VM-3100 Pro V-MIXING STATION

SERVICE NOTES

First Edition

Issued by RJA

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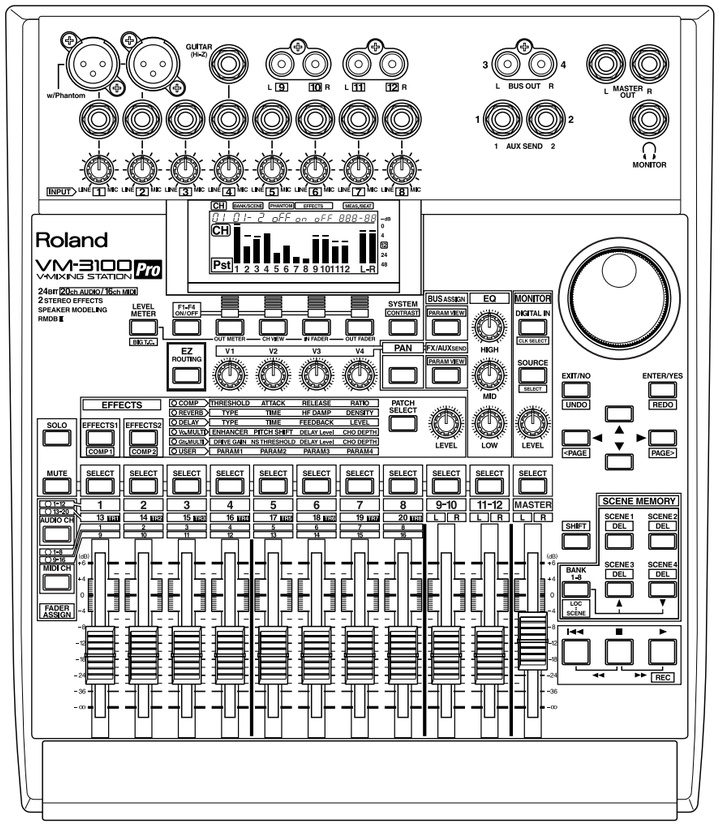


SPECIFICATIONS

VM-3100/3100Pro V Mixing Station

- Channels
  12
  20 (VM-3100Pro)

- Internal Memory
  EZ Routing Libraries: 16 (preset) + 16 (user)
  Compressor Libraries: 16 (preset) + 16 (user)
  Equalizer Librarirs: 16 (preset) + 16 (user)
  Effects Patches: 50 (preset)
  Effects Patches: 100 (preset) + 100 (user)
  * VM-3100Pro only

- Channel Equalizers
  3-band parametric (HI, MID, LOW) x 12 channel
  3-band parametric (HI, MID, LOW) x 20 channel
  * VM-3100Pro only

- Signal Processing
  AD Conversion: 24 bits, 64 times oversampling
  (Input 1 to 8)
  20 bits, 64 times oversampling
  (Input 9 to 12)
  DA Conversion: 24 bits, 128 times oversampling
  Internal processing: 24 bits

- Sample Rate
  44.1 kHz

- Frequency Response
  20 Hz to 20 kHz
- Total Harmonic Distortion
  (INPUT = +4 dBu, 1 kHz at nominal output level)
  0.002 % or less

- Nominal Input Level (Variable)
  Input 1 to 2 (XLR type) : –50 to +4 dBu
  (Balanced: maximum +19 dBu, Unbalanced
  : maximum +19 dBu)
  Input 1 to 2 (1/4" phone type) : –50 to +4 dBu
  (Balanced: maximum +19 dBu, Unbalanced:
  maximum +19 dBu)
  Input 3 to 8 (1/4" phone type) : –60 to +4 dBu
  (Unbalanced: maximum +19 dBu)
  Input 9 to 12 (RCA phono type): 0 dBu (Unbalanced:
  maximum +12 dBu)
  Guitar (Hi-Z) : –50 to +4 dBu
  (Unbalanced: maximum +19 dBu)

- Input Impedance
  Input 1 to 2 (XLR type) : 20 k ohms
  Input 1to 8 (1/4" phone type) : 20 k ohms
  Input 9 to 12 (RCA phono type): 11 k ohms
  Guitar (Hi-Z) : 1 M ohms
- Nominal Output Level
  Master Out : 0 dBu
  AUX Send : 0 dBu
  Bus Out : 0 dBu

- Output Impedance
  Master Out : 1 k ohms
  AUX Send : 1 k ohms
  Bus Out : 1 k ohms
  Monitor (Headphones) : 150 ohms

- Recommended Load Impedance
  Master Out : 10 k ohms or greater
  AUX Send : 10 k ohms or greater
  Bus Out : 10 k ohms or greater
  Monitor (Headphones) : 8 to 50 ohms
- Residual Noise Level (Input Terminated with 1 k ohm, INPUT = LINE, IHF-A, typ.)
  Master Out : –84 dBu or less
  AUX Send : –84 dBu or less
  Bus Out : –84 dBu or less
- Display
  60.0 x 25.0 mm (with backlit):
  136 x 32 dots, Graphic LCD
  7 segments x 25 characters LCD
- Jacks and Connectors
  Input Jacks 1 to 2
  (XLR type, Balanced, with Phantom Power)
  Input Jacks 1to 2 (1/4" phone type, TRS Balanced)
  Input Jacks 3 to 8 (1/4" phone type)
  Input Jacks 9 to 12 (RCA phono type)
  Guitar (Hi-Z) Jack (1/4" phone type)
  Master Out Jacks L, R (1/4" phone type)
  AUX Send Jacks 1, 2 (1/4" phone type)
  Bus Out Jacks L, R (RCA phono type)
  Monitor (Headphones) Jack (Stereo 1/4" phone type)
  Foot Switch Jack (1/4" phone type)
  MIDI Connectors (IN, OUT/through)
  Digital In Connectors (Coaxial, Optical)
  Digital Out Connectors (Coaxial, Optical)
  RMDB II Connector (DB-25 type)* VM-3100Pro only
- Power Supply
  AC 117 V, AC 230 V or AC 240 V

- Power Consumption
  12 W (VM-3100)
  15 W (VM-3100Pro)

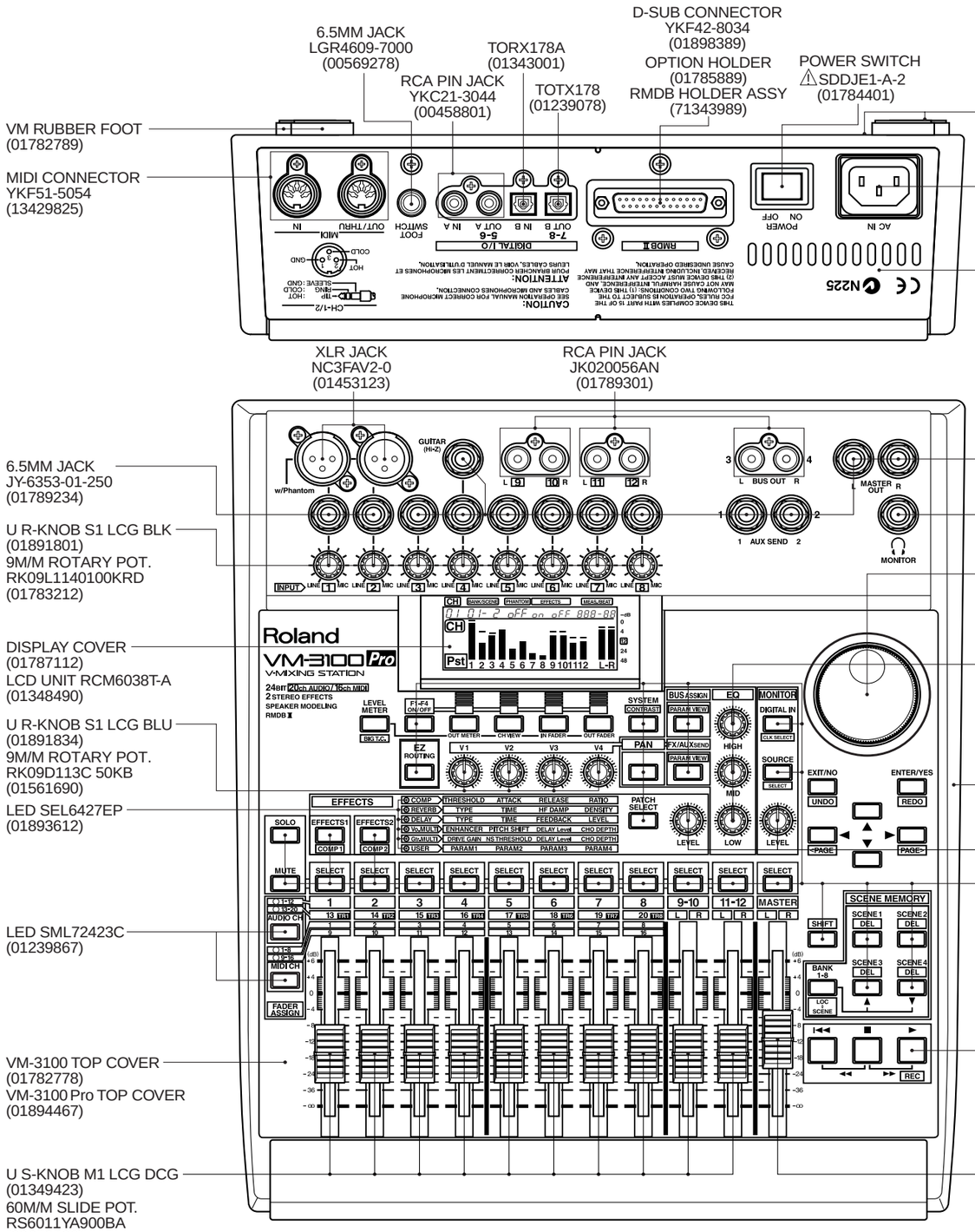
- Dimension
  300 (W) x 343 (D) x 95 (H) mm
  11-13/16 (W) x 13-9/16 (D) x 3-13/16 (H) inches

- Weight
  3.6 kg (VM-3100Pro)
  7 lbs 15 oz

- Accessories
  Owner's Manual Set English (71344445)
  AC Cord Set 120V (00894378)
  AC Cord Set 230V (00894389)
  AC Cord Set 240VE (00907001)
  AC Cord Set 240VA (23495124)
- Options
  Interface Box for adat/TASCAM : DIF-AT
  Foot Switch : FS-5U (BOSS)
  Pedal Switch : DP-2
  Stereo Headphones : RH-120

(0 dBu = 0.775 Vrms)

LOCATION OF CONTROLS



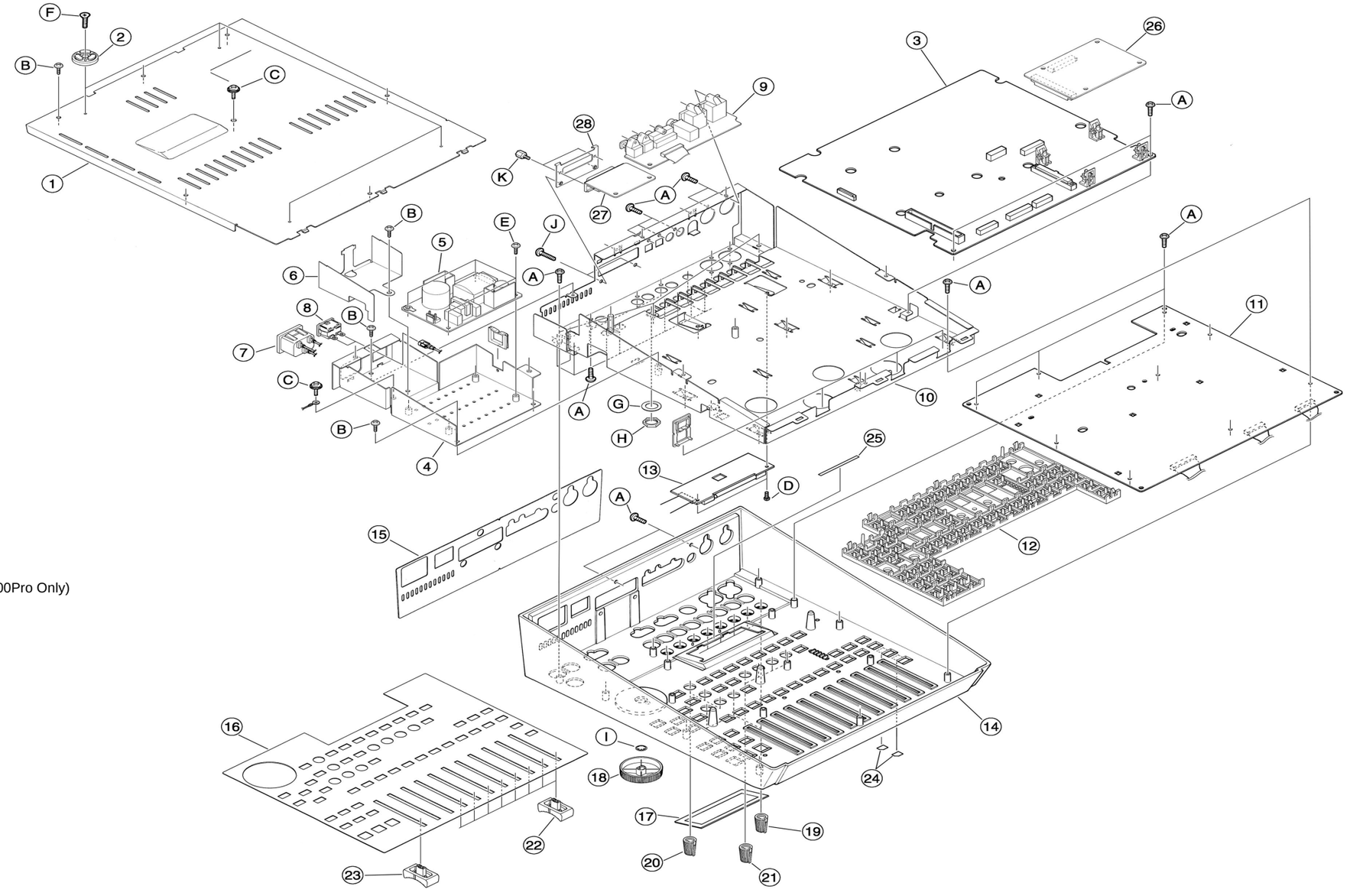
EXPLODED VIEW

[PART]

