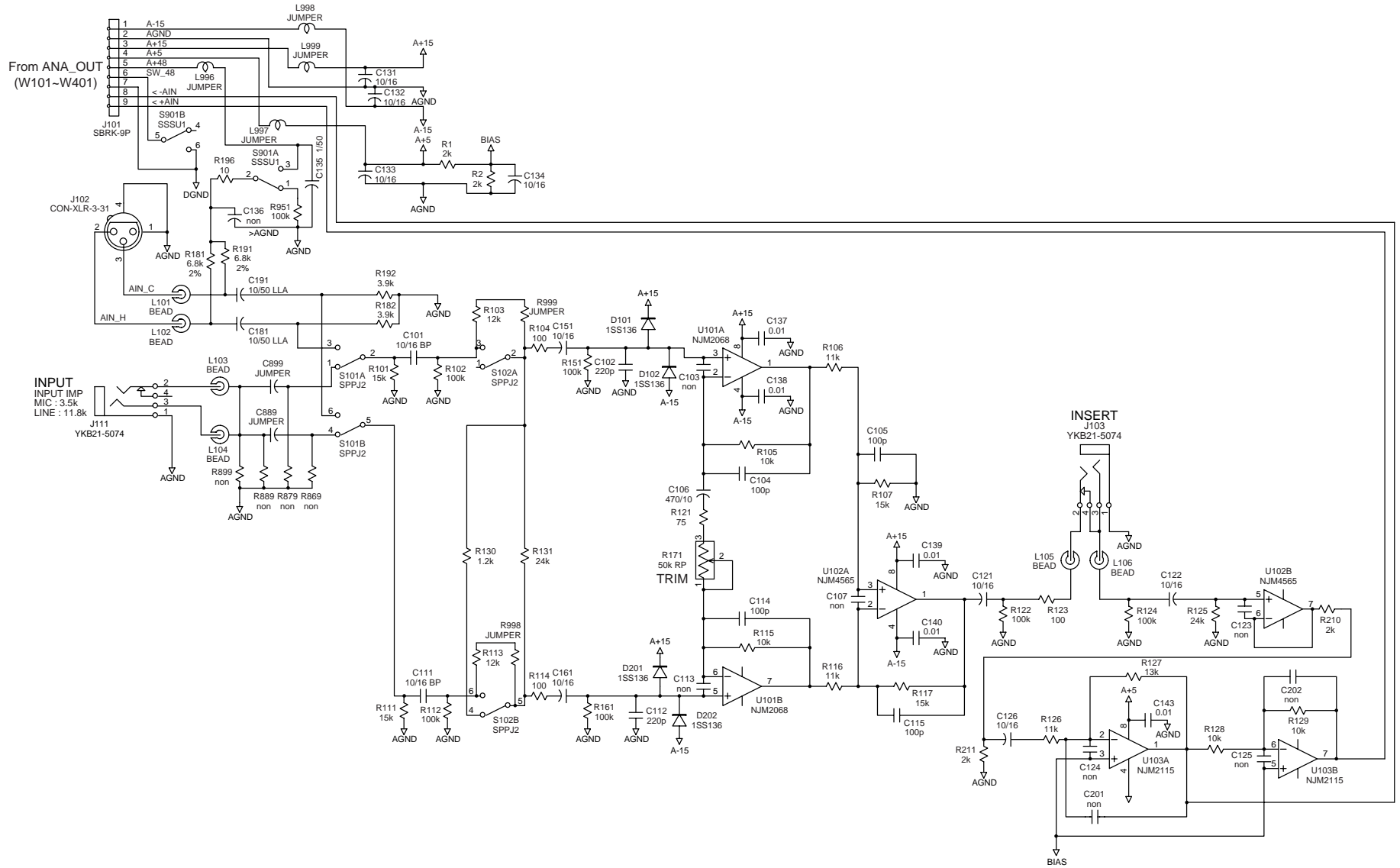
6-1-15. MAIN, POWER, VM200 (15/15)



