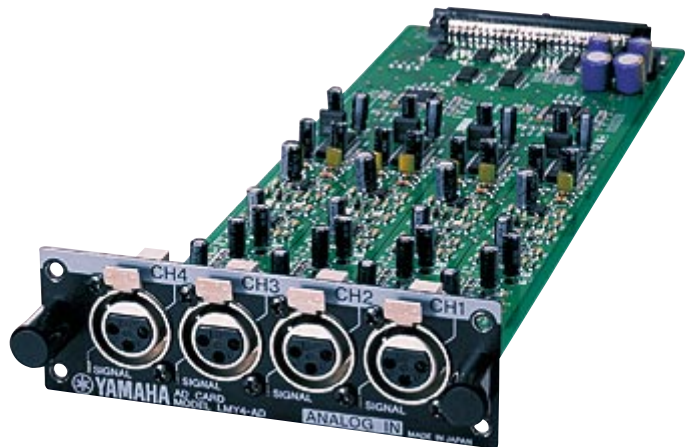


AD CARD LMY4-AD

SERVICE MANUAL



■ CONTENT

NOTICE OF CHANGES IN LMY4-AD S/M	3
SPECIFICATIONS	4
PANEL LAYOUT	4
DIMENSIONS	4
BLOCK DIAGRAM	5
LSI PIN DESCRIPTION	6
IC BLOCK DIAGRAM	8
CIRCUIT BOARD	9
TEST PROGRAM	11
PARTS LIST	
CIRCUIT DIAGRAM	

IMPORTANT NOTICE

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

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

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

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

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

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

WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and /or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

■ NOTICE OF CHANGES IN LMY4-AD S/M

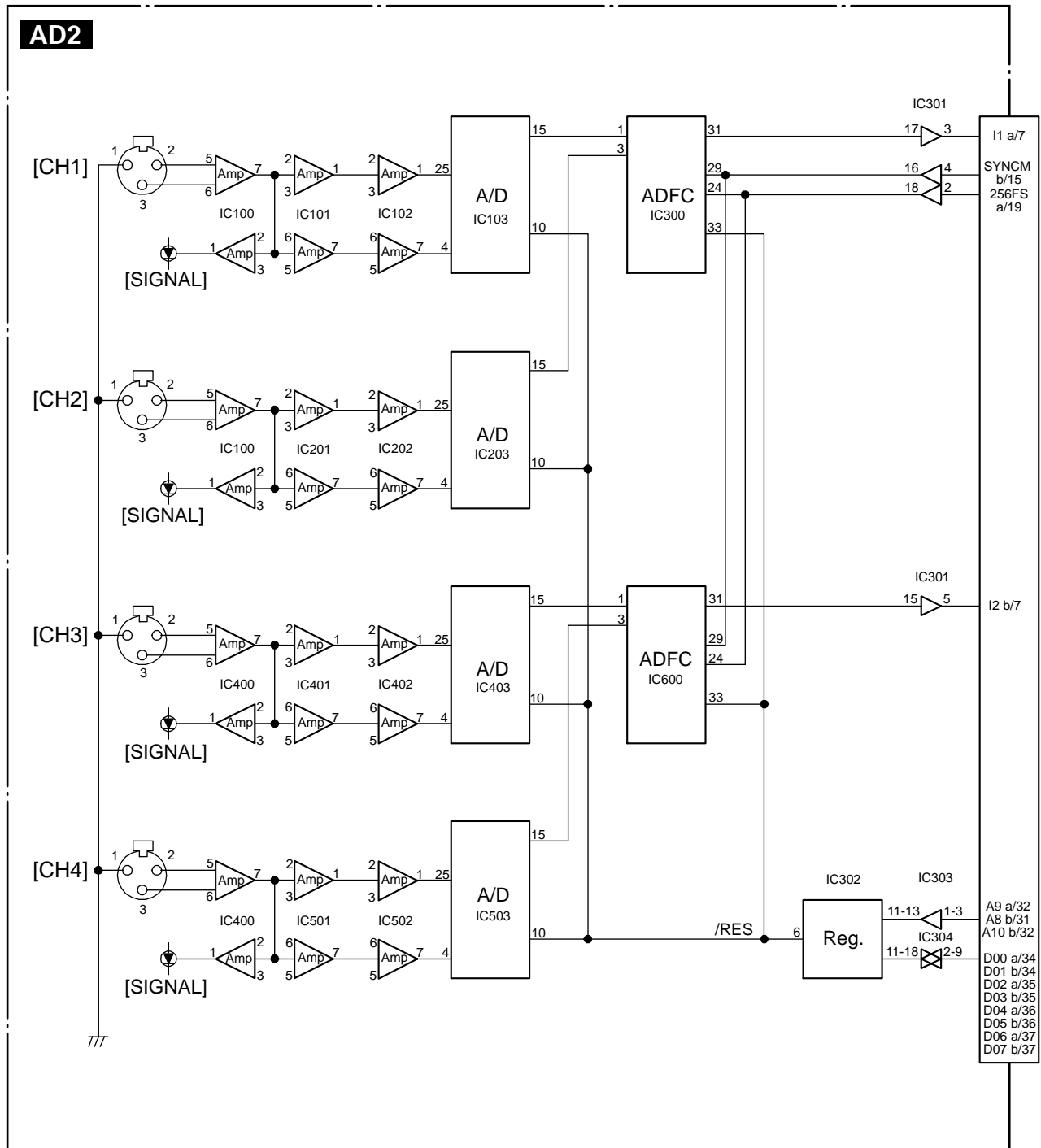
● IC BLOCK DIAGRAM

1. Logic IC HD74LV244AFPEL (IS024400) is changed to Logic IC TC74VHC244F (XT800A00)
2. Logic IC HD74LV245AFPEL (IS024500) is changed to Logic IC 74VHC245SJX (XY874A00)

● TEST PROGRAM

Test program is newly provided. (Page 11)