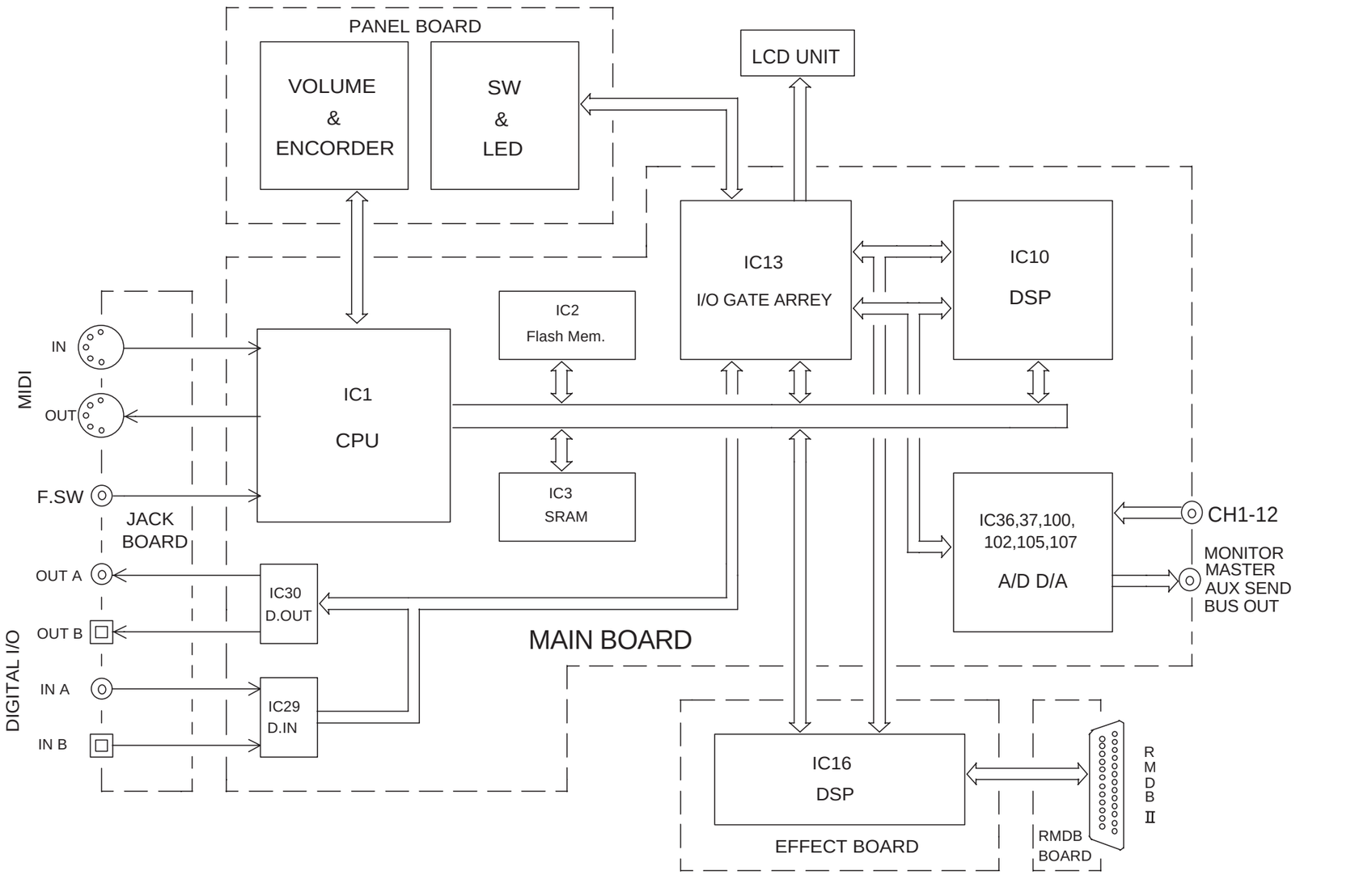
NO.	PART CODE	PART NAME
①	01782756	BOTTOM COVER
②	01782789	VM RUBBER FOOT
③	71452367	VM-3100 MAIN BOARD ASSY
④	01785856	PWR SPLY HOLDER
⑤	01785823	SWITCHING REGULATOR A1DU2LEB034
⑥	01901823	SHIELD COVER
⑦	01898912	WIRING AC ASSY
⑧	01784401	SEESAW SWITCH SDDJE1-A-2
⑨	71230756	JACK BOARD ASSY
⑩	01782734	SUB CHASSIS
⑪	71230745	PANEL BOARD ASSY
⑫	01780890	ECM011 KEYTOP
⑬	01348490	LCD UNIT RCM6038T-A
⑭	01780878	TOP CASE
⑮	01894478	VM-3100Pro REAR PANEL
	01789701	VM-3100 REAR PANEL
⑯	01894467	VM-3100Pro TOP COVER
	01782778	VM-3100 TOP COVER
⑰	01787112	DISPLAY COVER
⑱	01016367	D R-KNOB LF DBL
⑲	01891801	U R-KNOB S1 LCG BLK
⑳	01891812	U R-KNOB S1 LCG GRN
㉑	01891834	U R-KNOB S1 LCG BLU
㉒	01349423	U S-KNOB M1 LCG DCG
㉓	01349434	U S-KNOB M1 MRD LCG
㉔	17048472	CHANNEL SEAL (04676-202)
㉖	71340712	EFFECT BOARD ASSY (VM-3100Pro Only)
㉗	71340678	RMDB BOARD ASSY (VM-3100Pro Only)
㉘	01785889	OPTION HOLDER (VM-3100Pro Only)

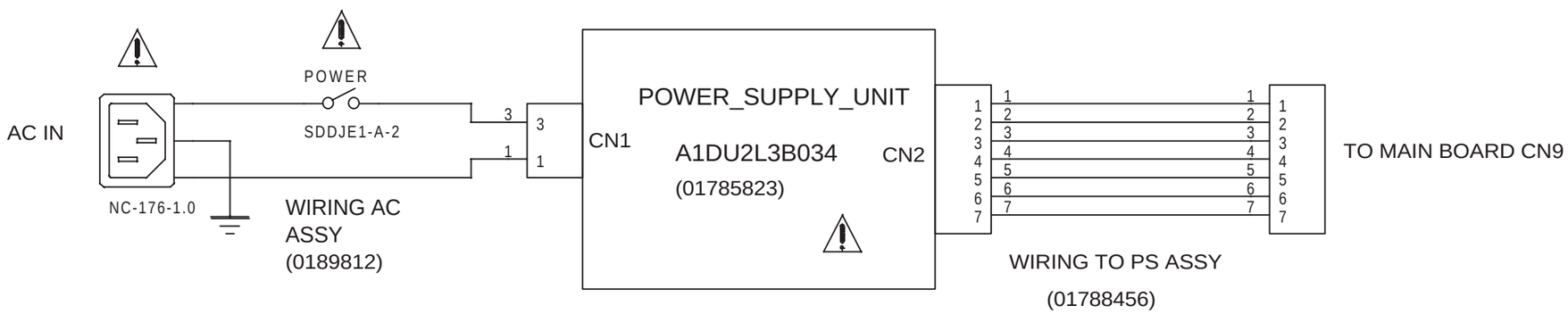
[SCREW]

Ⓐ	40011101	BINDING TAPTIGHT B M3x8mm BZC
Ⓑ	40012534	BINDING TAPTIGHT S M3x6mm BZC
Ⓒ	********	M4x8mm LO2 BZC
Ⓓ	********	BINDING TAPTIGHT S M2.6x6mm ZC
Ⓔ	40011056	BINDING TAPTIGHT B M3x6mm ZC
Ⓕ	40011156	FLAT TAPTIGHT B M3x8mm BZC
Ⓖ	17048631	WASHER M9
Ⓗ	17048630	NUT M9
Ⓘ	********	SE-9
Ⓙ	40127689	BINDING TAPTIGHT S M3x10mm BZC (VM-3100Pro Only)
Ⓚ	17048474	HEXPOST (VM-3100Pro Only)



BLOCK DIAGRAM





PARTS LIST

SAFETY PRECAUTIONS:
The parts marked ⚠ have safety-related characteristics. Use only listed parts for replacement.

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The parts marked ⚠ have safety-related characteristics. Use only listed parts for replacement.

	QTY	PART NUMBER	DESCRIPTION	MODEL NUMBER
Ex.	10	22575241	Sharp Key	C-20/50
	15	2247017300	Knob (orange)	DAC-15D

Failure to completely fill the above items with correct number and description will result in delayed or even undelivered replacement.

NOTE: The parts marked # are new. (initial parts)

MAIN BOARD ASSY → MB
PANEL BOARD ASSY →PB
EFFECT Board Assy →EB
JACK BOARD ASSY →JB
RMDB HOLDER ASSY →RB

CASING

#	01780878	TOP CASE			
#	01787112	DISPLAY COVER			1
#	01894467	TOP COVER	for VM-3100Pro		1
#	01894478	REAR PANEL	for VM-3100Pro		1
#	01782778	TOP COVER	for VM-3100		1
#	01789701	REAR PANEL	for VM-3100		1
#	71235990	BOTTOM ASSY			1
	NOTE:	'BOTTOM ASSY' includes the following parts.			
#	********	BOTTOM COVER			1
	01782789	VM RUBBER FOOT			4

CHASSIS

#	01782734	SUB CHASSIS			1

KNOB, BUTTON

#	01780890	KEYTOP	ECM011		1
#	01016367	D R-KNOB	LF DBL		1
#	01891801	U R-KNOB	S1 LCG BLK		10
#	01891812	U R-KNOB	S1 LCG GRN		3
#	01891834	U R-KNOB	S1 LCG BLU		4
	01349423	U S-KNOB	M1 LCG DCG		10
	01349434	U S-KNOB	M1 MRD LCG		1

SWITCH

	01784401	SDDJE1-A-2 10A/250VAC	POWER SWITCH		1
	00894656	SKQNAD	TACT SWITCH	SW1-46 on PB	46

JACK, SOCKET

#	01789234	JY-6353-01-250	6.5MM JACK	JK1-2. 14 on MB	3
	01673712	JY-6353-01-130	6.5MM JACK	JK5-11. 15-18 on MB	11
	00569278	LGR-4609-7100	6.5MM JACK	JK2 on JB	1
#	01789301	JK020056AN	RCA PIN JACK	JK12. 13. 19 on MB	3
	00458801	YKC21-3044 PIN 0/0	RCA PIN JACK	JK3 on JB	1
	01453123	NC3FAV2-0	XLR JACK	JK3. 4 on MB	2
	13429825	YKF51-5054 2PZ	MIDI CONNECTOR	JK1 on JB	1
#	01898389	YKF42-8034	D-SUB CONNECTOR	CN1 on RB	1

DISPLAY UNIT

	01348490	RCM6038T-A	LCD UNIT		1
	NOTE:	Replacement RCM6038T-A should be made on a unit base.			

POWER SUPPLY UNIT

#	71342412	PS ASSY			1
⚠	01785823	A1DU2L3B034	SWITCHING REGULATOR		1
	NOTE:	Replacement SWITCHING REGULATOR should be made on a unit base.			
	NOTE:	'PS ASSY' includes the following parts.			
#	01898912	AC ASSY	WIRING		1
#	01788456	TO PS ASSY	WIRING		1
#	01785856	PWR SPLY HOLDER			1