6-2. LCD INTERFACE, VM200

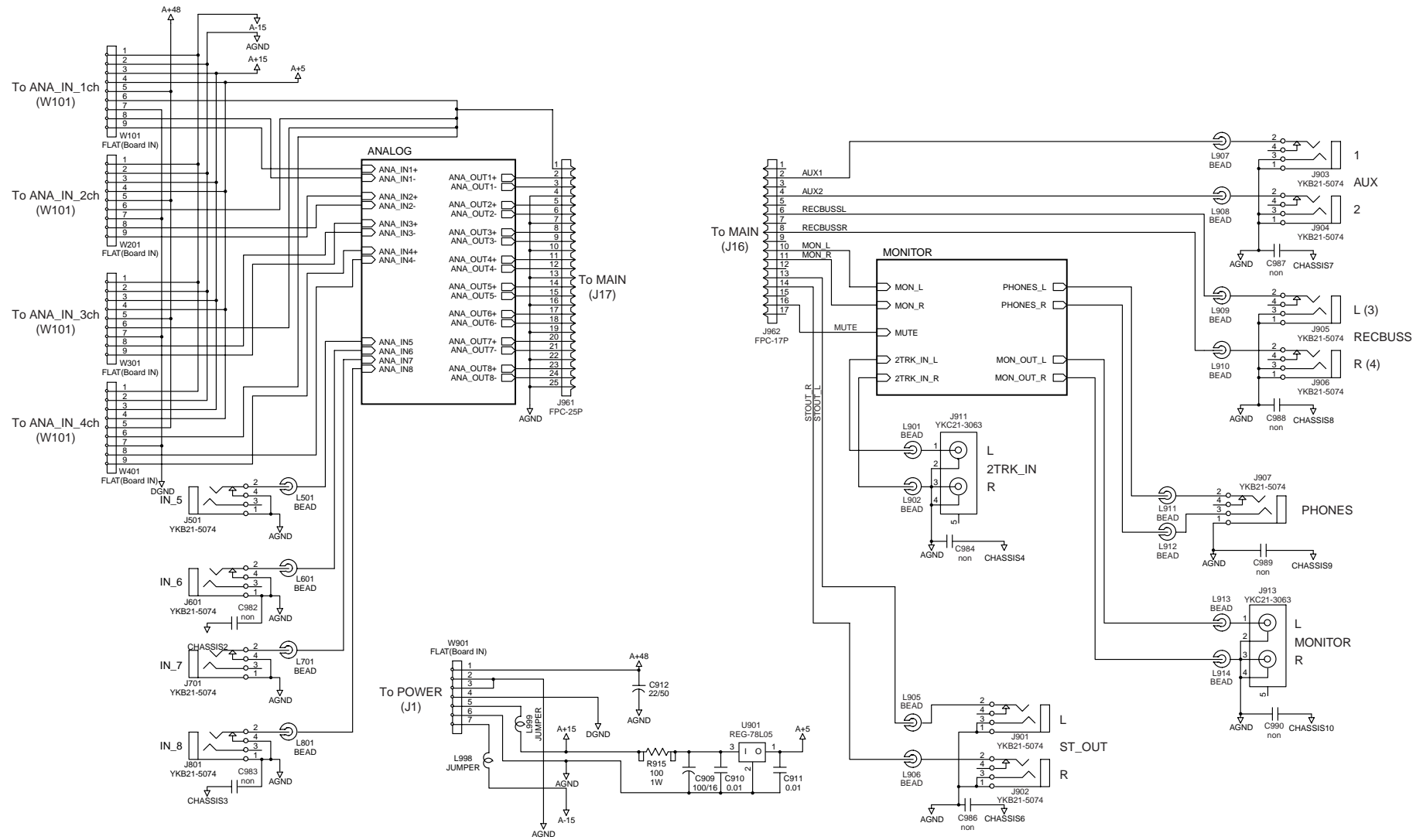


6-3. ANALOG IN, VM200

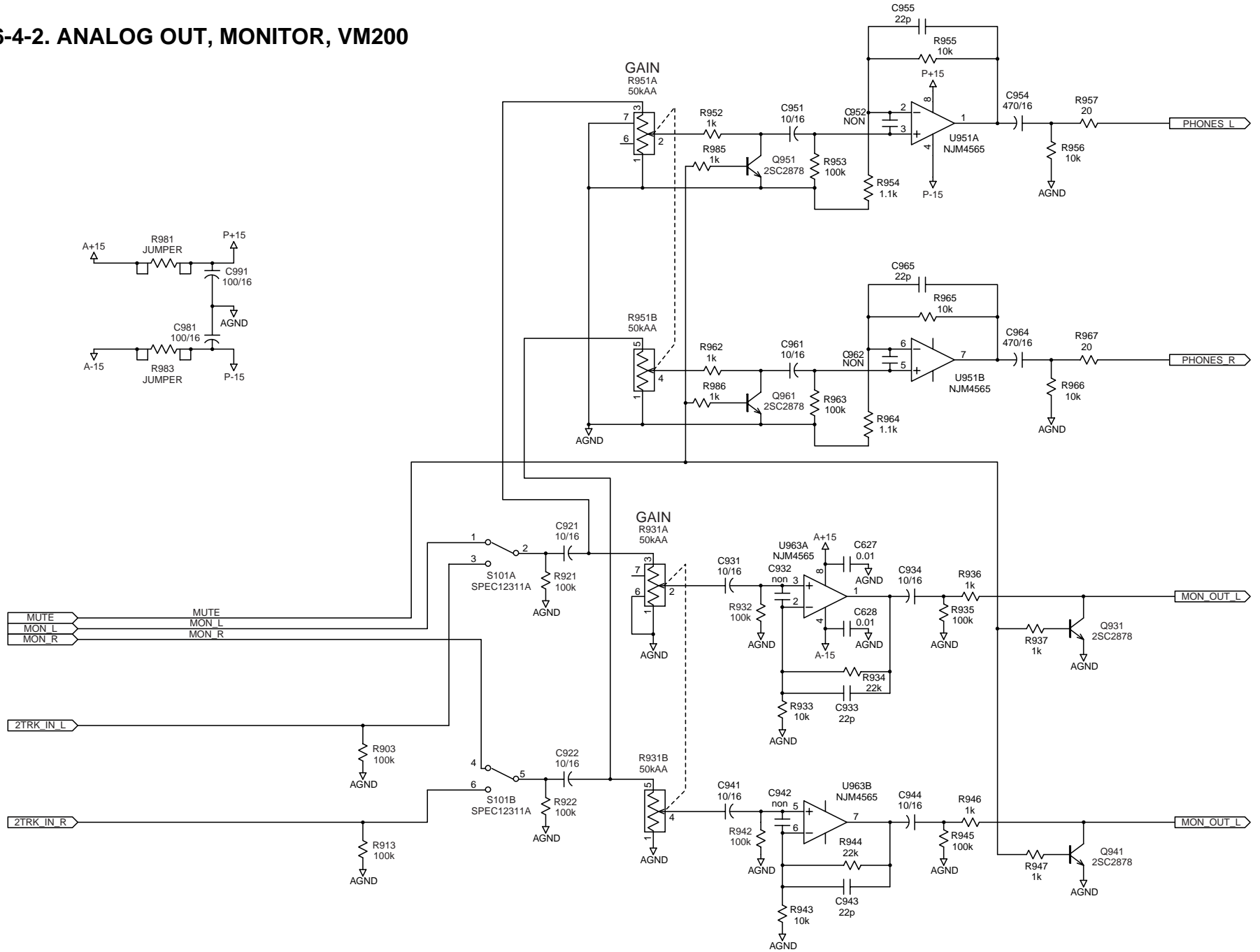


6-4. ANALOG OUT, VM200