■ BLOCK DIAGRAM



LSI PIN DESCRIPTION

● YAC509 (XM167A00) ADFC

AD1: IC300, 600

PIN No.	NAME	I/O	FUNCTION	PIN No.	NAME	I/O	FUNCTION															
1	SI0 (L)	I	Input to Lch LO gain side (IMOD0=1) Input to Lch (IMOD0=0)	23	XO	O	Connect X'tal OUT crystal oscillator or input 256fs clock to XI.															
2	SI1 (L)	I	Input to Lch HI gain side (IMOD0=1)	24	XI	I	Connect X'tal IN crystal oscillator or input 256fs clock to XI.															
3	SI0 (R)	I	Input to Rch LO gain side (IMOD0=1) Input to Rch (IMOD0=0)	25	CK256A	O	Output clock which is inputted to 256fs OUT XI.															
4	SI1 (R)	I	Input to Rch HI gain side (IMOD0=1)	26	MCK	O	Output 128fs clock.															
5	WCKI	I/O	Word clock input/output of serial input	27	BCKO	O	Output 64fs bit clock which divides MCK (It rises at the head of SYNC).															
6	BCKI	I/O	Bit clock input/output of serial input	28	WCKO	O	Output 1fs word clock which divides MCK and of which the duty ratio is 50%.															
7	IMOD0 (*)	I	Setting of serial input modes. "1" = parallel, "0" = serial	29	SYNC	I/O	Input/output of 1fs synchronous clock (The fall of SYNC makes the 6th rise of 256fs the head of WC.)															
8	IMOD1 (*)	I	Setting of serial input modes. "1" = asynchronous, "0" = synchronous	30	SOR	O	Output in order of Rch data and Lch data.															
9	ITM0 (*)	I	Setting of input data timing	31	SOL	O	Output in order of Lch data and Rch data.															
10	ITM1 (*)	I	(") <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>ITM1</th> <th>ITM0</th> <th>Input timing (format)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>Move forward 20 bits closer</td> </tr> <tr> <td>0</td> <td>1</td> <td>16 bits B.B format</td> </tr> <tr> <td>1</td> <td>0</td> <td>18 bits B.B format</td> </tr> <tr> <td>1</td> <td>1</td> <td>20 bits B.B format</td> </tr> </tbody> </table>	ITM1	ITM0	Input timing (format)	0	0	Move forward 20 bits closer	0	1	16 bits B.B format	1	0	18 bits B.B format	1	1	20 bits B.B format	32	CKSEL (*)	I	Switching of input or output of SYNC. "1" = output, "0" = input.
ITM1	ITM0	Input timing (format)																				
0	0	Move forward 20 bits closer																				
0	1	16 bits B.B format																				
1	0	18 bits B.B format																				
1	1	20 bits B.B format																				
11	GSEL0 (*)	I	Setting of a floating gain	33	RESET	I	Internal reset at "0".															
12	GSEL1 (*)	I	(") <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>GSEL1</th> <th>GSEL0</th> <th>Floating gain</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>12 dB (2 bits)</td> </tr> <tr> <td>0</td> <td>1</td> <td>18 dB (3 bits)</td> </tr> <tr> <td>1</td> <td>0</td> <td>24 dB (4 bits)</td> </tr> <tr> <td>1</td> <td>1</td> <td>30 dB (5 bits)</td> </tr> </tbody> </table>	GSEL1	GSEL0	Floating gain	0	0	12 dB (2 bits)	0	1	18 dB (3 bits)	1	0	24 dB (4 bits)	1	1	30 dB (5 bits)	34	MUTE (*)	I	Output "0" for output mute all at "0".
GSEL1	GSEL0	Floating gain																				
0	0	12 dB (2 bits)																				
0	1	18 dB (3 bits)																				
1	0	24 dB (4 bits)																				
1	1	30 dB (5 bits)																				
13	DFC (*)	I	Digital filter ON/OFF ("1"=ON, "0"=OFF)	35	OMD (*)	I	SOL, SOR output (switching of "0"=MBS First/"1"=LSB First).															
14	GCC (*)	I	Automatic adjustment of floating gain ON/OFF ("1"=ON, "0"=OFF)	36	NSC (*)	I	Noise shooing ON/OFF. "1"=OFF, "0"=ON.															
15	HTC (*)	I	Quasi instantaneous cross fade bold time ON/OFF ("1"=ON, "0"=OFF)	37	Test4	O	Normally non-connected.															
16	CFT0 (*)	I	Setting of cross fade time	38	Test5	O	"															
17	CFT1 (*)	I	(") <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>CFT1</th> <th>CFT0</th> <th>Cross fade time</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0 ms</td> </tr> <tr> <td>0</td> <td>1</td> <td>53 ms</td> </tr> <tr> <td>1</td> <td>0</td> <td>106 ms</td> </tr> <tr> <td>1</td> <td>1</td> <td>212 ms</td> </tr> </tbody> </table>	CFT1	CFT0	Cross fade time	0	0	0 ms	0	1	53 ms	1	0	106 ms	1	1	212 ms	39	VDD	O	VDD(+5V)
CFT1	CFT0	Cross fade time																				
0	0	0 ms																				
0	1	53 ms																				
1	0	106 ms																				
1	1	212 ms																				
18	GND		GND	40	GND		GND															
19	VDD		VDD(+5V)	41	DLSP0 (*)	I	Floating delay switching. ("1"=16 sample delay, "0"=0 sample delay)															
20	Test1 (*)	I	Normally non-connected	42	FLSW (*)	I	Floating inhibiting SW. "1"= floating, "0"= floating is inhibited. ADC of output wave at HI level side.															
21	Test2 (*)	I	"	43	Test6 (*)	I	Normally non-connected.															
22	Test3	O	"	44	Test7 (*)	I	"															

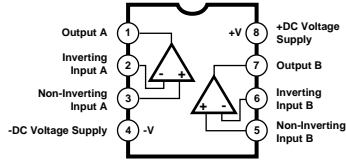
• AK5392-VS-E2 (XV065A00) A/D CONVERTER

AD1: IC103, 203, 403, 503

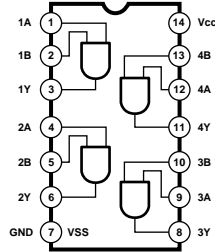
PIN No.	NAME	I/O	FUNCTION	PIN No.	NAME	I/O	FUNCTION
1	VREFL	O	L ch standard voltage output (+3.75V)	15	SDATA	O	Serial data output
2	GNDL		L ch standard grand (0 V)	16	FSYNC	I/O	Frame synchronization clock
3	VCOML	O	L ch common voltage (+2.5 V)	17	MCLK	I	Master clock input
4	AINL+	I	L ch analog +input	18	CMODE	I	Master clock select
5	AINL-	I	L ch analog -input	19	HPFE	I	HPF enable pin
6	ZCAL	I	Zero calibration "L"=VCOML, VCOMR "H": Analog input (AINLI,AINRI)	20	TEST	I	Test pin
7	VD		Power supply for digital	21	B GND		Ground (0 V)
8	DGND		Ground for digital	22	A GND		Ground for analog (0 V)
9	CAL	O	Calibration status	23	VA		Power source for analog (5V)
10	RST	I	Reset	24	AINR-	I	Rch analog -input
11	SMODE2	I	Serial interface mode select	25	AINR+	I	Rch analog +input
12	SMODE1	I		26	VCOMR	O	R ch common voltage (2.5 V)
13	LSCK	I/O	Clock for L/R ch select	27	GNDR		R ch standard glound (0 V)
14	SCLK	I/O	Serial data clock	28	VREFR	O	R ch standard voltage output (3.75 V)

IC BLOCK DIAGRAM

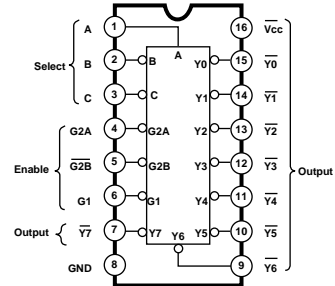
- **NJM2068MD-T1 (XJ553A00)**
Dual Operatinal Amplifier
AD: IC100-102, 201, 202,400-402,
501, 502,700, 750, 800, 850



- **HD74LV08AFPEL (IS000800)**
Qual 2 Input AND
AD: IC306

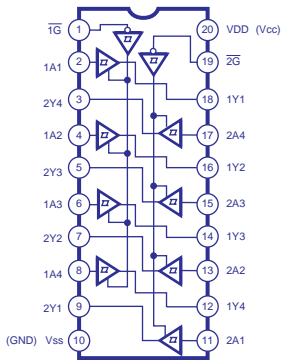


- **SN74LV138ANSR (IS013810)**
DECODER
AD: IC303

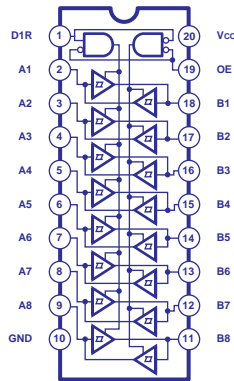


ENABLE INPUTS			SELECT INPUTS		OUTPUTS								
G1	G2A	G2B	C	B	A	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7
X	H	X	X	X	X	H	H	H	H	H	H	H	H
X	X	H	X	X	X	H	H	H	H	H	H	H	H
L	X	X	X	X	X	H	H	H	H	H	H	H	H
H	L	L	L	L	L	H	H	H	H	H	H	H	H
H	L	L	L	L	H	H	H	H	H	H	H	H	H
H	L	L	L	L	H	H	H	H	H	L	H	H	H
H	L	L	L	L	H	H	H	H	H	L	L	H	H
H	L	L	L	L	H	H	H	H	H	L	L	L	H
H	L	L	L	L	H	H	H	H	H	L	L	L	L
H	L	L	L	L	H	H	H	H	H	L	L	L	L

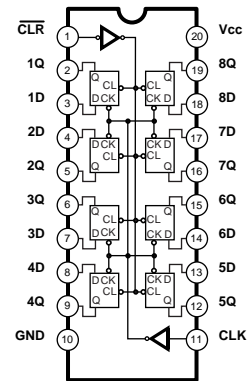
- **TC74VHC244F (XT800A00)**
Octal 3-State Bus Buffer
AD2: IC301