PCB ASSY

# ⚠	71230734	MAIN BOARD ASSY			1
#	71230756	JACK BOARD ASSY			1
	NOTE:	'JACK BOARD ASSY' includes the following parts.5			
#	01783289	WIRING	JACK BOARD on JB		1
#	71230745	PANEL BOARD ASSY			1
	NOTE:	NOTE: 'PANEL BOARD ASSY' includes the following parts.			
#	01783245	WIRING	PANEL BOARD-A	on PB	1
#	01783256	WIRING	PANEL BOARD-B	on PB	1
#	01783278	WIRING	PANEL BOARD-C	on PB	1
#	71343989	RMDB HOLDER ASSY	(VM-3100Pro only)		1
	NOTE:	'RMDB HOLDER ASSY' includes the following parts.			
#	01785889	OPTION HOLDER		on RB	1
#	********	RMDB BOARD ASSY		on RB	1

	NOTE:	'RMDB BOARD ASSY' includes the following parts.			
#	01789245	WIRING	RMDB BOARD	on RB	1
#	71340712	EFFECT BOARD ASSY	(VM-3100Pro only)		1

IC

	01786667	HD6413006F20	IC (CPU)	IC1 on MB	1
	00892556	TC170C140AF-003 (ESP2)	IC (CUSTOM)	IC2 on MB,IC16 on EB	1 +1
	01231334	SLA919FF0J	IC (GATE ARRAY)	IC13 on MB	1
	01124678	TC55257DFL-55L 256K	IC (SRAM)	IC3 on MB	1
#	01679790	V53C16258HK-35-TP	IC (DRAM)	IC12 on MB,IC18 on EB	1 +1
#	01783123	LH28F400BVE-BL85	IC (FLASH MEMORY)	IC2 on MB	1
#	01679990	AK4524VF	IC (AD/DA)	IC100. 102. 105. 107 on MB	4
	01238101	AK4520AVF-E2	IC (AD/DA)	IC36. 37 on MB	2
	00893967	TC74VHC153F(EL)	IC (CMOS)	IC9 on MB	2
	00564534	TC74VHC574F(EL)	IC (CMOS)	IC7. 112 on MB,IC8 on EB	2 +1
	00231889	TC74VHC32F(EL)	IC (CMOS)	IC25 on MB	1
	00231878	TC74VHC00F(EL)	IC (CMOS)	IC5. 18. 22. 28 on MB	4
	00567534	TC74VHC138F(EL)	IC (CMOS)	IC51 on MB	1
	00564545	TC74VHC04F(EL)	IC (CMOS)	IC27 on MB	1
	01567190	TC74VHCU04F(EL)	IC (CMOS)	IC31 on MB	1
	01340212	TC74VHC86F(EL)	IC (CMOS)	IC23 on MB	1
	00893978	TC74VHC393F(EL)	IC (CMOS)	IC19 on MB,IC12 on EB	1 +1
	00236889	TC74VHC157F(EL)	IC (CMOS)	IC14-15 on MB	2
	00236878	TC74VHC74F-EL	IC (CMOS)	IC17. 24 on MB,IC11. 13. 19 on EB	2 +3
	00231890	TC74VHC08F(EL)	IC (CMOS)	IC26 on MB,IC14 on EB	1 +1
#	01783190	LC89051VD-TLM	IC (CMOS)	IC29 on MB	1
#	01785178	TC9271FS	IC (CMOS)	IC30 on MB	1
	15249121	TC7W04F(TE12L)	IC (CMOS)	IC21 on EB	1
#	01896056	HD74HC4051P	IC (CMOS)	IC4. 5 on PB	2
#	01896067	SN74HC574N	IC (CMOS)	IC2 on PB	1
	01677756	HD74HC138P	IC (CMOS)	IC1 on PB	1
	15289117	NJM5532MD-TE1	IC (OP AMP)	IC38. 39 on MB	2
	15289105	UPC4570G2-E2	IC (OP AMP BIPOLAR)	IC40-49 on MB	10
	15199283	UPC78L05T-E1	IC (REGULATOR)	IC101. 104. 106. 108-110 on MB	6
	00458312	NJM2360M	IC (REGULATOR)	IC50. 111 on MB	2
	00564690	TC9246F(ELP)	IC (PLL)	IC21 on MB,IC10 on EB	1 +1
	15289123	M51953AFP-600C	IC (RESET)	IC4 on MB	1
⚠	15289125	PC-410KT 178FAY	IC (PHOTO COUPLER)	IC6 on MB	1
	01239078	TOTX178	IC (OPTICAL DIGITAL OUT)	JK5 on JB	1
	01343001	TORX178A	IC (OPTICAL DIGITAL IN)	JK4 on JB	1
	01341578	TC74VHC14F(EL)	IC (TTL SCHMITT TRIGGER INV.)	IC15. 20 on RB	1

TRANSISTOR

	15309109	2SA1162-GR(TE-85R)	TRANSISTOR	Q10-11. 15 on MB	3
	15309604	2SB1197KR T-146	TRANSISTOR	Q3-6. 24 on MB	5
	01239990	2SC4117-GR(TE85L)	TRANSISTOR	Q12 on MB	1
	15329103T0	2SK880-GR(TE85R)	FET TRANSISTOR	Q9 on MB	1
#	01898034	RN2402 (TE85L)	TRANSISTOR	Q1 on MB	1
	00679312	RN1402(TE85L)	TRANSISTOR	Q2. 14 on MB	2
	15329505	DTC314TK T146	DIGITAL TRANSISTOR	Q16-23 on MB	8
#	01898045	M54585P	TRANSISTOR ARRAY	IC3 on PB	1

DIODE

	00673789	SB20-03P-TD	SCHOTTKY DIODE	D13 on RB	1
	01017512	RB411D T146	SCHOTTKY DIODE	D10 on MB	1
	15019126	1SS133 T-77	SWITCHING DIODE	D1-46 on PB	46
	15339119T0	1SS352(TPH3)	SWITCHING DIODE	D8 on MB	1
	01121323	DA204U T106	ARRAY DIODE	D1.3-7.100-105 on RB	12
	15339105	DAN202K T146 (CHIP)	ARRAY DIODE	D1. 9 on MB	2
	15339108	DA204K T146	ARRAY DIODE	D2-7 on MB	6
#	01893612	SEL6427EP	LED (RED)	LED30-35 on PB	6
	01239856	SEL5921A TP15	LED (ORANGE)	LED01-05.07.10-15.17.20-25. 27.37.40-45.47 on PB	29
	01239867	SML72423C TP15	LED (RED/GREEN)	LED16. 236 on PB	2

RESISTOR

	01566412	CND2B10VTE103J	RESISTOR ARRAY	RA1-4 on MB	4
#	13749759T0	SR25TRE 270 J	CARBON RESISTOR	on PB	8
	00120289	RR1220P-104-D	MTL.FILM RESISTOR	on MB	1
	00121089	RPC10T 750 J	MTL.FILM RESISTOR	on MB	2
	00348767	RR1220P-471-D	MTL.FILM RESISTOR	on MB	14
	00564212	RR1220P-332-D 3.3K OHM (CHIP)	MTL.FILM RESISTOR	on MB	4
	00564256	RR1220P-682-D 6.8K OHM (CHIP)	MTL.FILM RESISTOR	on MB	8
	00566067	RR1220P-151-D	MTL.FILM RESISTOR	on MB	2
	00899178	RR1220P-683-D (68K D-RANK)	MTL.FILM RESISTOR	on MB	4
	00904701	RR1220P-302-D (3K D-RANK)	MTL.FILM RESISTOR	on MB	12
	01013889	RR1220P-181-D	MTL.FILM RESISTOR	on MB	16
	01122089	RR1220Q-220-D	MTL.FILM RESISTOR	on MB	2
#	01896278	MCR18EZHJ 2R2	MTL.FILM RESISTOR	on MB	1
	15399349	RPC10T 100 J 1/10W	MTL.FILM RESISTOR	on MB	11
	15399357	RPC10T 220 1/10W	MTL.FILM RESISTOR	on MB	1
	15399365	RPC10T 470 J 1/10W	MTL.FILM RESISTOR	on RB	12
	15399373	RPC10T 101 J 1/10W	MTL.FILM RESISTOR	on MB, on EB	21 +1
	15399377	RPC10T 151 J 1/10W	MTL.FILM RESISTOR	on MB	3
	15399381	RPC10T 221 J 1/10W	MTL.FILM RESISTOR	on MB	3
	15399385	RPC10T 331 J 1/10W	MTL.FILM RESISTOR	on MB, on EB	6 +1
	15399397	RPC10T 102 J 1/10W	MTL.FILM RESISTOR	on MB	3
	15399401	RPC10T 152 J 1/10W	MTL.FILM RESISTOR	on MB, on EB	1 +1
	15399409	RPC10T 332 J 1/10W	MTL.FILM RESISTOR	on MB	2
	15399411	RPC10T 392 J 1/10W	MTL.FILM RESISTOR	on MB	1
	15399413	RPC10T 472 J 1/10W	MTL.FILM RESISTOR	on MB	3
	15399421	RPC10T 103 J 1/10W	MTL.FILM RESISTOR	on MB, on RB	20 +6
	15399429	RPC10T 223 J 1/10W	MTL.FILM RESISTOR	on MB	15
	15399433	RPC10T 333 J 1/10W	MTL.FILM RESISTOR	on MB	1
	15399437	RPC10T 473 J 1/10W	MTL.FILM RESISTOR	on MB	2
	15399445	RPC10T 104 J 1/10W	MTL.FILM RESISTOR	on MB	19
	15399453	RPC10T 224 J 1/10W	MTL.FILM RESISTOR	on MB, on EB	2 +1
	15399457	RPC10T 334 J 1/10W	MTL.FILM RESISTOR	on MB	1
	15399469	RPC10T 105 J 1/10W	MTL.FILM RESISTOR	on MB	6
	15419701	RR1220P-103-D 10K OHM (CHIP)	MTL.FILM RESISTOR	on MB	1
	15419702	RR1220P-102-D 1/10W	MTL.FILM RESISTOR	on MB	16
#	15419704	RR1220P-101-D	MTL.FILM RESISTOR	on MB	12
	15419707	RR1220P-472-D 4.7K OHM (CHIP)	MTL.FILM RESISTOR	on MB	10
	15419712	RR1220P-182-D 1.8K	MTL.FILM RESISTOR	on MB	16
	15419715	RR1220R-105-D	MTL.FILM RESISTOR	on MB	1
	15419717	RR1220P-273-D 27K 1/10W	MTL.FILM RESISTOR	on MB	4

	15419724	RR1220P-333D 33K OHM (CHIP)	MTL.FILM RESISTOR	on MB	4
	15419725	RR1220P-223D 22K OHM (CHIP)	MTL.FILM RESISTOR	on MB	4

POTENTIOMETER

#	01783212	RK09L1140100KRD	9M/M ROTARY POTENTIOMETER	VR1-8 on MB	8
	01561690	RK09D113C 50KB W/O CLICK	9M/M ROTARY POTENTIOMETER	VR12-20 on PB	9
	00679490	RS6011YA900BA	60M/M SLIDE POTENTIOMETER	VR1-11 on PB	11