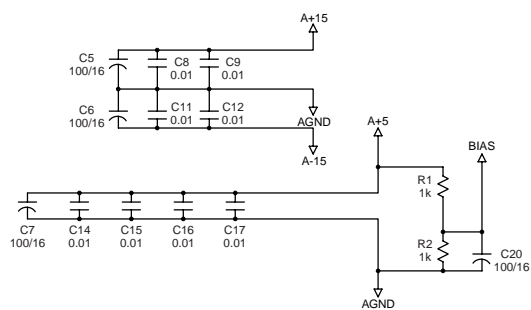
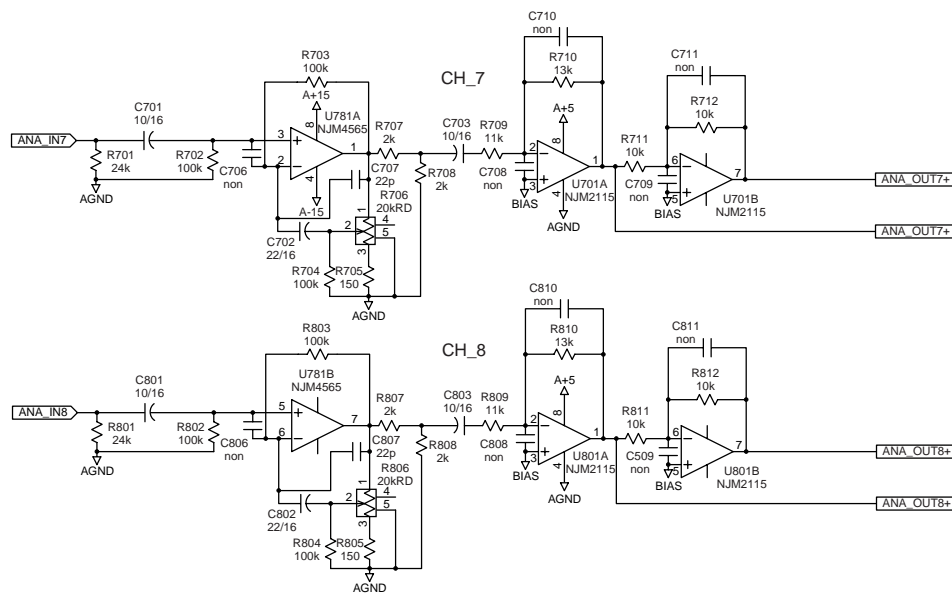
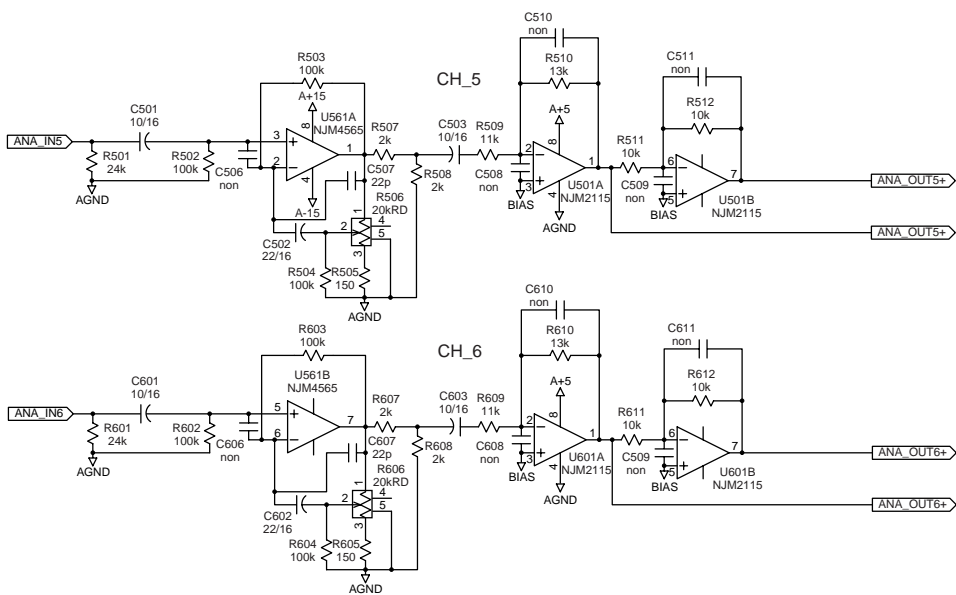
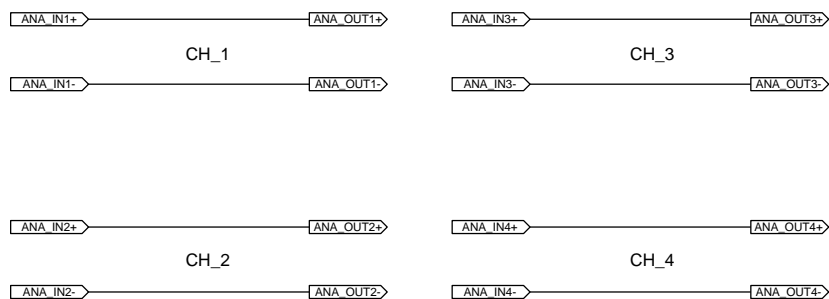
6-4-1. ANALOG OUT, ROOT, VM200