- **74VHC245SJX (XY874A00)**
Octal 3-State Bus Buffer
AD2: IC304, 305

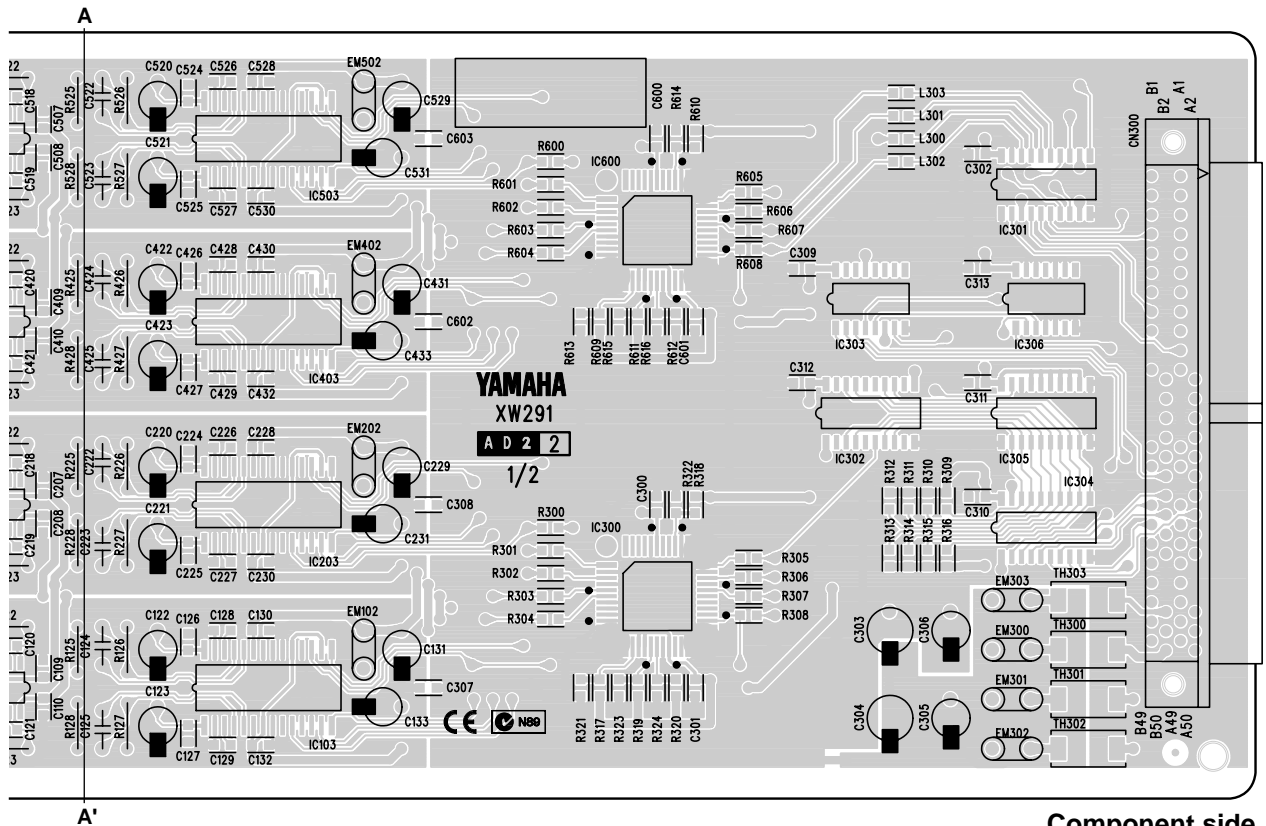
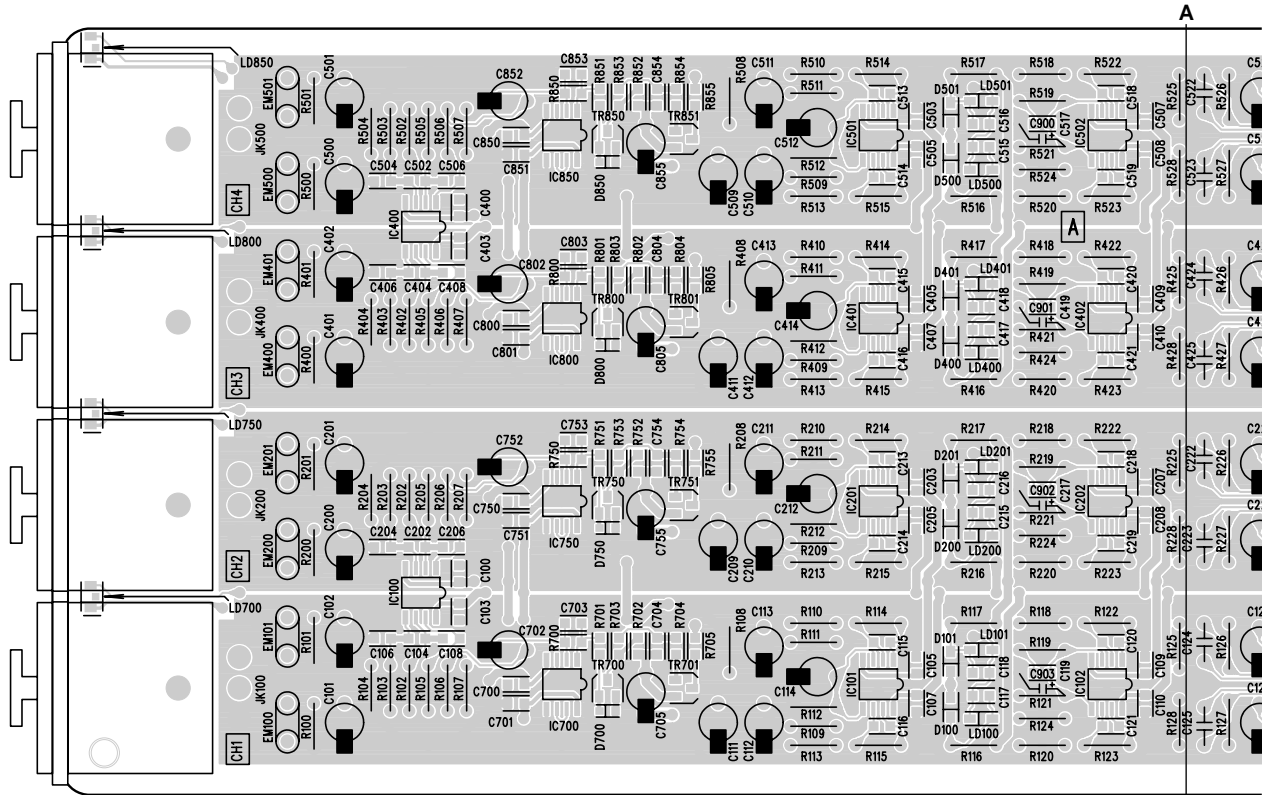