CAPACITOR

#	01896589	SK4-0J106MZ4-RA	TANTALUM CAPACITOR	C125. 129 on MB	2
#	01784189	UP050F104ZAB	MLT.LAY.CERA CAPACITOR	on JB, on PB	4 +5
#	01893623	ECA0JM472B	CERAMIC CAPACITOR	C66 on MB	1
#	15359616R0	GRM40CH150J50PT10	CERAMIC CAPACITOR	on MB, on EB	1 +1
#	15359614R0	GRM40CH220J50PT10	CERAMIC CAPACITOR	on MB	20
#	01673123	GRM40CH221J50PT	CERAMIC CAPACITOR	on MB	23
	15359222	ECJ2VF1E224Z 22000PF/50V	CERAMIC CAPACITOR	on MB	1
#	01893812	GRM40CH121J50PT10	CERAMIC CAPACITOR	on MB	2
	15359221M0	GRM40B683K25PT	CERAMIC CAPACITOR	on MB	7
#	15359613R0	GRM40CH100D50PT10	CERAMIC CAPACITOR	on MB	8
	01672423	GRM40CH101J50PT	CERAMIC CAPACITOR	on MB, on RB	20 +6
#	01893823	GRM40CH050C50PT10	CERAMIC CAPACITOR	on MB	4
	15359448R0	GRM40B103K50PT10	CERAMIC CAPACITOR	on MB, on EB	9 +1
	15359206R0	GRM40F104Z25PT10	CERAMIC CAPACITOR	on MB, on RB, on EB	66 +2 +13
#	01898934	16CV220GX	CERAMIC CAPACITOR	on MB	1
	13519555	DD104-63SL220J50 50VJ 22PF	CERAMIC CAPACITOR	on JB	1
	13519560	DD104-63SL101J50 50VJ 100PF	CERAMIC CAPACITOR	on JB	3
	01784134	ECHU1H681JX5	POLYEST. CAPACITOR	on MB	16
#	01898434	ECHU1H101JX5	POLYEST. CAPACITOR	on MB	4
#	01898423	ECHU1H222JX5	POLYEST. CAPACITOR	on MB	12
#	01898412	ECHU1C392JX5	POLYEST. CAPACITOR	on MB	8
#	01893656	ROS-16V101M-T2	CHEMICAL CAPACITOR	C400. 401 on MB	2
	13639557M0	ECA1CM102B	CHEMICAL CAPACITOR	C515 on MB	1
	01783467	RV2-16V101MZ7-R	CHEMICAL CAPACITOR	on MB	1
	01565712	RV2-25V330MZ7-R	CHEMICAL CAPACITOR	on MB	4
#	01784478	RV2-6V470MZ7-R	CHEMICAL CAPACITOR	on MB	14
#	01784467	RV2-6V101MZ7-R	CHEMICAL CAPACITOR	on MB, on EB	6 +1
#	01784456	RV2-50V3R3MZ7-R	CHEMICAL CAPACITOR	on MB	1
#	01784412	RV2-16V220MZ7-R	CHEMICAL CAPACITOR	on MB	36
#	01783489	RV2-16V470MZ7-R	CHEMICAL CAPACITOR	on MB	6
#	01898456	RV3-50V330MF80-R	CHEMICAL CAPACITOR	on MB	1
#	01789589	RV2-50V100MZ7-R	CHEMICAL CAPACITOR	on MB	5
#	01896001	RV3-6V331MZ7-R	CHEMICAL CAPACITOR	on MB, on RB, on EB	14 +1 +2
	13639698	ECEA0JKS101B (H=5MM)	CHEMICAL CAPACITOR	on PB	3

INDUCTOR, COIL, FILTER

	01458667	BLM41P750SPT	FERRITE BEAD	L1 on MB	1
#	01893634	LQH4N151K04	COIL	L5 on MB	1
#	01893678	CR54 180	CHOKE COIL	L6 on MB	1

CRYSTAL, RESONATOR

	00894023	MA-406 20.000MHZ TE24	CRYSTAL	X1 on MB	1

ENCODER

	01124478	EC16B24104 L=15	ROTARY ENCODER	ENC1 on PB	1

CONNECTOR

#	01783134	TX14-60R-6ST-MH1	CONNECTOR	CN7 on MB	1
#	01785034	TX15-60P-6ST-MH1	CONNECTOR	CN4 on EB	1
	13369851	PS-50PE-D4T1-B1	CONNECTOR	on MB	1
	13369541	B10B-PH-K-S JST	CONNECTOR	CN6 on MB	1
	13369563	B14B-PH-K-S JST	CONNECTOR	CN4 on MB	1
	13369564	B12B-PH-K-S JST	CONNECTOR	CN10 on MB	1
	13369565	B11B-PH-K-S JST	CONNECTOR	CN1 on MB	1
	13369592	B7B-XH-A(7P) JST	CONNECTOR	CN9 on MB	1
	13369675	S15B PH-K-S JST	CONNECTOR	CN3 on EB	1
	13369793	52030-1610	FFC/FPC CONNECTOR	CN5 on MB	1

TRANSFORMER

	12449615	PT-10244-615	PULSE TRANSFORMER	on MB	1

SCREW

	********	SCREW M2.6x6	BINDING TAPTITE S FE ZC		2
	40011056	SCREW M3x6	BINDING TAPTITE B FE ZC		4
	40342578	SCREW M3x6	BINDING TAPTITE S BZC		10
	40011101	SCREW M3x8	BINDING TAPTITE B FE BZC		28
	40011156	SCREW M3x8	FLAT TAPTITE B BZC		4
	40127689	SCREW M3x10	BINDING TAPTITE S BZC	for VM-3100Pro	2
	********	SCREW M4x8	LO2 BZC		2
	17048474	HEXPOST		for VM-3100Pro	2
	********	SE-9(SE RING)			1
	17048630	NUT M9			1
	17048631	WASHER M9			1

PACKING

#	01900790	PACKING CASE			1

MISCELLANEOUS

	00899890	PWB SPACER	KGES-12		4

ACCESSORIES (STANDARD)

#	71230678	OWNER'S MANUAL SET	JAPANESE		1
#	71344445	OWNER'S MANUAL SET	ENGLISH		1
⚠	00894367	AC CORD SET 100V	SP18A+IS14 VCTF2X0.75		1
⚠	00894378	AC CORD SET 120V	SP301+IS14 SJT18/3		1
⚠	00894389	AC CORD SET 230V	SP22+IS14 H05VV-F3G1.0		1
⚠	00907001	AC CORD SET 240VE	KP-610 GTTBS-3 KS-31A		1
⚠	23495124	AC CORD SET 240VA	SC-144-JO1 ES303-10HMA		1

TEST MODE

♦ Tools required

- Oscilloscope
- Audio generator
- Equipment (e.g. CD player) with COAXIAL and OPTICAL output (Sampling frequency 44.1 kHz)
- Equipment (e.g. DAT) with COAXIAL and OPTICAL input
- MIDI-capable equipment (e.g. MC-80)
- Condenser mic (capable of operating from phantom power supply)
- Foot pedal (e.g. DP-2)
- Headphones
- MIDI cable
- RMDB II cable
- Digital audio optical cable

♦ Entering the test mode

Press and hold AUDIO CH SELECT buttons 4 and 7 and turn on POWER switch. Continue holding the buttons until the LCD displays the check menu.

♦ Verifying version number

With the check menu displayed, press the function button [F4] (OUT FADER). The LCD now shows version numbers.
Note: When [F4] button is pressed again, the version screen exits to the check menu screen.

♦ Selection of test menu option

The check menu screen lists the following checks:

Check option	Check
01: LCD Check	LCD contrast
02: LED Check	LEDs
03: SW Check	Switches
04: Fader Check	Faders
05: Pot Check	Rotary potentiometers
06: Foot SW Check	Foot switch
07: MIDI Check	MIDI circuits
08: A/D D/A Check	A-D-A conversion
09: Digital Check	Digital inputs
10: Device Check	Devices
11: RMDB Check	RMDB II interface
12: Encoder Check	Encoder
13: Digital Out Check	Digital outputs

To select the check item, first position the cursor to the check index by using either VALUE dial or arrow buttons [Δ] and [∇], and then press [ENTER/YES] button.

1.01: LCD Check
The option "LCD Check" is located on the top left side of the check screen.
The bottom of the screen identifies the function buttons [F1] - [F4]. Press these buttons one by one to perform the following operation:

"BLACK": turns off all LCD dots.
"WHITE": turns on all LCD dots.
"CHK1": displays black and white checkered screen.
"CHK2": displays the reversed black and white checkered screen.

To exit to the menu screen, press again the function button. To exit the current check item, press [EXIT/NO] button.

2. 02: LED Check
The option "LED Check" is displayed on the top left side of the check screen.
The bottom of the screen identifies the function buttons [F1] - [F4]. Press these buttons one by one in that order to perform the following operation:
"SCAN": turns on and off the leftmost LED, and repeats this cycle up to the rightmost LED; and then turns on all LEDs.
"BLINK": blinks all LEDs.
"ALL ON": turns on all LEDs.
"MANU": turns on all LEDs one by one as VALUE dial is turned. Upon turning on the last LED, the LCD displays "Remain = OK".

To exit to the menu screen, press again the function button. To exit the current check item, press [EXIT/NO] button.

3. 03: SW Check
The option "SW Check" is displayed on the top left side of the check screen. Graphical representation of panel switches is also displayed. Press a switch and the switch symbol "_" changes to "Å†". The symbol "Å†" changes to "Å°" while the switch is kept pressed. When all switches displayed have successfully passed the test, the screen displays "Remain = OK".
Note: If all LEDs are blinking, it means that two or more buttons have been pressed simultaneously.
To exit the check, turn VALUE dial.

4. 04: Fader Check
The option "Fader Check" is displayed on the top left side of the check screen. Bargraph display of 11 faders also appears.
The current setting of the slider is represented by the height of the bar and the numerical representation field "value = xx" (xx: 0-127).
When all travel range of the fader (slider) is recognized, "OK" is placed above and below the bar.
To exit the test, press [EXIT/NO] button.

5. 05: Pot Check
The option "Pot Check" is displayed on the top left side of the check screen. The 9 rotary potentiometers are graphically represented on the screen.
The current setting of the potentiometer is represented by the simulating potentiometer and the numerical representation field "value = xx" (xx: 0-127). When all travel range of the potentiometer is recognized, The potentiometers on the screen are displayed in reverse video.
To exit the test, press [EXIT/NO] button.

6. 06: Foot SW Check
Connect the foot switch to FOOT SWITCH socket.

The option "Foot SW Check" is displayed on the top left side of the check screen.
The "xx" in the "Foot Sw = xx" field on the screen is turned on or off as the foot switch is depressed. When the test has successfully completed, the LCD displays "Remain = OK".
To exit the test, press [EXIT/NO] button.

7. 07: MIDI Check
Connect the VM3100/Pro to the MIDI-capable equipment through MI
The option "MIDI Check" is displayed on the top of the LCD screen. Press the function button [F1]. The LCD will display "MIDI I/O Check".
Send MIDI signals from the MIDI-capable equipment. The LCD will indicate the received MIDI signal data (value), indicating that the MIDI IN circuit on the unit is operating. The same data is output to the MIDI OUTPUT when the MIDI output circuit is operating.
o exit the test, press [EXIT/NO] button.

8. 08: A/D D/A Check
The option "A/D D/A Thru Check" is displayed on the top of the LCD screen. The function of buttons [F1] - [F4] is identified on the bottom of the LCD.

Designation on LCD Button		Function
"Input"	[F1]	Selects input channel group: 1-6/7-12
"Mon"	[F2]	Selects monitor output channel group: 1,2/3,4/5,6/7,8/9,10/11,12
"Mute"	[F3]	Mutes the audio signs.
"Phntm"	[F4]	Turns on/off the phantom power supply.

Turn channels 1-8 INPUT level controls (rotary potentiometers) fully counterclockwise (LINE).

Check 1
Set the audio generator to 1 kHz, sine and connect it to a channel INPUT.
Connect the oscilloscope to the corresponding output socket listed in the table below. Set the output level of the generator according to the list.
Verify that the oscilloscope reads 2.2 Vpp.
Repeat the step for the remaining channels.

Input = 1-6	Input = 7-12Output
CH 1 (5.5 Vpp)	CH 7 (5.5 Vpp)MASETER OUT (L)
CH 2 (5.5 Vpp)	CH 8 (5.5 Vpp)MASETER OUT (R)
CH 3 (5.5 Vpp)	CH 9 (2.2 Vpp)AUX SEND (1)
CH 4 (5.5 Vpp)	CH 10 (2.2 Vpp)AUX SEND (2)
CH 5 (5.5 Vpp)	CH 11 (2.2 Vpp)BUS OUT (L)
CH 6 (5.5 Vpp)	CH 12 (2.2 Vpp)BUS OUT (R)

Check 2
Select the input group "Input = 1-6". Connect the condenser Mic to INPUT CH 1 and turn the input level control potentiometer fully clockwise (MIC).
Connector the headphones to MONITOR and turn phantom power supply on (Phntm = On). Verify the sound from Mic to headphones.
Repeat the step for INPUT channel 2.

To exit the test, press [EXIT/NO] button.

9. 09: Digital In Check
Connect the CD player to VM3100/Pro: COAXIAL to IN A on the rear panel and OPTICAL to IN B.
The option "Digital In Check" is displayed on the top of the LCD screen.
The function button [F1] toggles between IN A and IN B and the LCD indicates the selected input in the "in = xxxx" field.
The screen displays "Freq = 44.1 k" or the like when the circuit is operating. Otherwise, it will display "Freq = ----".
To exit the test, press [EXIT/NO] button.

10. 10: Device Check
The option "Device Check" is displayed on the top left side of the LCD screen.
Press the function button [F1] - [F4] identified on the bottom of screen to start the following chip.
"ROM": flash memory (IC2, main board)
"ESP": gate array (IC10, main board)
"SRAM": memory (IC3, main board)
"OESP": gate array
(IC16, effects board) (VM3100Pro only)

When the IC is operating, the screen displays "OK", otherwise "NG".
Repeat the test step by pressing [EXIT/NO] button and then the function (F*) button.
Press [EXIT/NO] button upon completion of the 4th test to exit the screen.