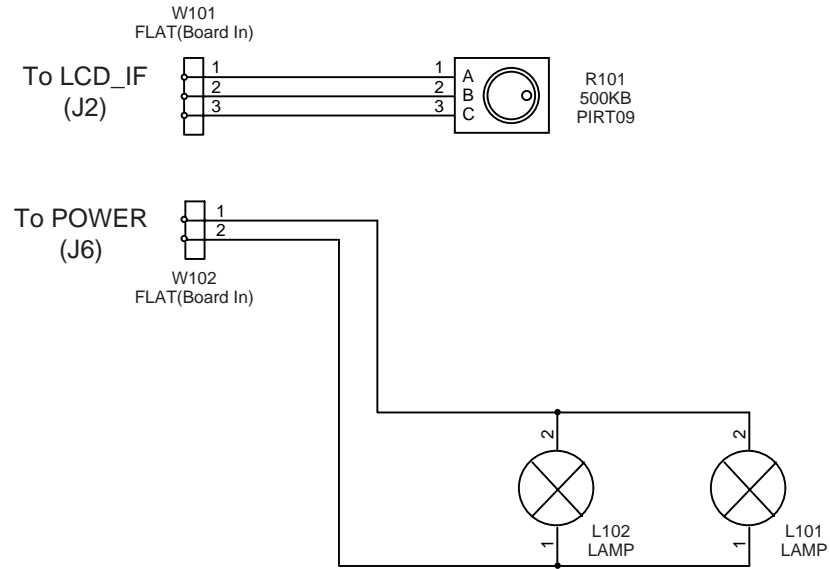
6-4-2. ANALOG OUT, MONITOR, VM200



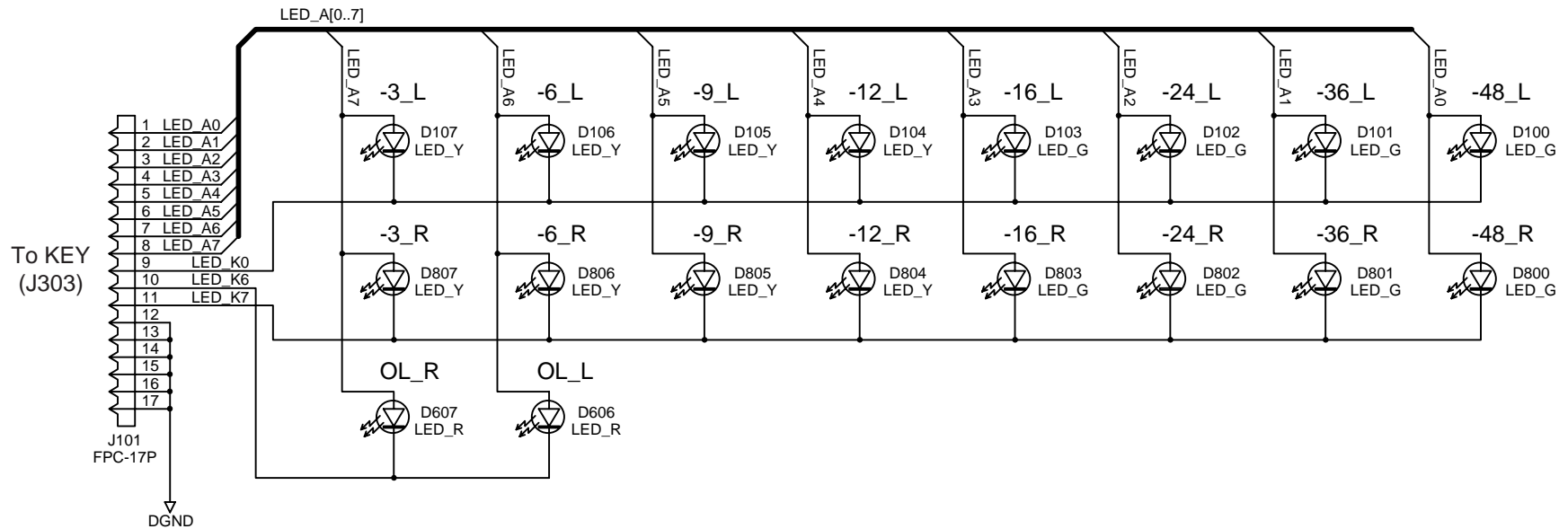
6-4-3. ANALOG OUT, INPUT, VM200



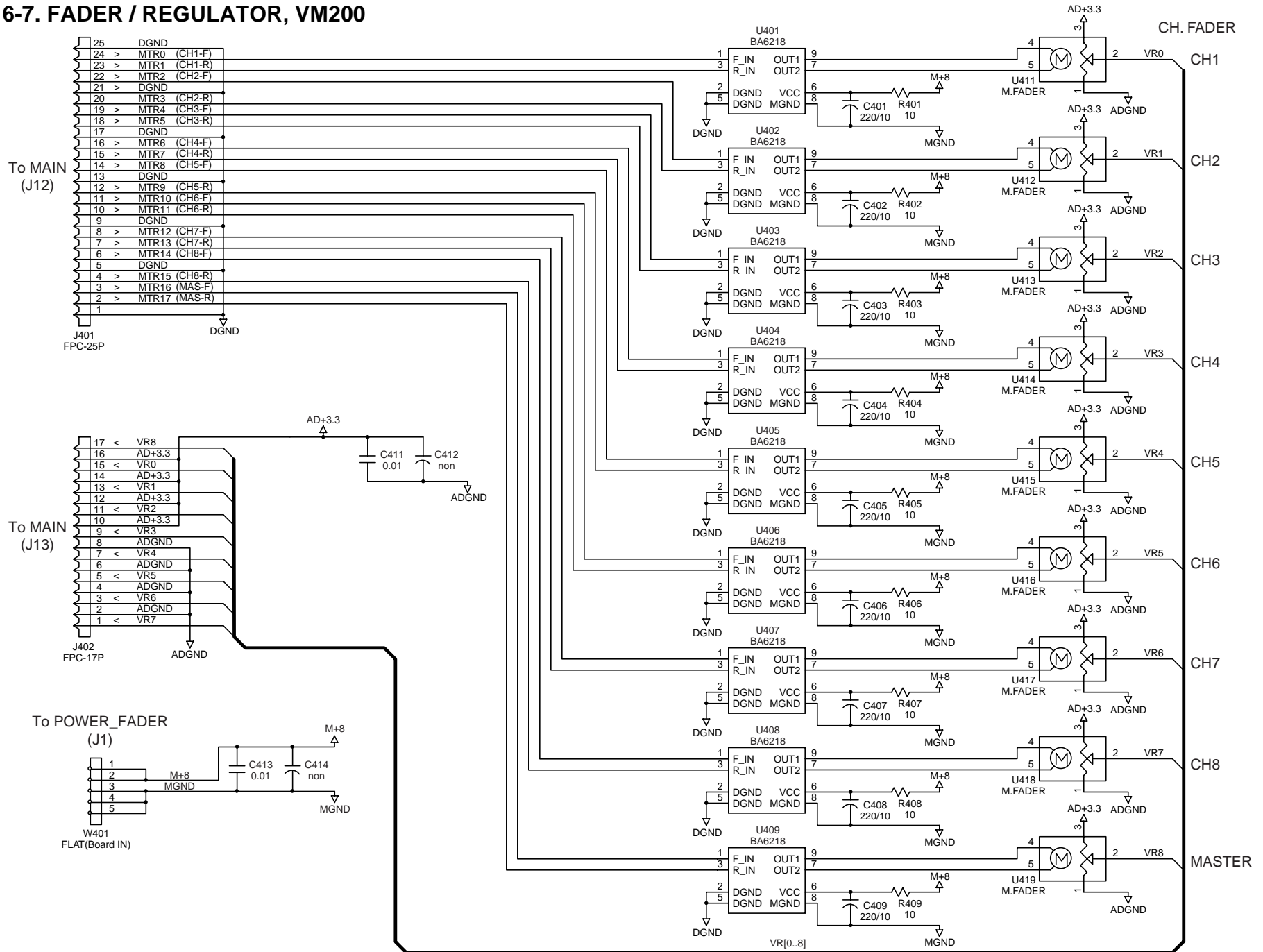