- **HD74LV273AFPEL (IS027300)**
Octal 3-State D-Type Flip Flop
AD: IC302



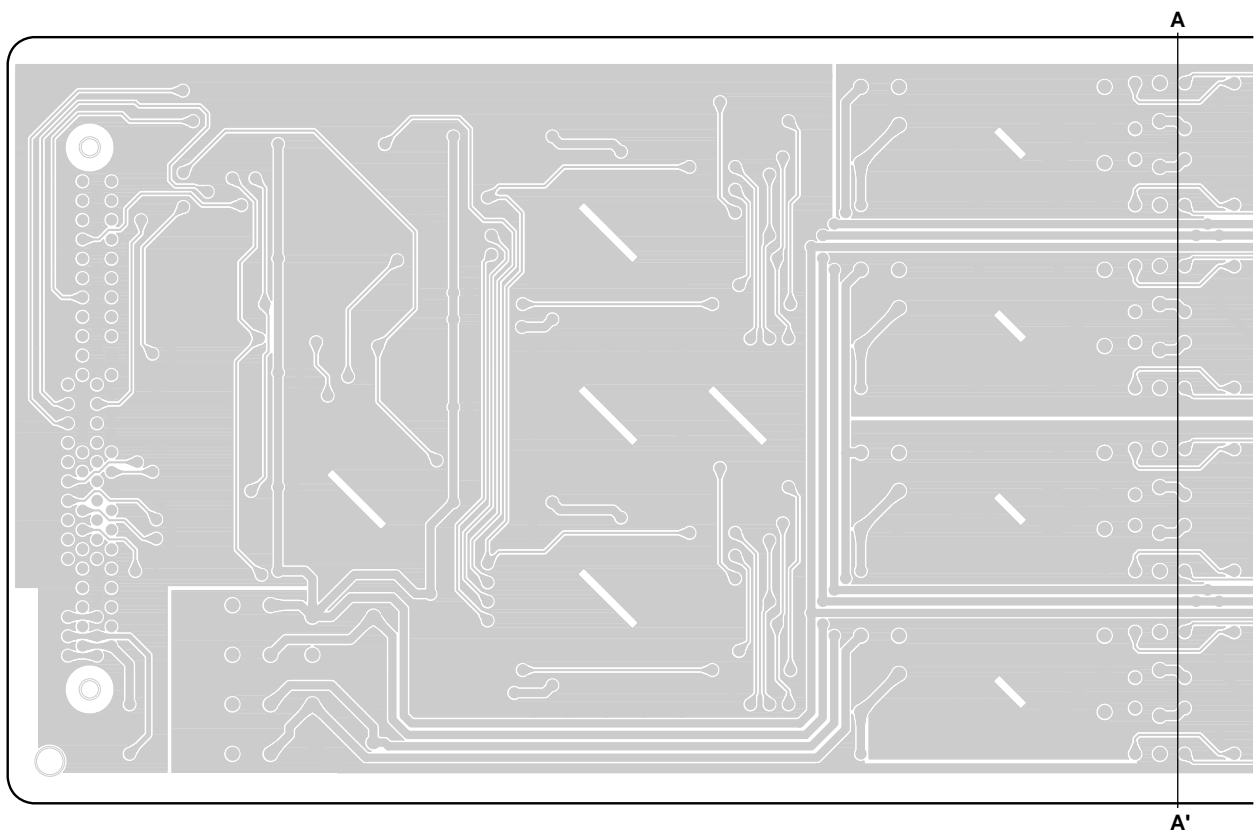
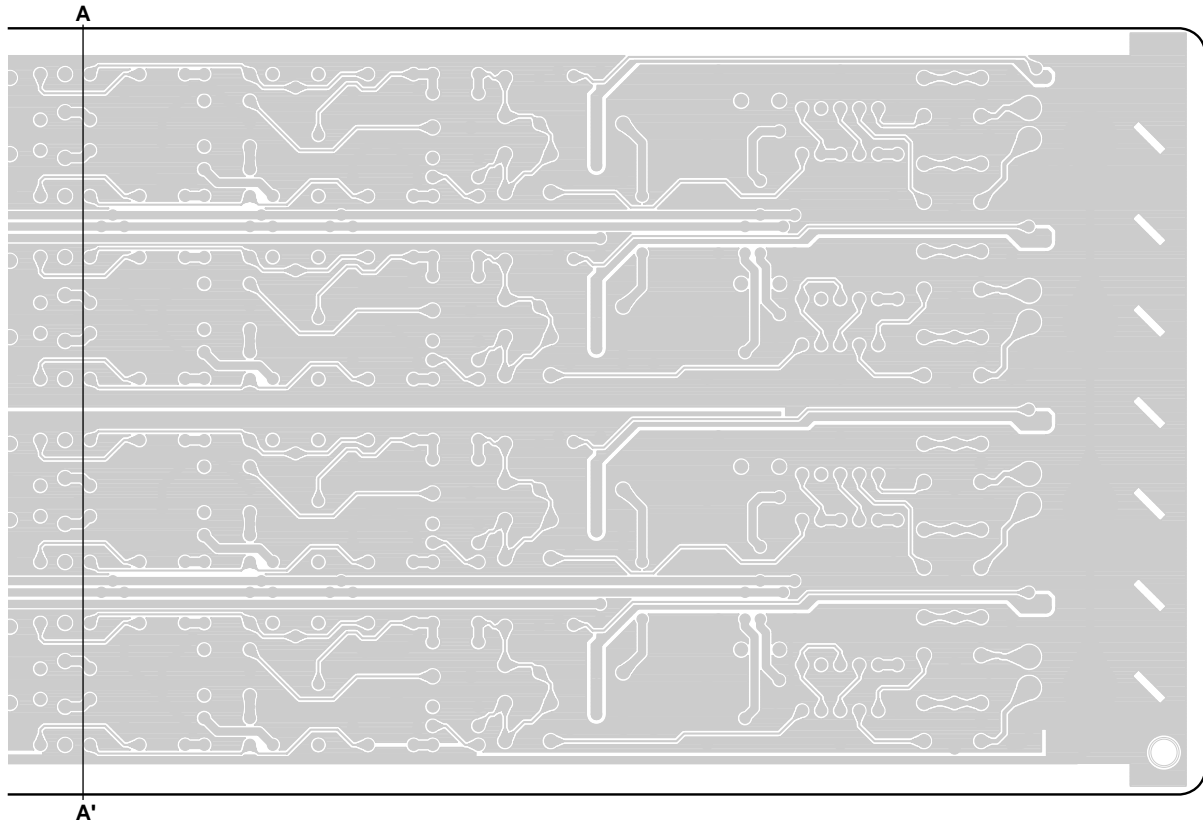
■ CIRCUIT BOARD

●AD2 Circuit Board



AD2: V509980

●AD2 Circuit Board



A'
Pattern side
AD2: V509980

■ TEST PROGRAM

1. Scope of Application

This specification shall apply to LMY4-AD.

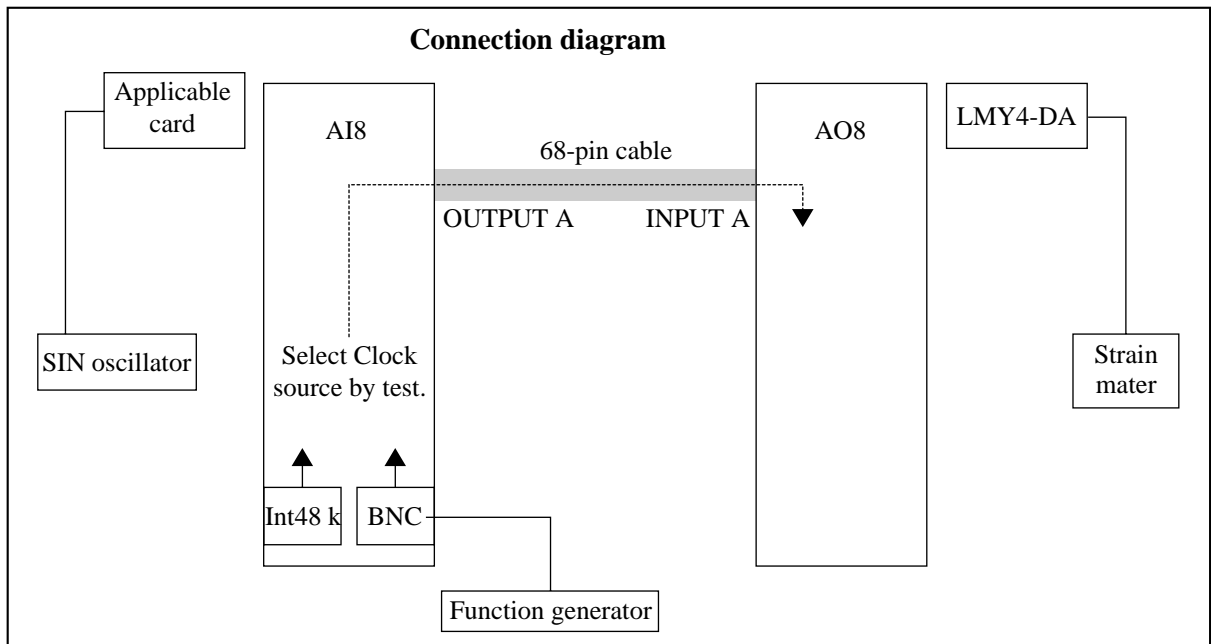
2 .Preparations

2-1. Conditions

- ◇ Set LMY4-AD (product) on AI8 and carry out test.
- ◇ Unless otherwise indicated, the following conditions shall apply.
 - 0 dBu=0. 775 Vrms
 - Output impedance shall be 150 ohm.
 - Input impedance of the oscilloscope, level gauge, etc. shall be 100 ohm or more.
 - Noise measurement shall be corrected with LPF at 12.7 kHz, -6 dB/OCT.
(To be measured not by effective value but by mean value)
 - Unless otherwise indicated, WORD CLOCK of AI shall be INT48 k.
For testing of Fs operation range, supply shall be made via BNC from Function generator.
 - WORD CLOCK of AO8 shall be supplied via INPUT A port.
 - AO8 analog output load shall be 600 ohm.