11. 11: RMDB Check (VM3100Pro only)
The option "RMDB Check" is displayed on the top left side of the LCD screen.
Press the function button [F1]. The screen displays "Clock = Master".
Short together pins 18 and 21 of RMDB II socket by using approx. 0.8 mm dia. wire (wire solder will serve) as a jumper wire.
Test the RMDB II digital audio circuit by following the procedure given below:

a. Short together pins 2 and 12 of RMDB II socket.
The audio signal from INPUT CH 1 is sent to MASTER OUT L socket.
b. Short together pins 3 and 11 of RMDB II socket.
The audio signal from INPUT CH 2 is sent to MASTER OUT R socket.
c. Short together pins 4 and 10 of RMDB II socket.
The audio signal from INPUT CH 3 is sent to AUX SEND 1 socket.
d. Short together pins 6 and 8 of RMDB II socket.
The audio signal from INPUT CH 4 is sent to AUX SEND 2 socket.

To exit the test, press [EXIT/NOÅn button.

12. 12: Encoder Check
The option "Enc Check" is displayed on the top left side of the LCD screen.
A rectangular box is also displayed. Turning VALUE dial paints portion of the box in the direction of turning. The "Value = xx" field on the display increments the value from –25 up to 25.

The LCD will display "Remain = OK".
To exit the test, press [EXIT/NO] button.

13. 13: Digital Out Check
The option "Digital Out Check" is displayed on the top left side of the LCD screen.
Connect OUT A and OUT B of VM3100/VM3100Pro to COAXIAL IN and OPTICAL IN of the DAT, respectively.
Connect the audio generator output to INPUT CH 1.
Monitor the CH L output of the DAT through a suitable device such as headphones. The signal from the audio generator should be heard.
To exit the test, press [EXIT/NO] button.

SYSTEM SOFTWARE UPDATE USING THE SMF

♦ **Updating the system software using SMF**

The system software of VM3100/3100Pro can be updated by using the latest version of standard MIDI file. The update disc (#17048962) contains the following SMF data:
VM310001.MID
VM310002.MID
VM310003.MID
VM310004.MID
VM310005.MID

Updating procedure

1. Connect MIDI IN socket of VM3100/3100Pro, through the MIDI cable, to the MIDI OUT of a MIDI sequencer that can play SMF data.
2. While holding down [SELECT] button of channels 2 and 5, turn on power.
3. The LCD displays "MIDI System Update?". Press [ENTER/YES] button.
4. The prompt is replaced with "Select Update Area". Select the range to be updated by pressing the function button (F1, F2 or F3). Normal selection is the main area. Selecting the user area will cause the user data to be erased.
5. Press [F4] button. The prompt "Erase Old System OK?" will appear. Press [ENTER/YES] button and the existing system software will be erased.
6. The message "Now Working" and then "Waiting MIDI-EX" will appear. Play the SMF data.
7. When the message "Please Reboot OK" is displayed, turn off the VM3100/Pro and then turn it on again.

This completes updating process.

CAUTION: Do not turn off power during updating.
If the unit is accidentally is turned off, repeat steps 1-7. The screen may not the exact repetition of the first updating cycle, but the procedure is exactly the same.

♦ **Saving system parameters**

Before replacing a board of the VM3100/Pro, save the user system parameters and user data onto a sequencer or similar device. Reload the saved parameters and data after repairing the unit.

Å°**Sending system parameters as MIDI data**

1. Press [SYSTEM] (CONTRAST) button to enter the system parameter screen.
2. Press [F1-F4 ON/OFF] button. The LCD will identify the function buttons. Press "F3" button to enter the bulk dump screen.
3. Place a check mark in All check box by turning VALUE dial clockwise, or select only the desired parameters by specifying them with cursor buttons.
4. Press [ENTER/YES] button and the prompt "Are You SURE?" is displayed. Press [ENTER/YES] button again. The selected system parameters and the user data are sent out in MIDI exclusive format signals.

Å°**Receiving saved system parameters through MIDI**

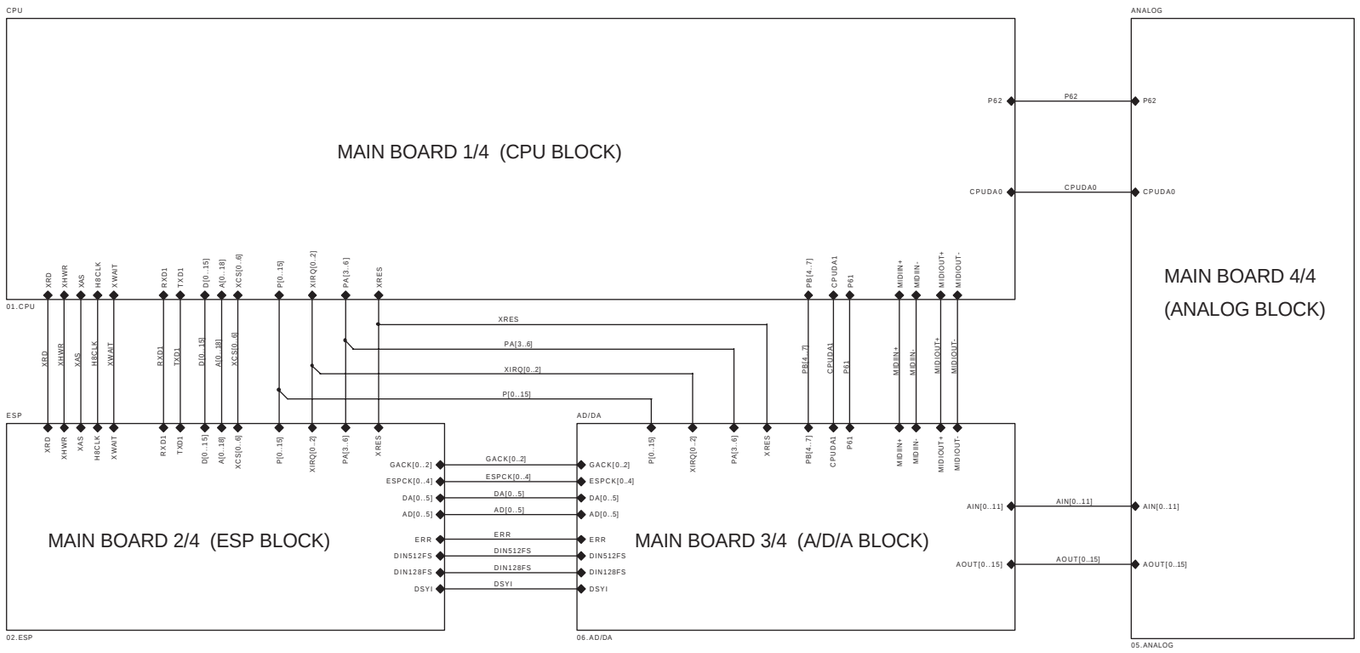
1. Press SYSTEM button to enter the system parameter screen.
2. Press [F1-F4 ON/OFF] button. The LCD will identify the function buttons. Press "F3" button to enter the bulk dump screen.
3. Press [F1-F4 ON/OFF] button. Press "F2" button. The LCD will display "Waiting" indicating that the unit is ready to receive the saved data.
4. While receiving MIDI signals, the screen displays "Now Receiving" and will display "Waiting" again when all saved data have been received.

♦ **Initializing system parameters**

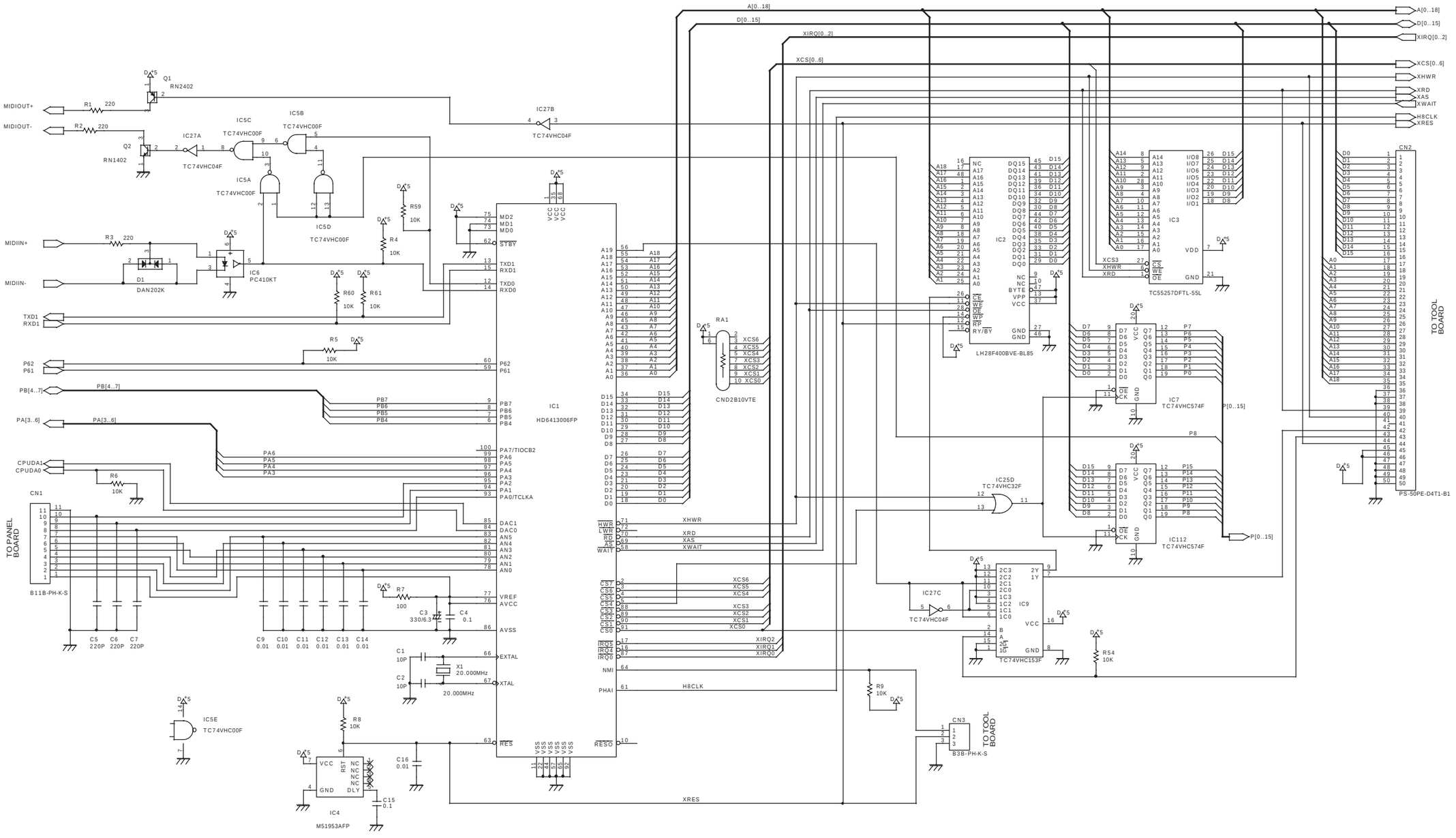
When resetting system parameters and user data to the factory settings (default value), take the following procedure.

1. Press [SYSTEM] button to enter the system parameter screen.
3. Press [F1-F4 ON/OFF] button and then [F4] button. The LCD will display the parameter initializing screen.
3. Place a check mark in All check box by turning VALUE dial clockwise, or select the required parameters by specifying them with cursor buttons.
4. Press [ENTER/YES] button and the prompt "Initialize. Are You SURE?" is displayed. Press [ENTER/YES] button again and the prompt "Initialize. Really SURE?" is displayed to protect from accidental selection. Confirm the selection by pressing [ENTER/YES] button. Then, existing system parameters and user data are replaced with the factory settings.
5. When the initialization process completes, press [EXIT/NO] button to exit the screen.