6-5. LCD BACK, VM200



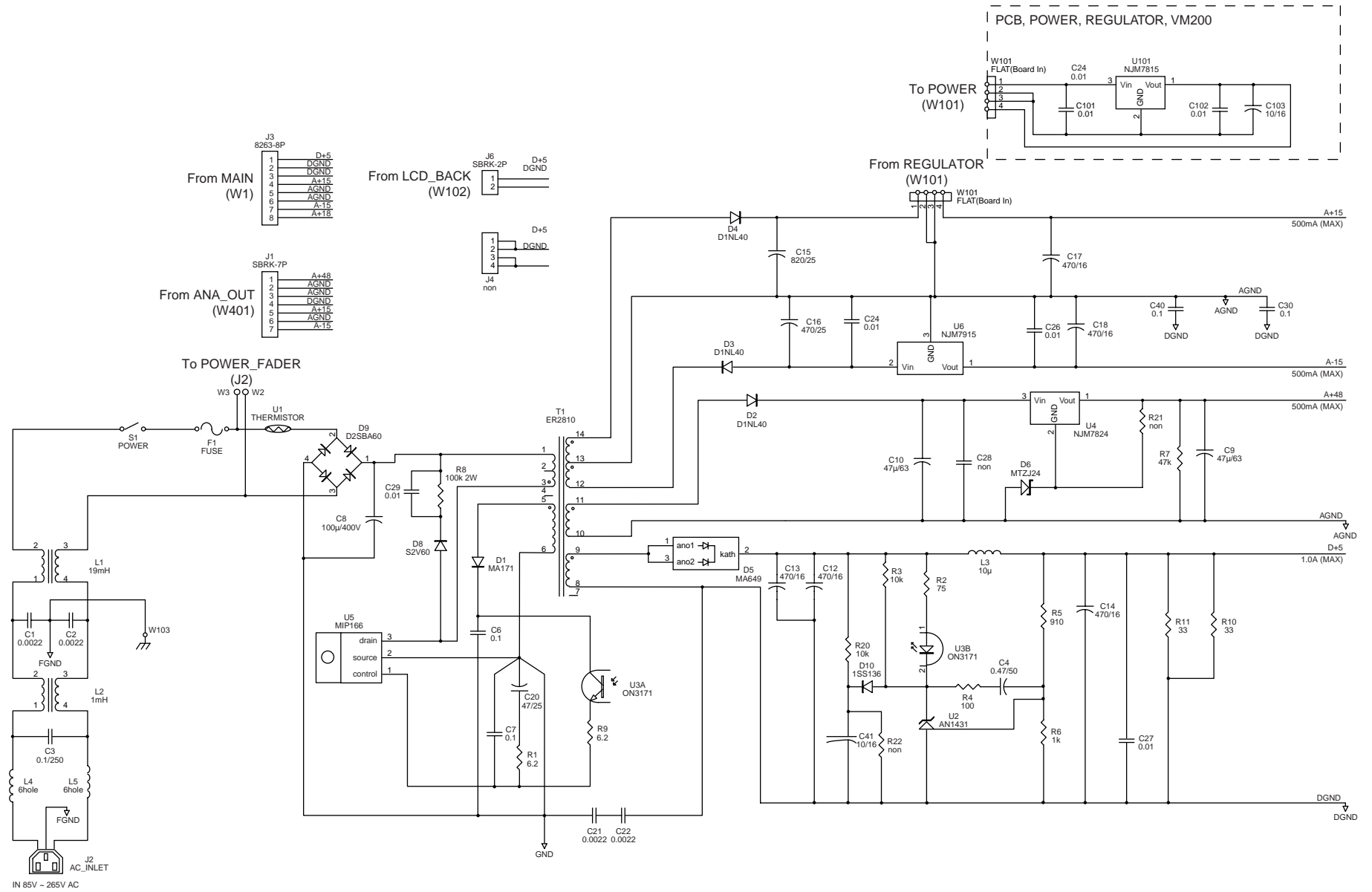
6-6. LED METER, VM200



6-7. FADER / REGULATOR, VM200

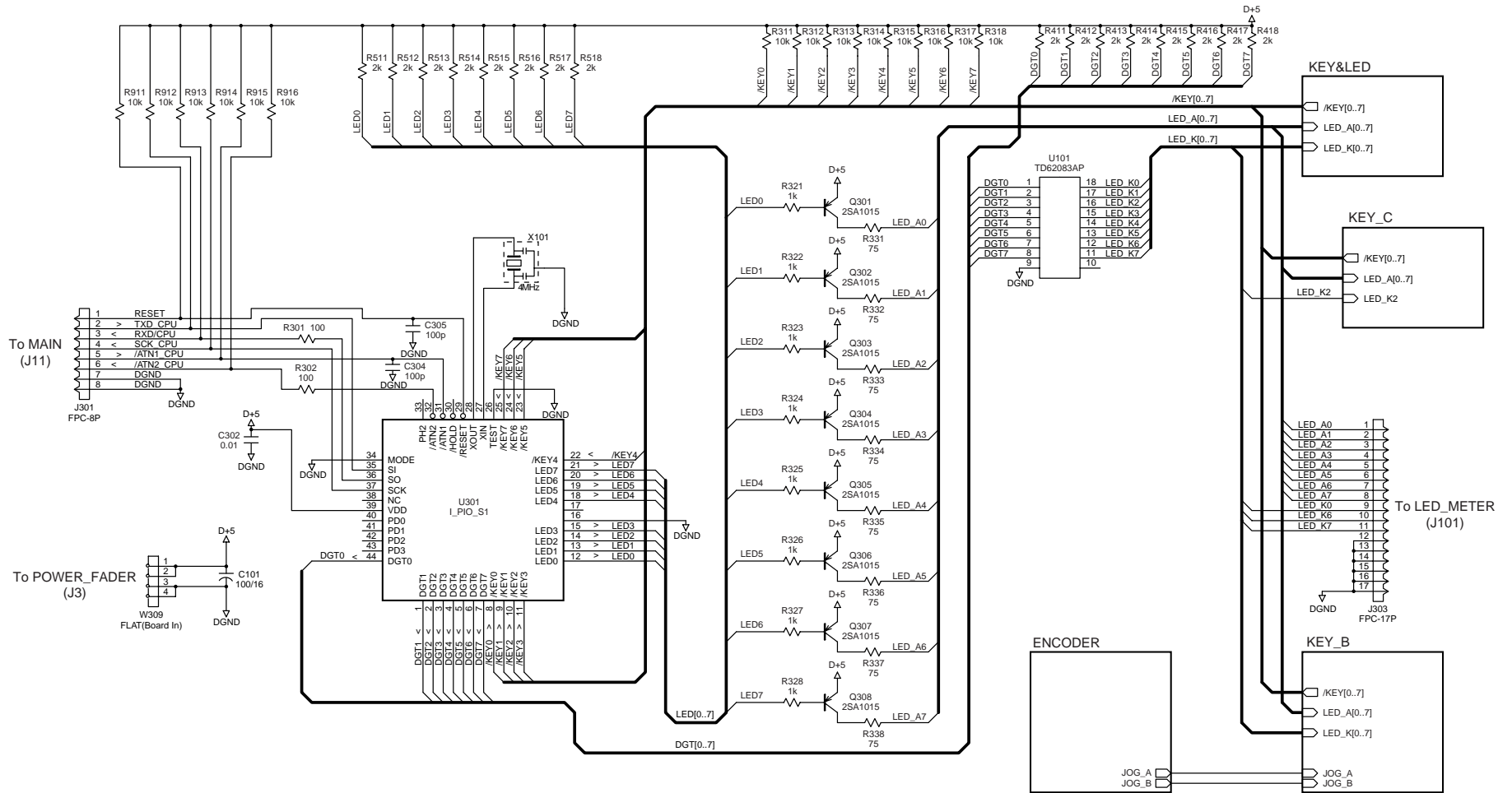


6-8. POWER / REGULATOR, VM200