2-2. Test program

Test program is activated by setting DIP SW of AI8/ AO8 in debug mode and then turning power ON. For setting procedure, refer to Section 4.



3. Test

3-1.OPTION CARD ID

After inserting the card, carry out ID checking when power is ON. Display on 7-segment LED in front of AI8: left place = (slot No.) and right place = (card type). Display is made of 8 slots each in order. Thus, visually ensure that they are recognized as LMY4-AD. Finally, currently locked WordClock source is displayed. Check visually as required.

Turn power ON in debug mode.



Display 8 slots each per second.



Display currently locked clock source (real time).

* Display of 7-segment LED according to card type			
Recognized as LMY4-ML	<i>1L</i> (1L) to	<i>8L</i> (8L)	
Recognized as LMY4-AD	<i>1A</i> (1A) to	<i>8A</i> (8A)	
Recognized as LMY4-DA	<i>1D</i> (1D) to	<i>8D</i> (8D)	
Others	<i>1</i> (1) to	<i>8</i> (8)	

* Display of 7-segment LED according to clock source (Ref. 4.)			
Int 48 kHz	<i>48</i> (48)	from Port A	<i>PA</i> (PA)
Int 44.1 kHz	<i>44</i> (44)	from Port B	<i>Pb</i> (Pb)
Int 39 kHz	<i>39</i> (39)	from Port C	<i>PC</i> (PC)
from BNC	-- (--)	UNLOCK	<i>UL</i> (UL blinking)

3-2. Gain, frequency characteristic, distortion rate (ch1 and 2 each)

Input terminal	Output terminal	Input level	Onput level			THD
			1 kHz	20 Hz	20 kHz	1 kHz
AI8 (LMY4-AD)	AO8 (LMY4-DA) (Set at +24dB)	+23 dBu	+23 +/- 1.0 dB	-2.0 to+1.0 dB ^(*1)	-2.0 to+1.0 dB ^(*1)	0.007% or less
		-7 dBu	-30 +/- 0.4 dB ^(*2)	-30 +/- 0.4 dB ^(*2)	-30 +/- 0.4 dB ^(*2)	0.005% or less

(*1): Set reference at 1 kHz input.

(*2): Set reference at +23 dBu input.

3-3. Difference in level between ch's

Gain difference measured in 3-2. shall be specified as follows.

Tolerance
1 dB or less

3-4. Residual noise (LPF: 12.7 kHz)

Input terminal	Output terminal	Condition	Residual noise
AI8 (LMY4-AD)	AO8 (LMY4-DA) (Set at +24 dB)	Input 150 ohm shorted	-96 dB or more

3-5. Crosstalk (1 kHz)

Input terminal	Output terminal	Condition	Crosstalk
AI8 (LMY4-AD)	AO8 (LMY4-DA) (Set at +24 dB)	Input 150 ohm shorted CH (N) to CH (N-1) or CH (N+1)	90 dB or more

3-6. Signal LED lightening level

Input terminal	Output terminal	Input level
AI8 (LMY4-AD) (GAIN=0 dB)	AO8 (LMY4-DA) (Set at +24 dB)	Light up at -10 +/-2 dBu or more

3-7. Fs operation range (ch1 and ch4 each)

Supply CLOCK from BNC of AI8. (48 kHz+6.5%, 44.1 kHz-10%)
Set UNC card so as to change CLOCK of AI8 over to BNC.

① Fs=51.12 kHz (48 kHz+6.5%)

- Set Function Generator at 51.12 kHz.
- Output level as listed below shall be obtained.

Input terminal	Input frequency	input level	Output terminal	Tolerance
AI8 (LMY4-AD)	1 kHz	+23 dBu	AO8 (LMY4-DA) (Set at +24 dB)	+23 +/- 1.0 dBu

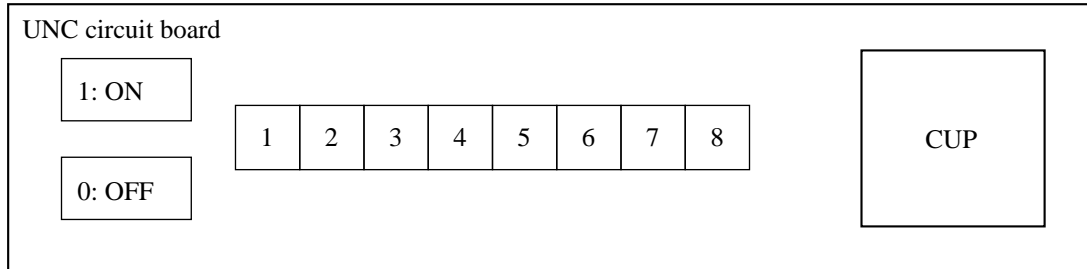
① Fs=39.69 kHz (44.1 kHz-10%)

- Set Function generator at 39.69 kHz.
- When tested in the same way as in ①, the same output level shall be achieved.

* All CHs shall be tested for 3-2. to 3-7.

4. Setting DIP SW for AI8/ AO8

UNC circuit board configuration is the same for both AI8 and AO8, though each DIP SW has a different meaning. The following shows the setting, though DipSW 8 is not used in any case (invalid).



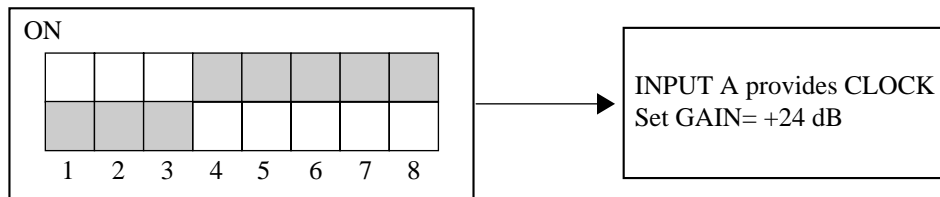
* Setting AI8 (UNC) DIP SW [1: ON (=GND) 0: OFF (= +5 V)]

1	Operation mode	1: Operation				0: Debug			
In order of 2, 3, 4	(*1) WC Sel mode	1, 1, 1 Int 48 kHz	0, 1, 1 Int 44.1 kHz	1, 0, 1 Int 39 kHz	0, 0, 1 WC (OUTPUT A)	1, 1, 0 WC (OUTPUT B)	0, 1, 0 WC (OUTPUT C)	1, 0, 0 BNC	0, 0, 0 Not used
	(*1) GAIN mode	1, 1, 1 sweep	0, 1, 1 78 dB	1, 0, 1 66 dB	0, 0, 1 54 dB	1, 1, 0 48 dB	0, 1, 0 42 dB	1, 0, 0 18 dB	0, 0, 0 12 dB
5	A/B Sel (*2)	1: ALL A				0: ALL B			
6	Phantom (*2)	1: ALL OFF				0: ALL ON			
7	GAIN (*2)	1: ALL MIN (0 dB)				0: 2, 3, 4 GAIN mode (*1)			

(*1) When DipSW7 is OFF, “WC Sel = Int48kHz fixed and DipSW 2,3,4 in GAIN mode.”