CIRCUIT DIAGRAM & BOARD
VM-3100 MAIN BOARD ASSY (71230734)



VM-3100 MAIN BOARD ASSY 1/4 (71230734)



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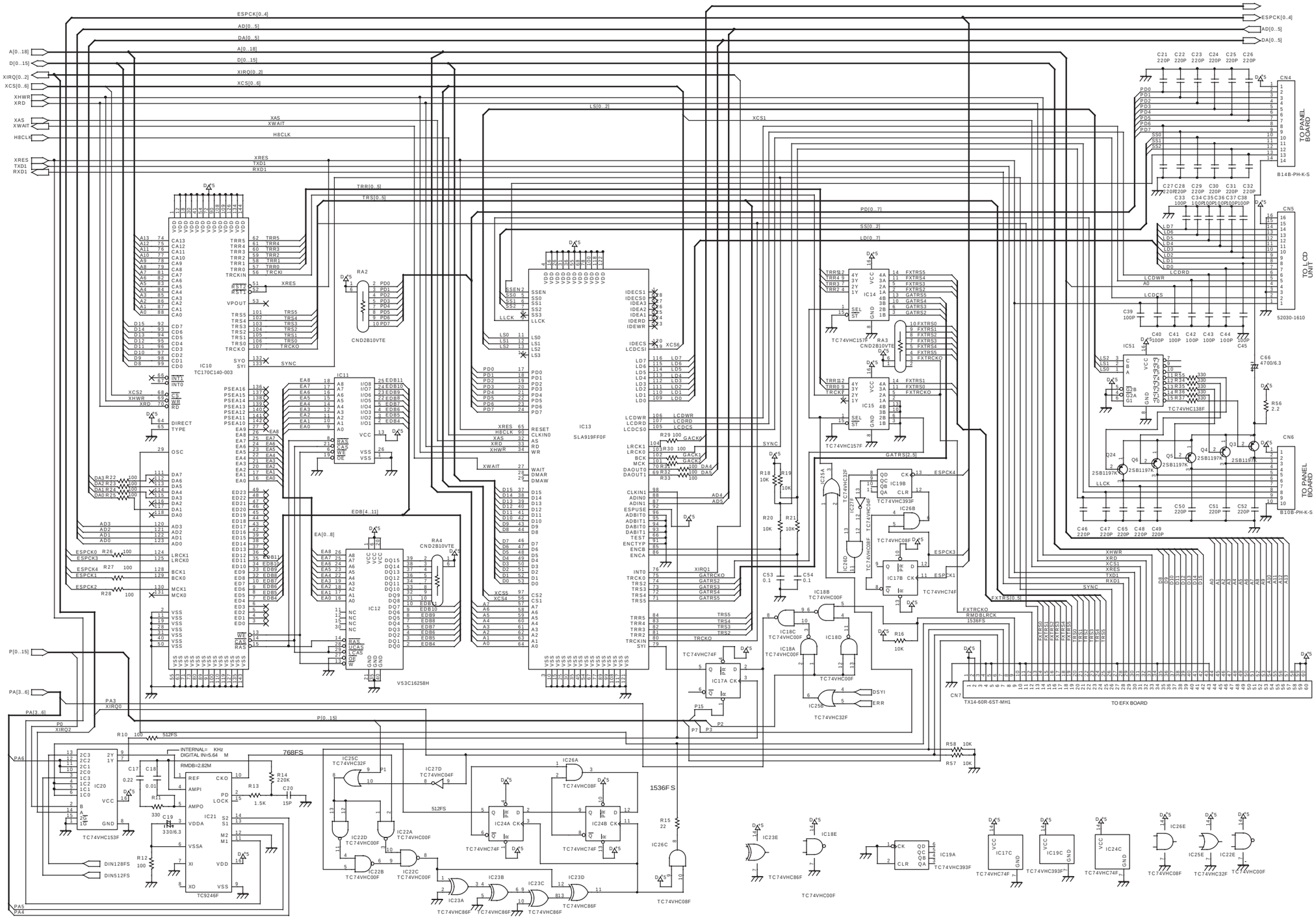

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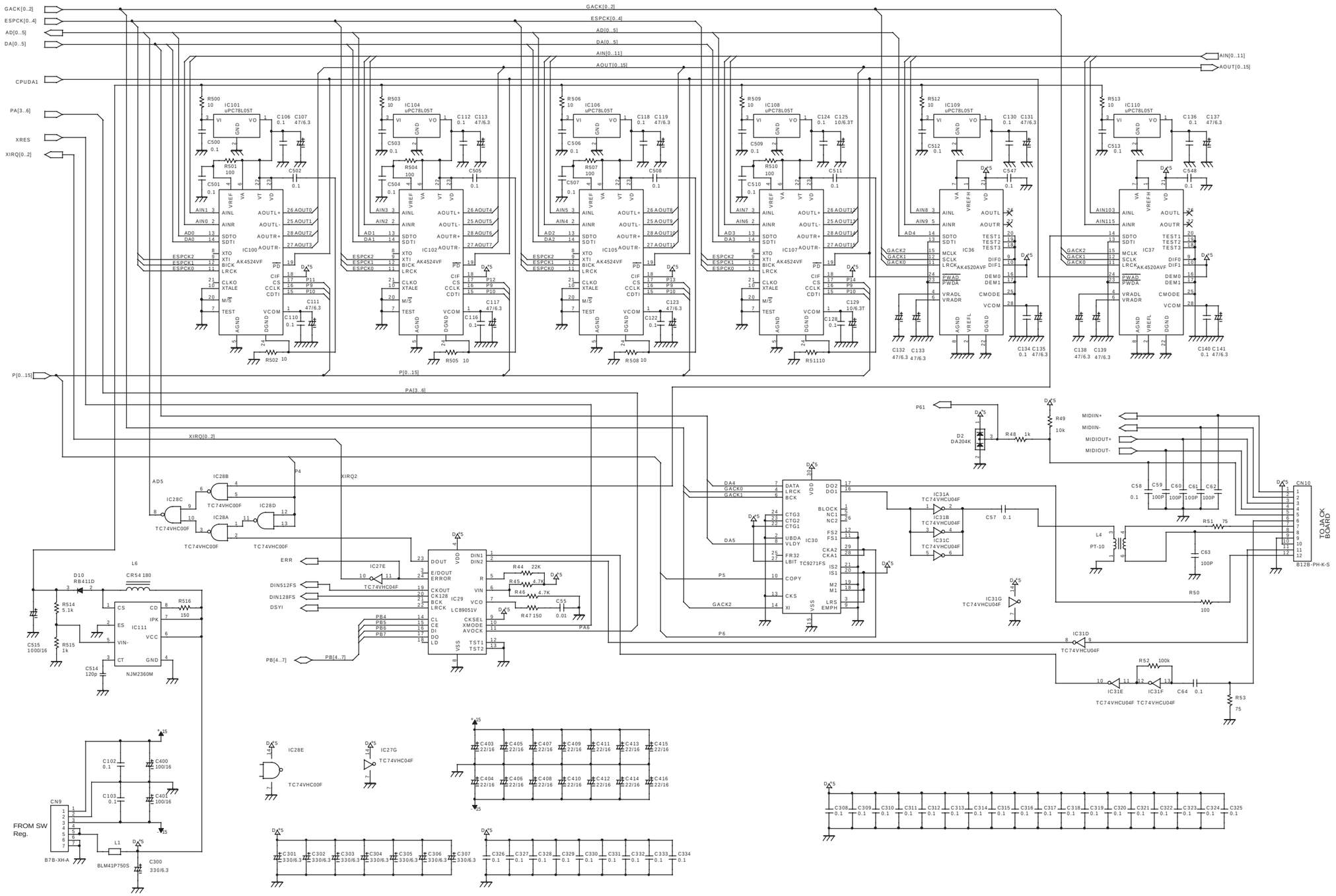
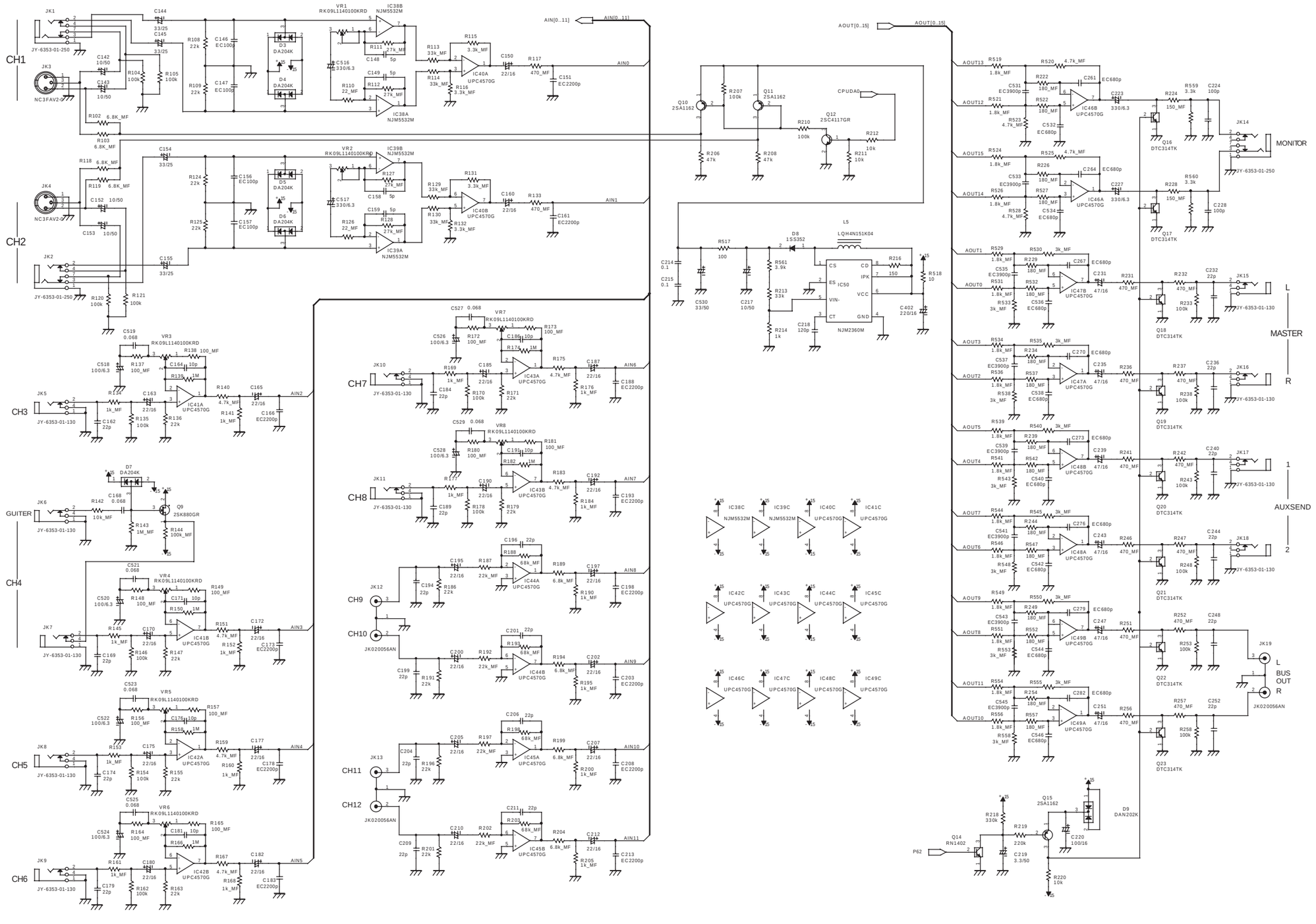


VM-3100 MAIN BOARD ASSY 4/4 (71230734)