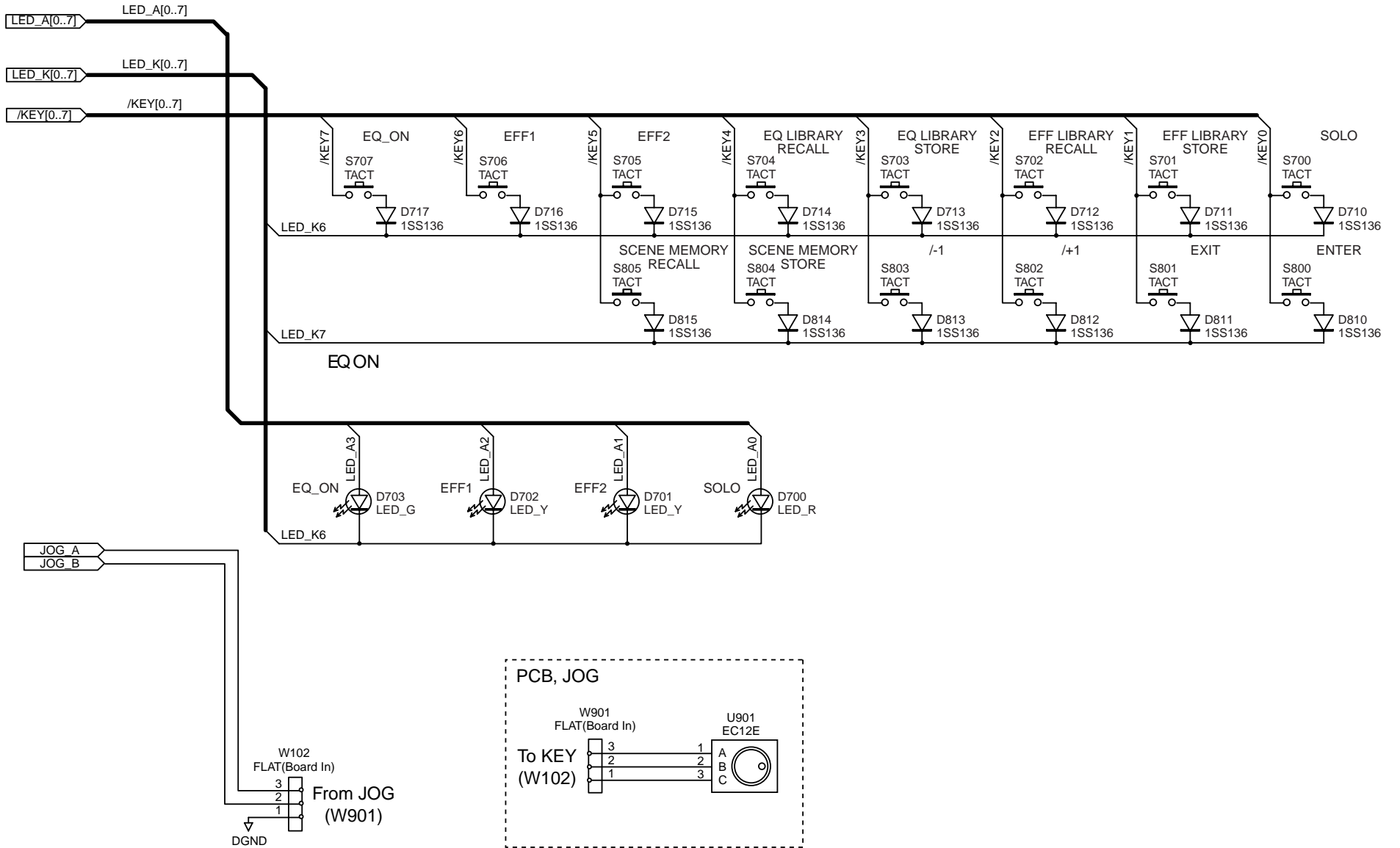


6-9. KEY, VM200

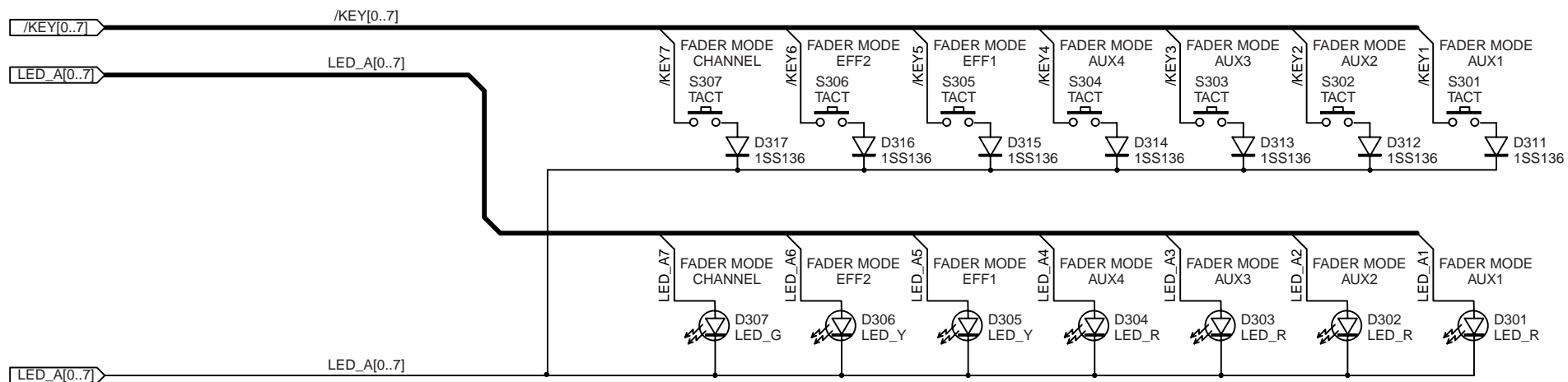
6-9-1. KEY, ROOT, VM200



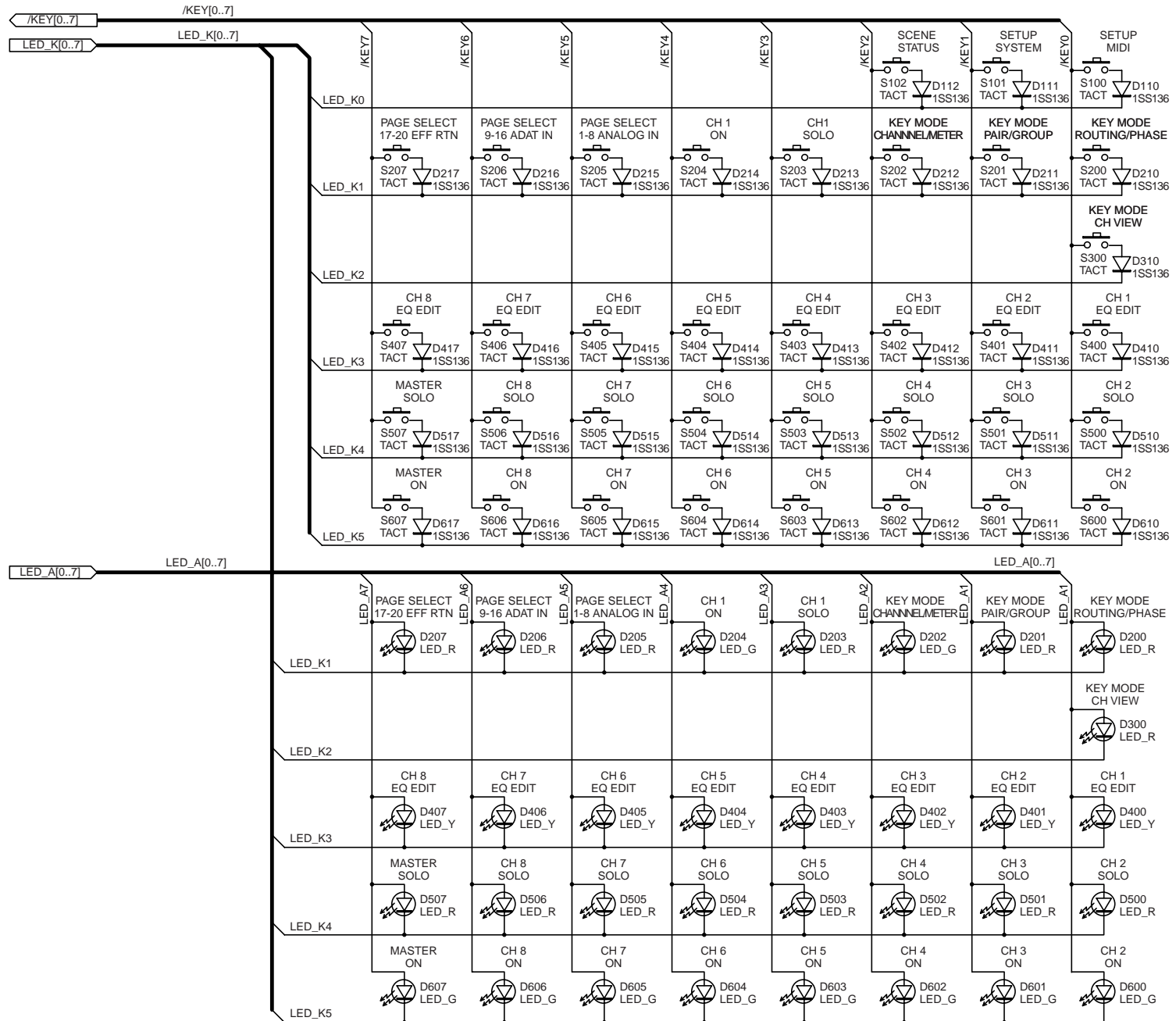