(*2) Gray area is effective only for LMY2-ML. Thus, DipSW 5, 6, and 7 shall be turned ON for test.

* Setting AO8 (UNC) DIP SW [1: ON (=GND) 0: OFF (= +5V)]



For details of AO8 DipSW, refer to SPECIFICATION FOR OVERALL TEST ON LMY4-DA.

AD CARD

LMY4-AD

PARTS LIST

■ CONTENT

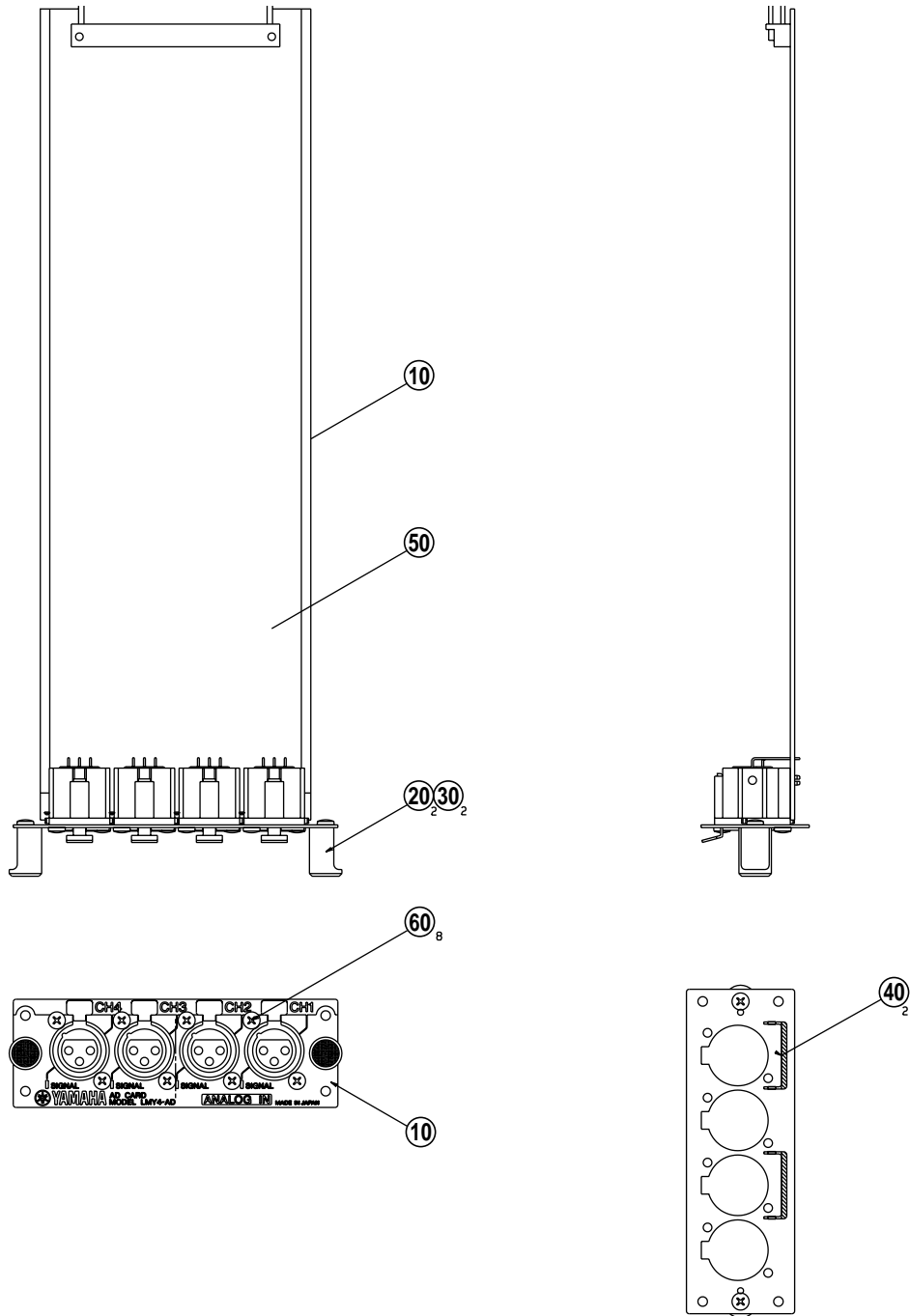
OVERALL ASSEMBLY	2
ELECTRICAL PARTS	3

Notes: DESTINATION ABBREVIATIONS

A: Australian model	J: Japanese model
B: British model	U: U.S. model
C: Canadian model	V: General export model (110V)
E: European model	W: General export model (220V)
H: North European model	X: General export model
I: Indonesian model	Y: Export model

- The numbers in "QTY" shows quantities for each unit.
- The parts with "--" in "Parts No." are not available as spare parts.
- The mark " } " in the remarks column indicates that these parts are interchangeable.

OVERALL ASSEMBLY



REF NO.	PART NO.	DESCRIPTION	REMARKS	QTY	RANK
		OVERALL ASSEMBLY	LMY4-AD		
	--	Overall Assembly	(V451620)		
10	V4103000	Panel			
20	VV441000	Knob	ABS	2	01
30	EP600190	Bind Head Tapping Screw-B	3.0X8 MFZN2BL	2	01
40	V4238900	Lans		2	
50	V5099800	Circuit Board	AD2		
60	VS863000	Bonding Head Screw	3.0X6 MFZN2BL	8	01