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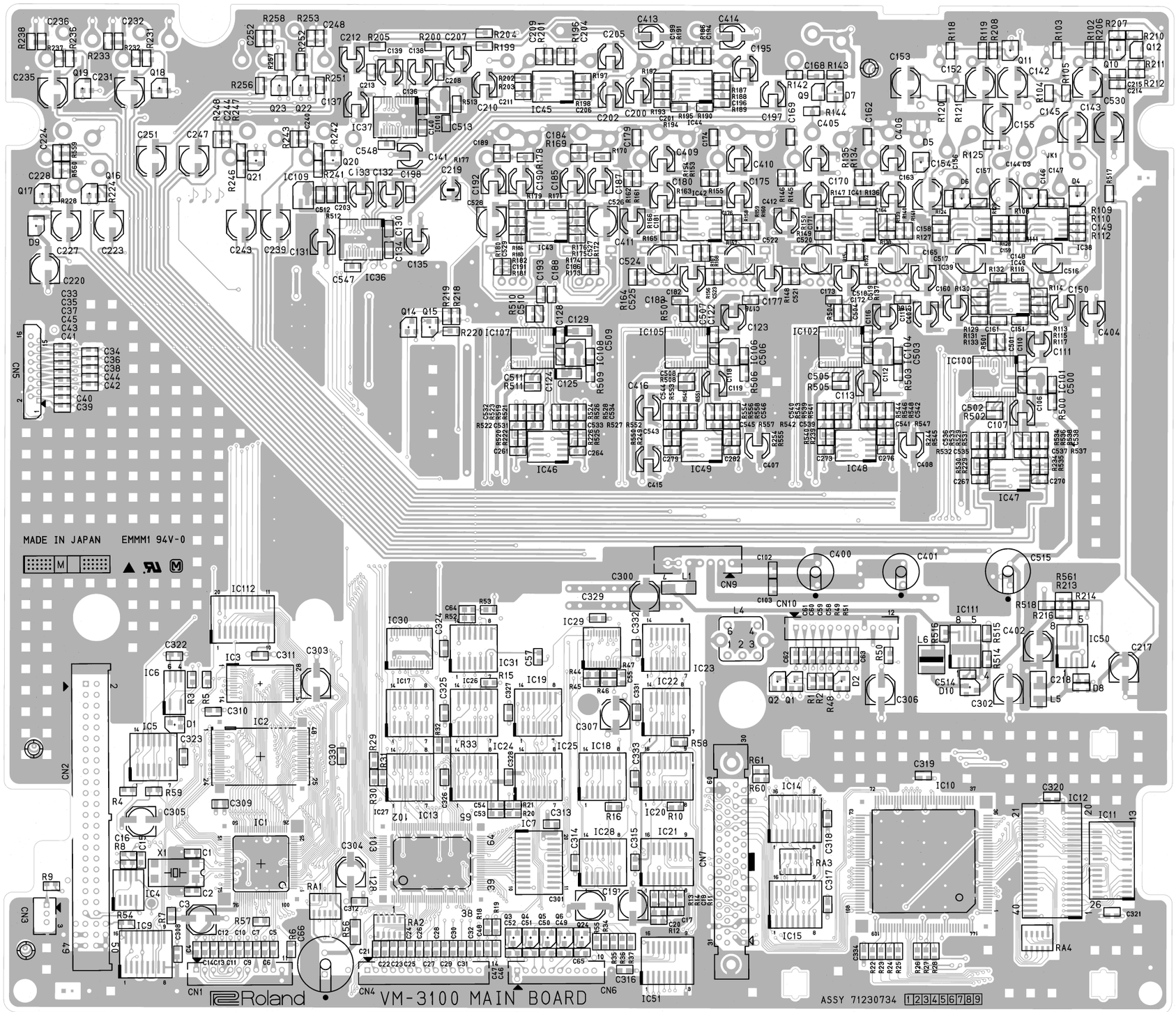
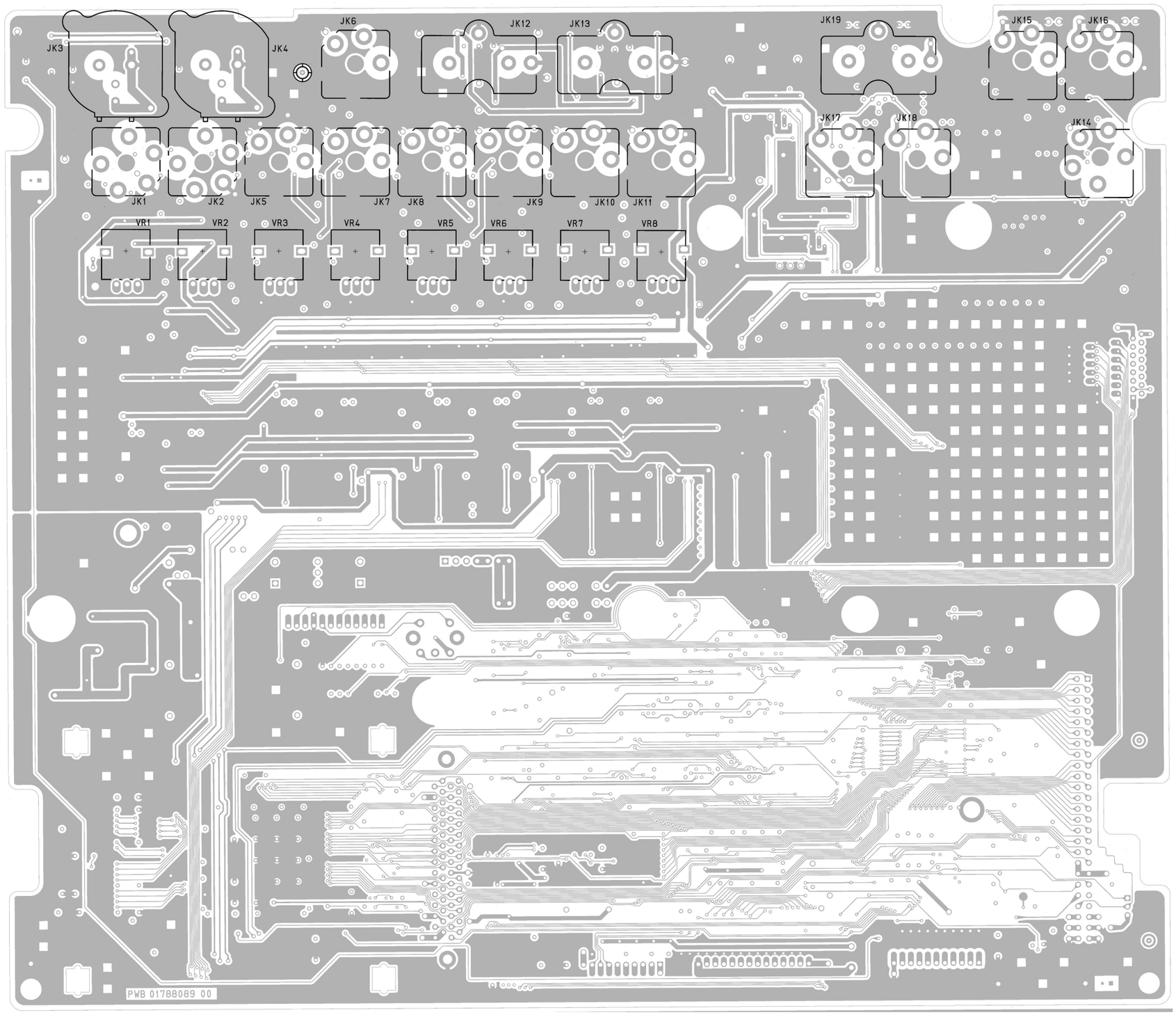


View from component side.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

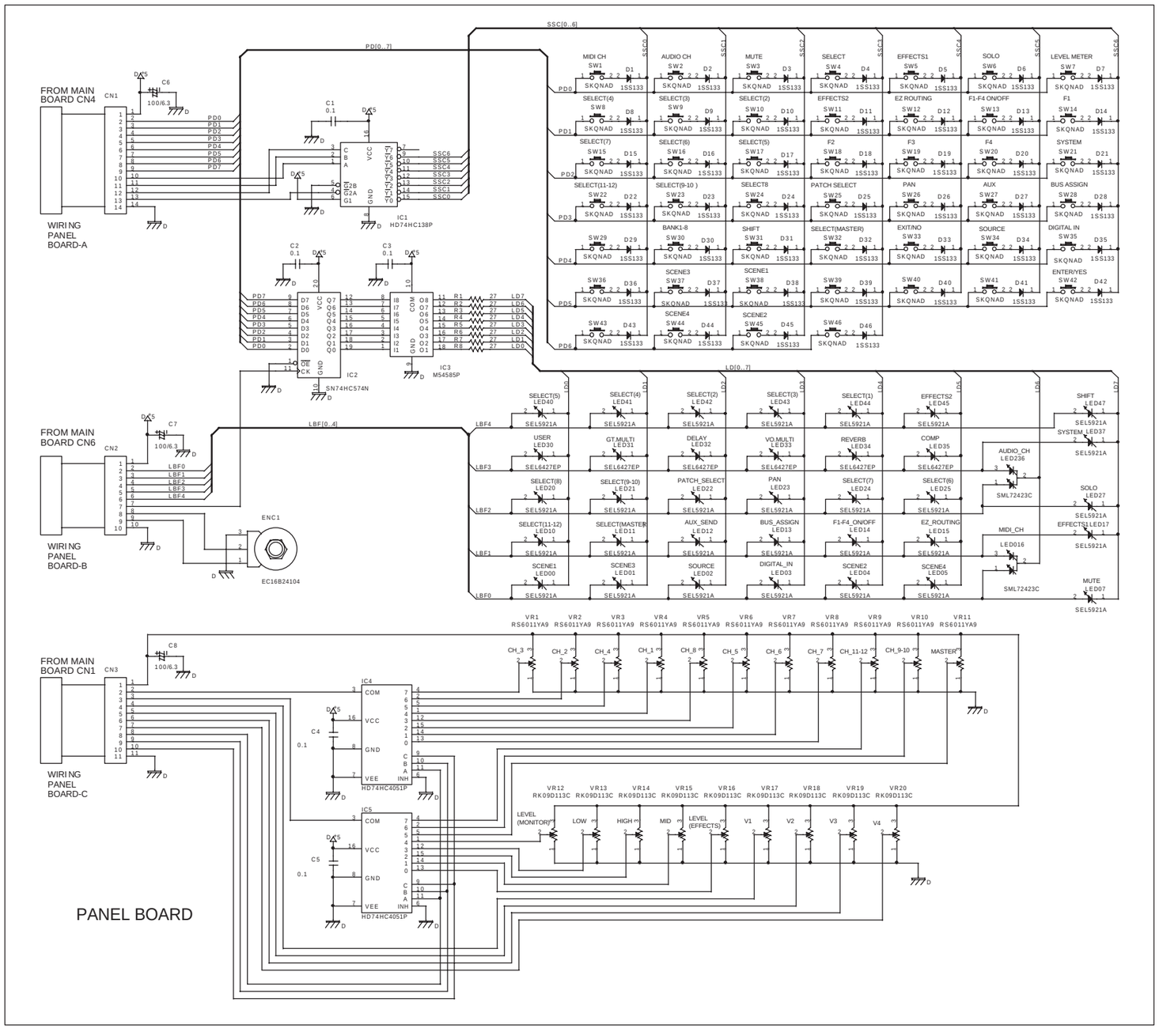
A B C D E F G H I J K L M N O P Q R S T U

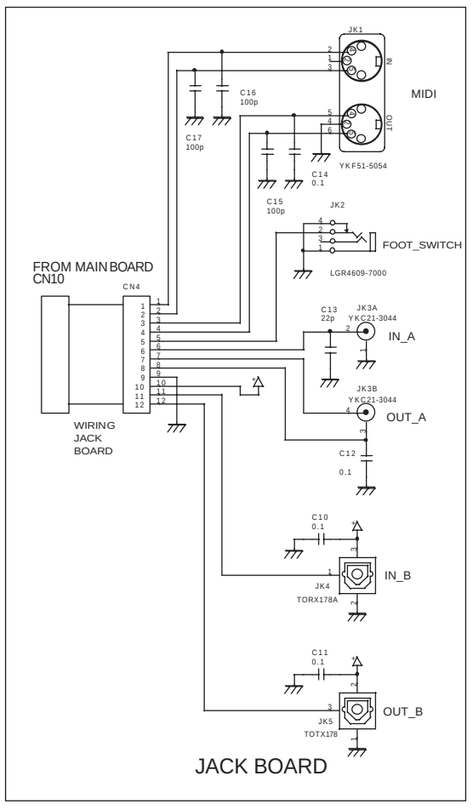
VM-3100 MAIN BOARD ASSY (71230734)



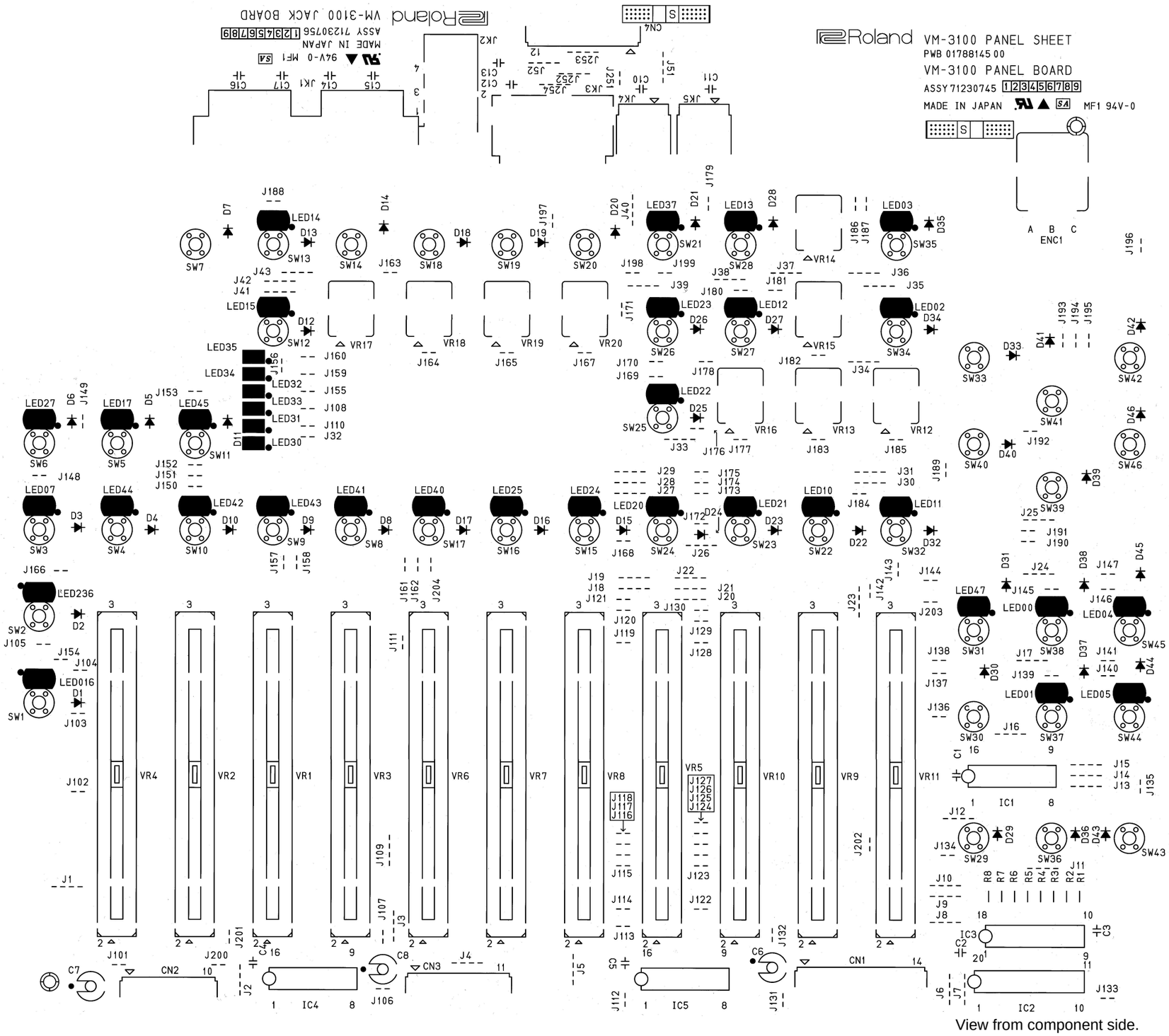
View from foil side.