6-9-2. KEY, KEY B, VM200 / JOG, VM200



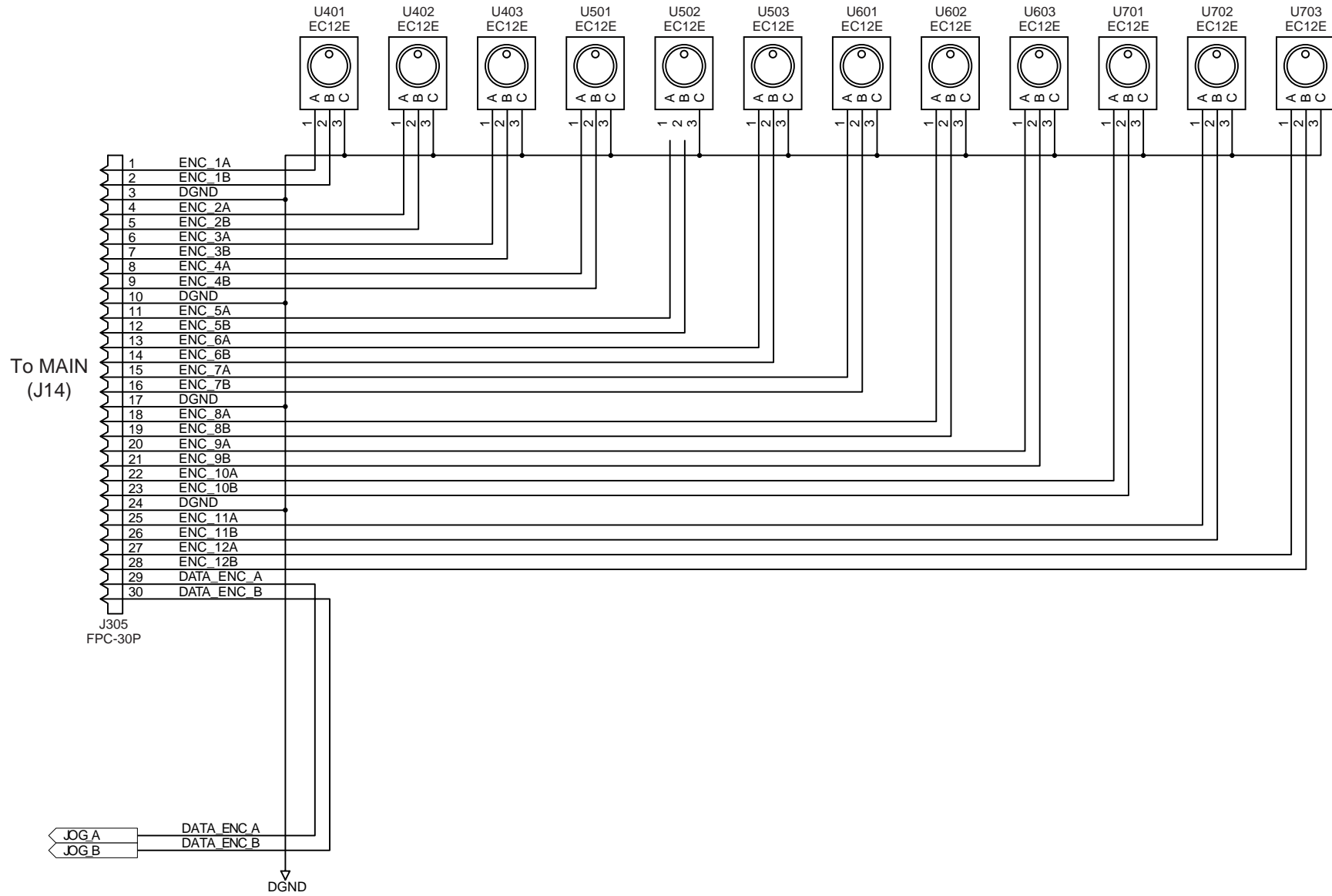
6-9-3. KEY, KEY C, VM200



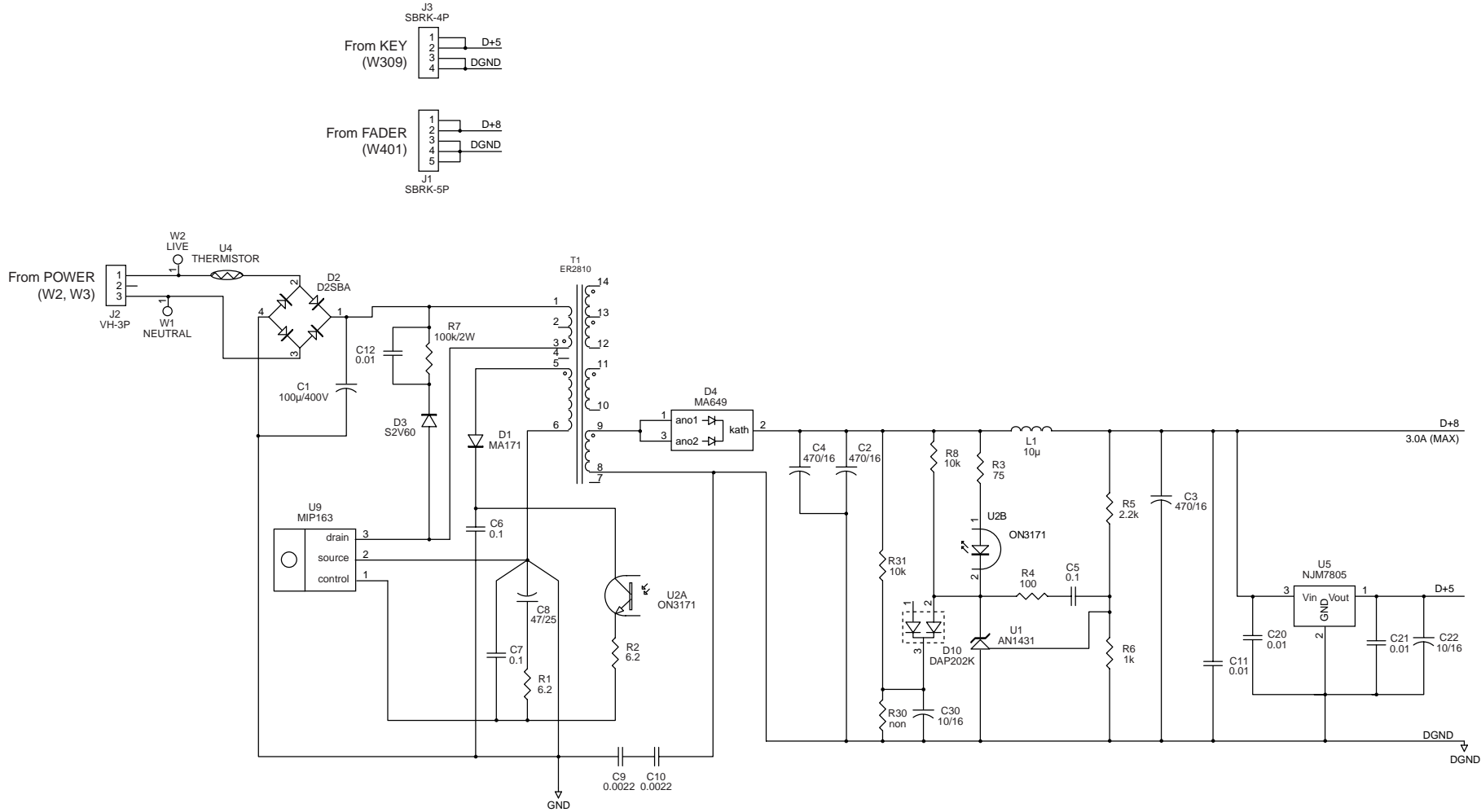
6-9-4. KEY, LED & KEY, VM200



6-9-5. KEY, ENCODER, VM200