*: New parts

RANK: Japan only

■ ELECTRICAL PARTS

REF NO.	PART NO.	DESCRIPTION	REMARKS	QTY	RANK
		ELECTRICAL PARTS	LMY4-AD		
	V5099800	Circuit Board	(XW291A!)		
C101	V5620900	Electrolytic Cap.	AD2		01
C102	V5620900	Electrolytic Cap.	10.00 50.0V		01
C111	UR847220	Electrolytic Cap.	10.00 50.0V		01
C114	UR837220	Electrolytic Cap.	22.00 25.0V		01
C122	UR857100	Electrolytic Cap.	22.00 16.0V		01
C123	UR857100	Electrolytic Cap.	10.00 35.0V		01
C131	UR837220	Electrolytic Cap.	10.00 35.0V		01
C133	UR837100	Electrolytic Cap.	22.00 16.0V		01
C200	V5620900	Electrolytic Cap.	10.00 16.0V		01
C201	V5620900	Electrolytic Cap.	10.00 50.0V		01
C209	UR847220	Electrolytic Cap.	10.00 50.0V		01
C212	UR837220	Electrolytic Cap.	22.00 25.0V		01
C220	UR857100	Electrolytic Cap.	22.00 16.0V		01
C221	UR857100	Electrolytic Cap.	10.00 35.0V		01
C229	UR837220	Electrolytic Cap.	22.00 16.0V		01
C231	UR837100	Electrolytic Cap.	10.00 16.0V		01
C303	V5829200	Capacitor	100 20V 20SG100M+T		01
C304	V5829200	Capacitor	100 20V 20SG100M+T		01
C305	V5829300	Capacitor	100 16V 16SG100M+T		01
C306	UR838100	Capacitor	100 16V 16SG100M+T		01
C400	UB044100	Monolithic Ceramic Cap.	F 0.010 50V Z		01
C401	V5620900	Electrolytic Cap.	10.00 50.0V		01
C402	V5620900	Electrolytic Cap.	10.00 50.0V		01
C403	UB044100	Monolithic Ceramic Cap.	F 0.010 50V Z		01
C404	UB052100	Monolithic Ceramic Cap.	SL 100P 50V J		01
C405	UB044100	Monolithic Ceramic Cap.	F 0.010 50V Z		01
C406	UB052150	Monolithic Ceramic Cap.	SL 150P 50V J		01
C407	UB044100	Monolithic Ceramic Cap.	F 0.010 50V Z		01
C408	UB052150	Monolithic Ceramic Cap.	SL 150P 50V J		01
C409	UB044100	Monolithic Ceramic Cap.	F 0.010 50V Z		01
C410	UB044100	Monolithic Ceramic Cap.	F 0.010 50V Z		01
C411	UR847220	Electrolytic Cap.	22.00 25.0V		01
C414	UR837220	Electrolytic Cap.	22.00 16.0V		01
C416	UB051820	Monolithic Ceramic Cap.	SL 82P 50V J		01
C417	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z		01
-419	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z		01
C420	VE788700	Monolithic Ceramic Cap.	10P 50V		01
C421	VE788700	Monolithic Ceramic Cap.	10P 50V		01
C422	UR857100	Electrolytic Cap.	10.00 35.0V		01
C423	UR857100	Electrolytic Cap.	10.00 35.0V		01
C424	UA354100	Mylar Capacitor	0.0100 50V J		01
C431	UR837220	Electrolytic Cap.	22.00 16.0V		01
C433	UR837100	Electrolytic Cap.	10.00 16.0V		01
C500	V5620900	Electrolytic Cap.	10.00 50.0V		01
C501	V5620900	Electrolytic Cap.	10.00 50.0V		01
C509	UR847220	Electrolytic Cap.	22.00 25.0V		01
C512	UR837220	Electrolytic Cap.	22.00 16.0V		01
C520	UR857100	Electrolytic Cap.	10.00 35.0V		01
C521	UR857100	Electrolytic Cap.	10.00 35.0V		01
C529	UR837220	Electrolytic Cap.	22.00 16.0V		01
C531	UR837100	Electrolytic Cap.	10.00 16.0V		01
C702	UR847100	Electrolytic Cap.	10.00 25.0V		01
C705	UR847100	Electrolytic Cap.	10.00 25.0V		01
C752	UR847100	Electrolytic Cap.	10.00 25.0V		01
C755	UR847100	Electrolytic Cap.	10.00 25.0V		01
C802	UR847100	Electrolytic Cap.	10.00 25.0V		01
C805	UR847100	Electrolytic Cap.	10.00 25.0V		01
C852	UR847100	Electrolytic Cap.	10.00 25.0V		01
C855	UR847100	Electrolytic Cap.	10.00 25.0V		01
CN300	VT640300	Receptacle	PHCC 100P SE		04
D100	V3840700	Diode	RN731V		
D101	V3840700	Diode	RN731V		
D200	V3840700	Diode	RN731V		
D201	V3840700	Diode	RN731V		
D400	V3840700	Diode	RN731V		
D401	V3840700	Diode	RN731V		
D500	V3840700	Diode	RN731V		
D501	V3840700	Diode	RN731V		
D700	VT332900	Diode	1SS355 TE-17		01
D750	VT332900	Diode	1SS355 TE-17		01
D800	VT332900	Diode	1SS355 TE-17		01
D850	VT332900	Diode	1SS355 TE-17		01
EM100	FZ006920	LC Filter	LS MT B271KB		01

*: New parts

RANK: Japan only

REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
EM101	FZ006920	LC Filter	LS MT B271KB			01
EM102	FZ006970	LC Filter	LS MT Y223NB			02
EM200	FZ006920	LC Filter	LS MT B271KB			01
EM201	FZ006920	LC Filter	LS MT B271KB			01
EM202	FZ006970	LC Filter	LS MT Y223NB			02
EM300	FZ006920	LC Filter	LS MT B271KB			01
EM301	FZ006920	LC Filter	LS MT B271KB			01
EM302	FZ006970	LC Filter	LS MT Y223NB			02
EM303	FZ006970	LC Filter	LS MT Y223NB			02
EM400	FZ006920	LC Filter	LS MT B271KB			01
EM401	FZ006920	LC Filter	LS MT B271KB			01
EM402	FZ006970	LC Filter	LS MT Y223NB			02
EM500	FZ006920	LC Filter	LS MT B271KB			01
EM501	FZ006920	LC Filter	LS MT B271KB			01
EM502	FZ006970	LC Filter	LS MT Y223NB			02
IC100	XJ553A00	IC	NJM2068MD-T1	OP AMP		02
-102	XJ553A00	IC	NJM2068MD-T1	OP AMP		02
IC103	XV065A00	IC	AK5392-VS-E2	A/D CONVERTER		12
IC201	XJ553A00	IC	NJM2068MD-T1	OP AMP		02
IC202	XJ553A00	IC	NJM2068MD-T1	OP AMP		02
IC203	XV065A00	IC	AK5392-VS-E2	A/D CONVERTER		12
IC300	XM167A00	IC	YAC509	ADFC		11
IC301	XT800A00	IC	TC74VHC244F	BUFFER		
IC302	IS027300	IC	HD74LV273AFPEL	D-FF		
IC303	IS013810	IC	SN74LV138ANSR	DECODER		
IC304	XY874A00	IC	74VHC245SJX	BUFFER		
IC305	XY874A00	IC	74VHC245SJX	BUFFER		
IC306	IS000800	IC	HD74LV08AFPEL	AND		
IC400	XJ553A00	IC	NJM2068MD-T1	OP AMP		02
-402	XJ553A00	IC	NJM2068MD-T1	OP AMP		02
IC403	XV065A00	IC	AK5392-VS-E2	A/D CONVERTER		12
IC501	XJ553A00	IC	NJM2068MD-T1	OP AMP		02
IC502	XJ553A00	IC	NJM2068MD-T1	OP AMP		02
IC503	XV065A00	IC	AK5392-VS-E2	A/D CONVERTER		12
IC600	XM167A00	IC	YAC509	ADFC		11
IC700	XJ553A00	IC	NJM2068MD-T1	OP AMP		02
IC750	XJ553A00	IC	NJM2068MD-T1	OP AMP		02
IC800	XJ553A00	IC	NJM2068MD-T1	OP AMP		02
IC850	XJ553A00	IC	NJM2068MD-T1	OP AMP		02
JK100	VL958600	XLM Connector	XLM-3-31PCV	CH1, SIGNAL		08
JK200	VL958600	XLM Connector	XLM-3-31PCV	CH2, SIGNAL		08
JK400	VL958600	XLM Connector	XLM-3-31PCV	CH3, SIGNAL		08
JK500	VL958600	XLM Connector	XLM-3-31PCV	CH4, SIGNAL		08
L300	V2589800	Chip Inductance	BK2125LM751 2			
-303	V2589800	Chip Inductance	BK2125LM751 2			
LD100	V2451800	LED (Chip)	SML-010LT			
LD101	V2451800	LED (Chip)	SML-010LT			
LD200	V2451800	LED (Chip)	SML-010LT			
LD201	V2451800	LED (Chip)	SML-010LT			
LD400	V2451800	LED (Chip)	SML-010LT			
LD401	V2451800	LED (Chip)	SML-010LT			
LD500	V2451800	LED (Chip)	SML-010LT			
LD501	V2451800	LED (Chip)	SML-010LT			
LD700	V5074100	LED (Chip)	PG1101F-TR			
LD750	V5074100	LED (Chip)	PG1101F-TR			
LD800	V5074100	LED (Chip)	PG1101F-TR			
LD850	V5074100	LED (Chip)	PG1101F-TR			
R100	HF758100	Carbon Resistor	100.0K 1/4 J			01
R101	HF758100	Carbon Resistor	100.0K 1/4 J			01
R102	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R103	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R104	VC328300	Metal Film Resistor	6.2K 1/4 F			
R105	VC328300	Metal Film Resistor	6.2K 1/4 F			
R106	V5099500	Metal Film Resistor	120K 1/4 F			
R107	VC322700	Metal Film Resistor	39.00 1/4 F			
R109	VC330000	Metal Film Resistor	33.0K 1/4 F			01
R110	VC328300	Metal Film Resistor	6.2K 1/4 F			
R111	VC330100	Metal Film Resistor	36.0K 1/4 F			
R112	VC327400	Metal Film Resistor	2.7K 1/4 F			01
R113	VC323500	Metal Film Resistor	68.00 1/4 F			
R114	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R115	VC327800	Metal Film Resistor	3.9K 1/4 F			
R116	VC329000	Metal Film Resistor	12.0K 1/4 F			
R117	VC329400	Metal Film Resistor	18.0K 1/4 F			01
R118	VC328800	Metal Film Resistor	10.0K 1/4 F			01