PANEL BOARD ASSY (71230745) / JACK BOARD ASSY (71230756)



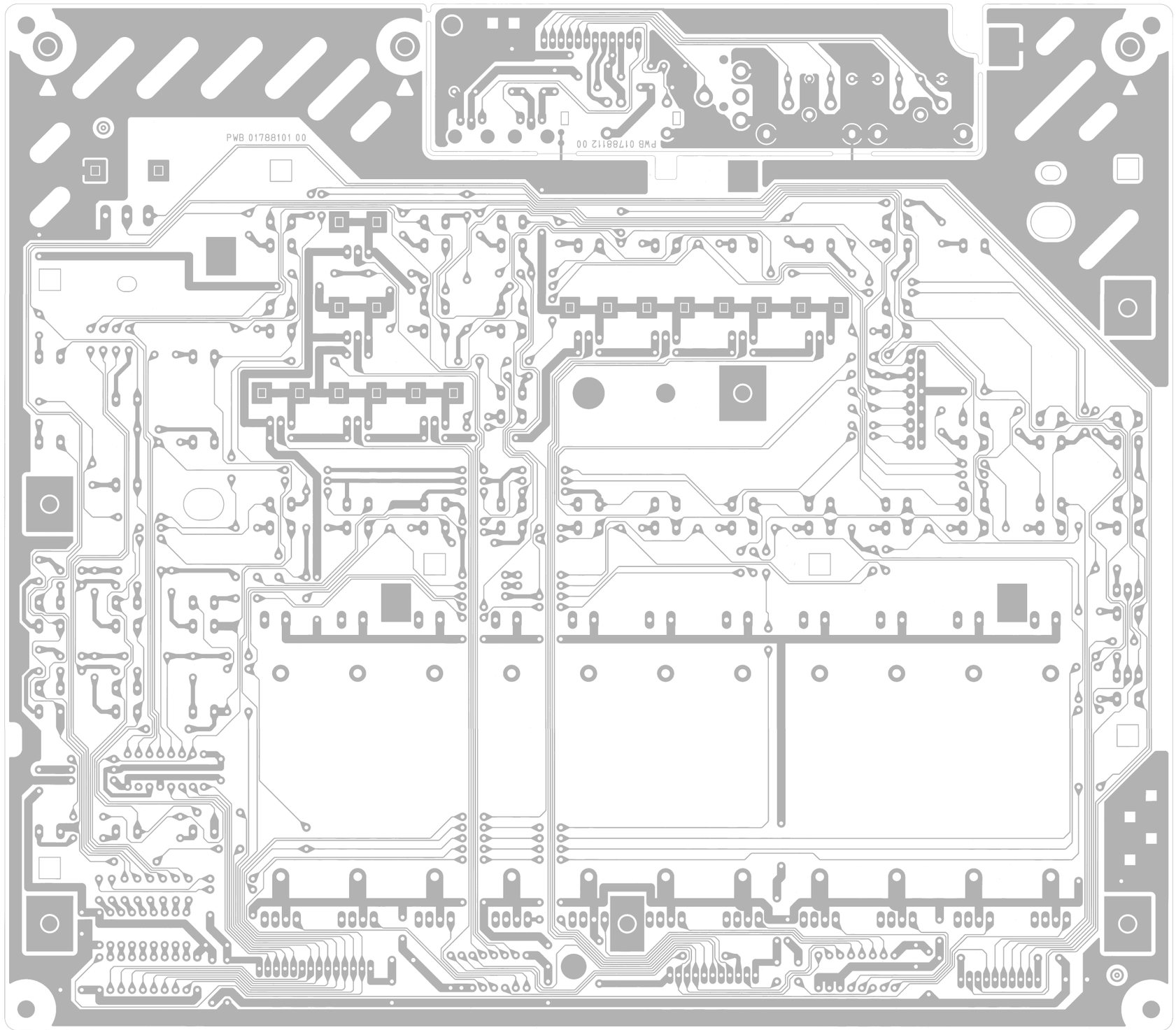


PANEL BOARD ASSY (71230745) / JACK BOARD ASSY (71230756)



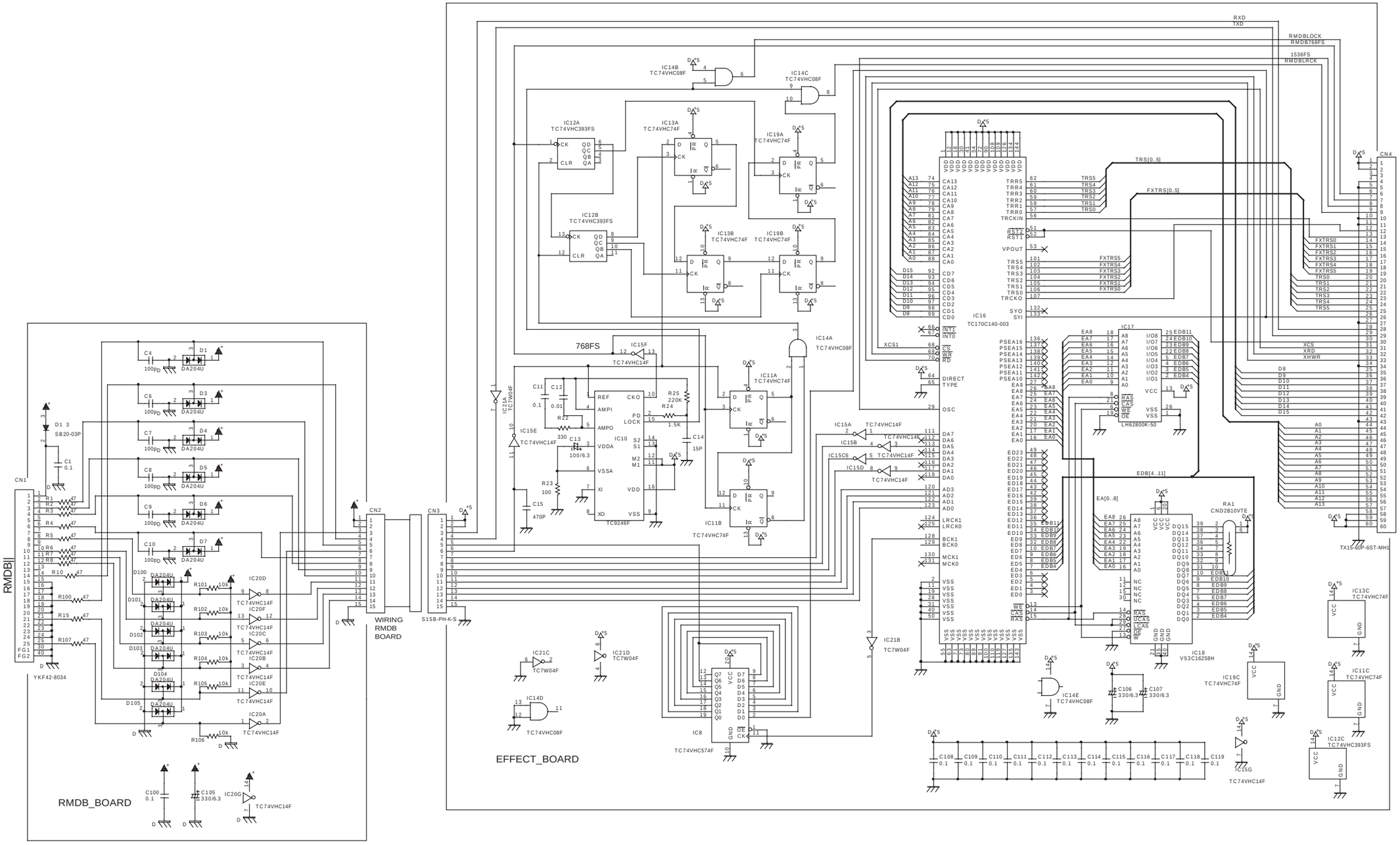
View from component side.

PANEL BOARD ASSY (71230745) / JACK BOARD ASSY (71230756)



View from foil side.

VM-3100Pro RMDB BOARD ASSY (71340678) / VM-3100Pro EFFECT BOARD ASSY (71340712)

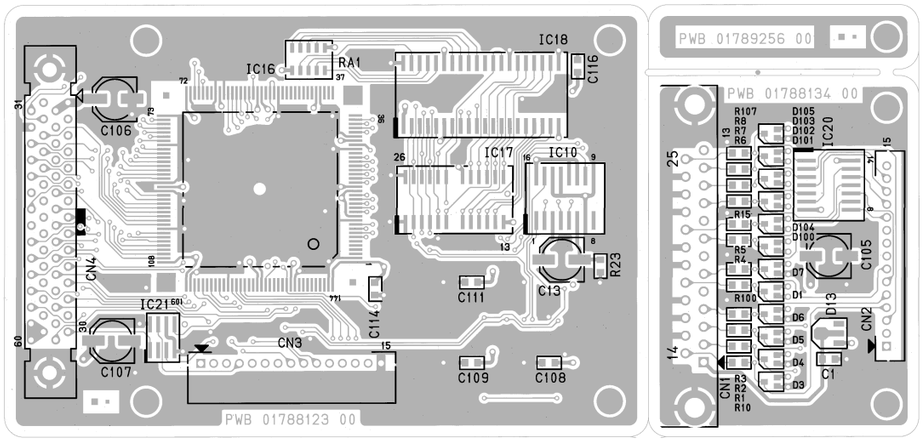


VM-3100Pro RMDB BOARD ASSY (71340678) / VM-3100Pro EFFECT BOARD ASSY (71340712)

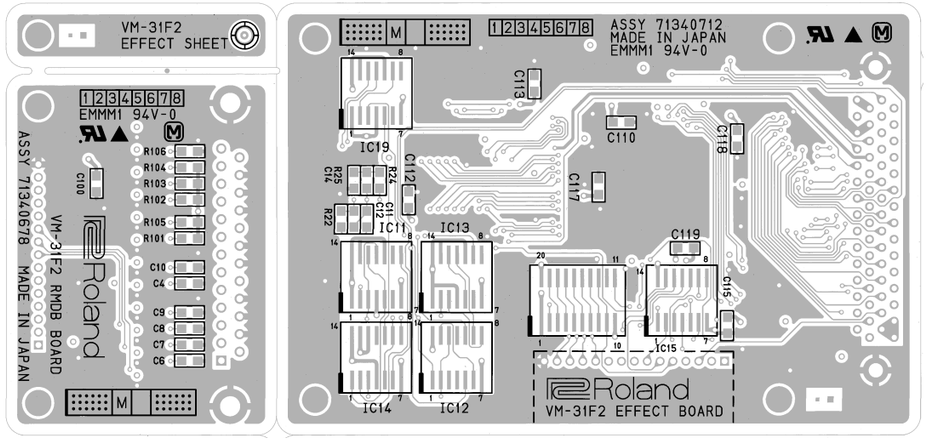
EFFECT BOARD ASSY
(71340712)

RMDB BOARD ASSY(71340678)

EFFECT BOARD ASSY
(71340712)



View from components side.



View from foil side.