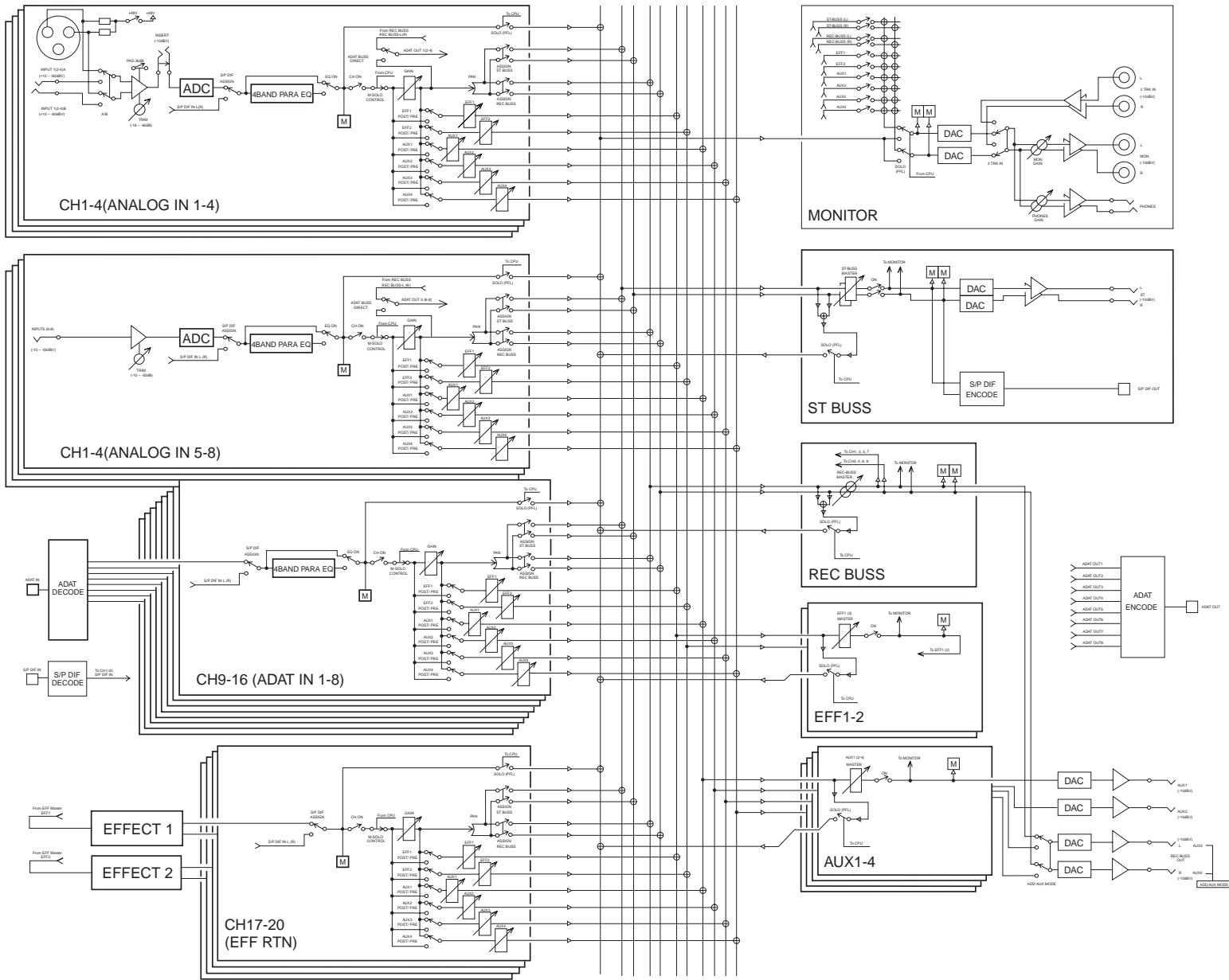


6-10. POWER FADER, VM200



6-11. BLOCK DIAGRAM, VM200

VM200 Block Diagram



< NOTE >

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