*: New parts

RANK: Japan only

REF NO.	PART NO.	DESCRIPTION		REMARKS	QTY	RANK
R119	VC321700	Metal Film Resistor	15.00 1/4 F			
R120	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R121	VC328900	Metal Film Resistor	11.0K 1/4 F			01
R122	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R123	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R124	VC327400	Metal Film Resistor	2.7K 1/4 F			01
R125	HF754470	Carbon Resistor	47.0 1/4 J			01
-128	HF754470	Carbon Resistor	47.0 1/4 J			01
R200	HF758100	Carbon Resistor	100.0K 1/4 J			01
R201	HF758100	Carbon Resistor	100.0K 1/4 J			01
R202	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R203	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R204	VC328300	Metal Film Resistor	6.2K 1/4 F			
R205	VC328300	Metal Film Resistor	6.2K 1/4 F			
R206	V5099500	Metal Film Resistor	120K 1/4 F			
R207	VC322700	Metal Film Resistor	39.00 1/4 F			
R209	VC330000	Metal Film Resistor	33.0K 1/4 F			01
R210	VC328300	Metal Film Resistor	6.2K 1/4 F			
R211	VC330100	Metal Film Resistor	36.0K 1/4 F			
R212	VC327400	Metal Film Resistor	2.7K 1/4 F			01
R213	VC323500	Metal Film Resistor	68.00 1/4 F			
R214	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R215	VC327800	Metal Film Resistor	3.9K 1/4 F			
R216	VC329000	Metal Film Resistor	12.0K 1/4 F			
R217	VC329400	Metal Film Resistor	18.0K 1/4 F			01
R218	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R219	VC321700	Metal Film Resistor	15.00 1/4 F			
R220	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R221	VC328900	Metal Film Resistor	11.0K 1/4 F			01
R222	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R223	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R224	VC327400	Metal Film Resistor	2.7K 1/4 F			01
R225	HF754470	Carbon Resistor	47.0 1/4 J			01
-228	HF754470	Carbon Resistor	47.0 1/4 J			01
R400	HF758100	Carbon Resistor	100.0K 1/4 J			01
R401	HF758100	Carbon Resistor	100.0K 1/4 J			01
R402	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R403	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R404	VC328300	Metal Film Resistor	6.2K 1/4 F			
R405	VC328300	Metal Film Resistor	6.2K 1/4 F			
R406	V5099500	Metal Film Resistor	120K 1/4 F			
R407	VC322700	Metal Film Resistor	39.00 1/4 F			
R409	VC330000	Metal Film Resistor	33.0K 1/4 F			01
R410	VC328300	Metal Film Resistor	6.2K 1/4 F			
R411	VC330100	Metal Film Resistor	36.0K 1/4 F			
R412	VC327400	Metal Film Resistor	2.7K 1/4 F			01
R413	VC323500	Metal Film Resistor	68.00 1/4 F			
R414	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R415	VC327800	Metal Film Resistor	3.9K 1/4 F			
R416	VC329000	Metal Film Resistor	12.0K 1/4 F			
R417	VC329400	Metal Film Resistor	18.0K 1/4 F			01
R418	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R419	VC321700	Metal Film Resistor	15.00 1/4 F			
R420	VC328800	Metal Film Resistor	10.0K 1/4 F			
R421	VC328900	Metal Film Resistor	11.0K 1/4 F			01
R422	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R423	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R424	VC327400	Metal Film Resistor	2.7K 1/4 F			01
R425	HF754470	Carbon Resistor	47.0 1/4 J			01
-428	HF754470	Carbon Resistor	47.0 1/4 J			01
R500	HF758100	Carbon Resistor	100.0K 1/4 J			01
R501	HF758100	Carbon Resistor	100.0K 1/4 J			01
R502	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R503	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R504	VC328300	Metal Film Resistor	6.2K 1/4 F			
R505	VC328300	Metal Film Resistor	6.2K 1/4 F			
R506	V5099500	Metal Film Resistor	120K 1/4 F			
R507	VC322700	Metal Film Resistor	39.00 1/4 F			
R509	VC330000	Metal Film Resistor	33.0K 1/4 F			01
R510	VC328300	Metal Film Resistor	6.2K 1/4 F			
R511	VC330100	Metal Film Resistor	36.0K 1/4 F			
R512	VC327400	Metal Film Resistor	2.7K 1/4 F			01
R513	VC323500	Metal Film Resistor	68.00 1/4 F			
R514	VC328800	Metal Film Resistor	10.0K 1/4 F			01
R515	VC327800	Metal Film Resistor	3.9K 1/4 F			

*: New parts

RANK: Japan only

REF NO.	PART NO.	DESCRIPTION	REMARKS	QTY	RANK
R516	VC329000	Metal Film Resistor	12.0K 1/4 F		
R517	VC329400	Metal Film Resistor	18.0K 1/4 F		01
R518	VC328800	Metal Film Resistor	10.0K 1/4 F		01
R519	VC321700	Metal Film Resistor	15.00 1/4 F		
R520	VC328800	Metal Film Resistor	10.0K 1/4 F		01
R521	VC328900	Metal Film Resistor	11.0K 1/4 F		01
R522	VC328800	Metal Film Resistor	10.0K 1/4 F		01
R523	VC328800	Metal Film Resistor	10.0K 1/4 F		01
R524	VC327400	Metal Film Resistor	2.7K 1/4 F		01
R525	HF754470	Carbon Resistor	47.0 1/4 J		01
-528	HF754470	Carbon Resistor	47.0 1/4 J		01
R700	VK582200	Carbon Resistor (chip)	330.0K 1/10 D		01
R750	VK582200	Carbon Resistor (chip)	330.0K 1/10 D		01
R800	VK582200	Carbon Resistor (chip)	330.0K 1/10 D		01
R850	VK582200	Carbon Resistor (chip)	330.0K 1/10 D		01
TH300	VV111400	Poly Switch	SMD075-2 SMD	} for current limitation	
TH301	VV111400	Poly Switch	SMD075-2 SMD		
TH302	VV111700	Poly Switch	SMD125-2 SMD		
TH303	VV111400	Poly Switch	SMD075-2 SMD		
TR700	VV556400	Transistor	2SC2412K Q,R,S		01
TR701	VV556500	Transistor	2SA1037K Q,R,S		01
TR750	VV556400	Transistor	2SC2412K Q,R,S		01
TR751	VV556500	Transistor	2SA1037K Q,R,S		01
TR800	VV556400	Transistor	2SC2412K Q,R,S		01
TR801	VV556500	Transistor	2SA1037K Q,R,S		01
TR850	VV556400	Transistor	2SC2412K Q,R,S		01
TR851	VV556500	Transistor	2SA1037K Q,R,S		01
	UA354100	Mylar Capacitor	0.0100 50V J		01
	UB044100	Monolithic Ceramic Cap.	F 0.010 50V Z		01
	UB050300	Monolithic Ceramic Cap.	SL 3P 50V C		01
	UB051100	Monolithic Ceramic Cap.	SL 10P 50V D		01
	UB051820	Monolithic Ceramic Cap.	SL 82P 50V J		01
	UB052100	Monolithic Ceramic Cap.	SL 100P 50V J		01
	UB052150	Monolithic Ceramic Cap.	SL 150P 50V J		01
	UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z		01
	UB245220	Monolithic Ceramic Cap.	F 0.220 25V Z		01
	RD250000	Carbon Resistor (chip)	0.0 0.0 J		01
	RD254100	Carbon Resistor (chip)	10.0 0.1 J		01
	RD255390	Carbon Resistor (chip)	390.0 0.1 J		01
	RD256220	Carbon Resistor (chip)	2.2K 0.1 J		01
	RD257100	Carbon Resistor (chip)	10.0K 0.1 J		01
	RD257470	Carbon Resistor (chip)	47.0K 0.1 J		01

*: New parts