

AV RECEIVER/AV AMPLIFIER RX-V563/HTR-6150/ DSP-AX563 SERVICE MANUAL

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 any 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 specifications 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 buss in the unit (heavy gauge black wires connect to this buss).

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

■ CONTENTS

TO SERVICE PERSONNEL	2	DISPLAY DATA	45
FRONT PANELS	3-4	IC DATA	46-59
REAR PANELS	5-8	BLOCK DIAGRAMS	61-65
REMOTE CONTROL PANEL	9	PRINTED CIRCUIT BOARDS.....	66-79
SPECIFICATIONS.....	10-12	PIN CONNECTION DIAGRAMS	80-81
INTERNAL VIEW	13	SCHEMATIC DIAGRAMS	83-96
DISASSEMBLY PROCEDURES	14-16	REPLACEMENT PARTS LIST	97-109
UPDATING FIRMWARE	17-21	REMOTE CONTROL	110-112
SELF DIAGNOSIS FUNCTION (DIAG)	22-44	Advanced setup	113



このサービスマニュアルは、エコマーク認定の再生紙を使用しています。
This Service Manual uses recycled paper.



■ TO SERVICE PERSONNEL

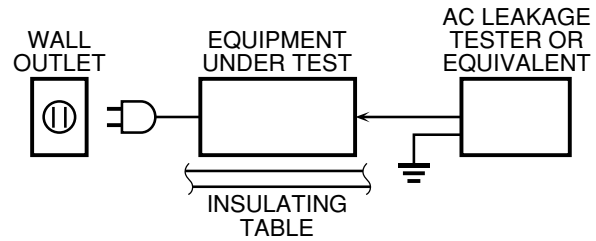
1. Critical Components Information

Components having special characteristics are marked  and must be replaced with parts having specifications equal to those originally installed.

2. Leakage Current Measurement (For 120V Models Only)

When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.

- Meter impedance should be equivalent to 1500 ohms shunted by 0.15 μ F.



- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.



For U model “CAUTION”

“F3401, F3402: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 6A, 125V FUSE.”

For C model CAUTION

F3401, F3402: REPLACE WITH SAME TYPE 6A, 125V FUSE.

ATTENTION

F3401, F3402: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE 6A, 125V.

WARNING: CHEMICAL CONTENT NOTICE!

This product contains chemicals known to the State of California to cause cancer, or birth defects or other reproductive harm.

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

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.

About lead free solder

All of the P.C.B.s installed in this unit and solder joints are soldered using the lead free solder.

Among some types of lead free solder currently available, it is recommended to use one of the following types for the repair work.

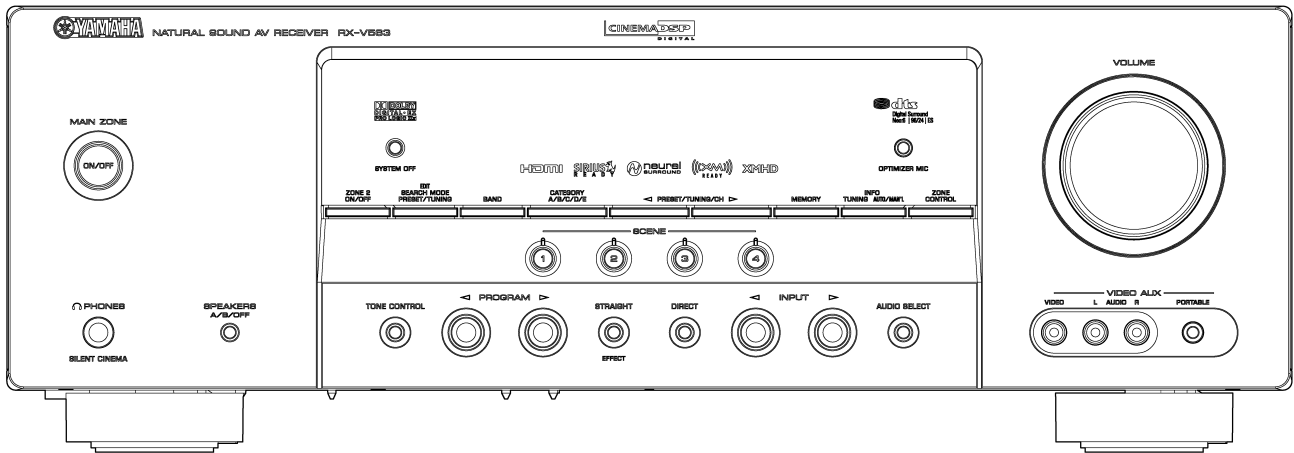
- Sn + Ag + Cu (tin + silver + copper)
- Sn + Cu (tin + copper)
- Sn + Zn + Bi (tin + zinc + bismuth)

Caution:

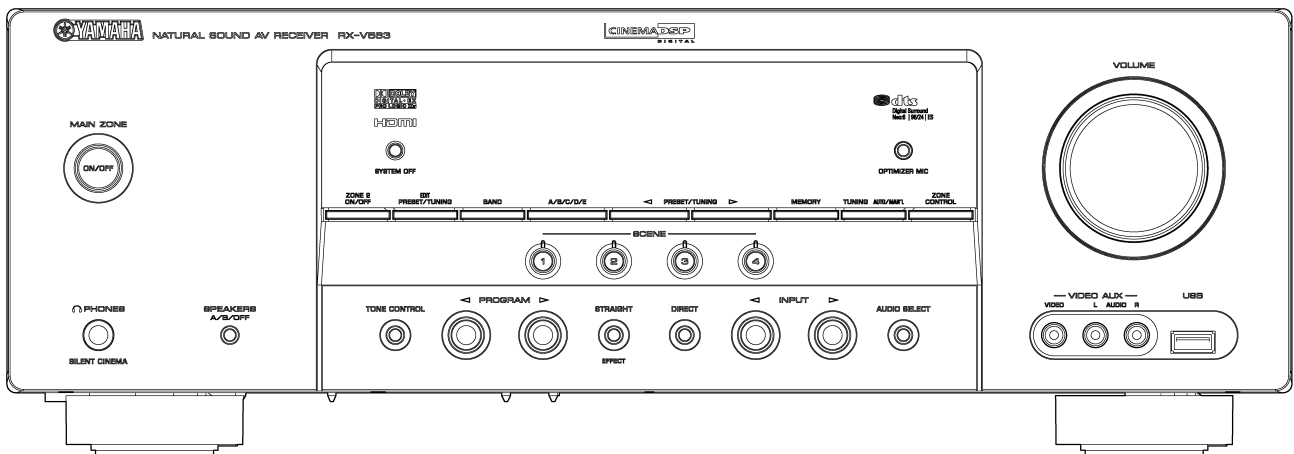
As the melting point temperature of the lead free solder is about 30°C to 40°C (50°F to 70°F) higher than that of the lead solder, be sure to use a soldering iron suitable to each solder.

■ FRONT PANELS

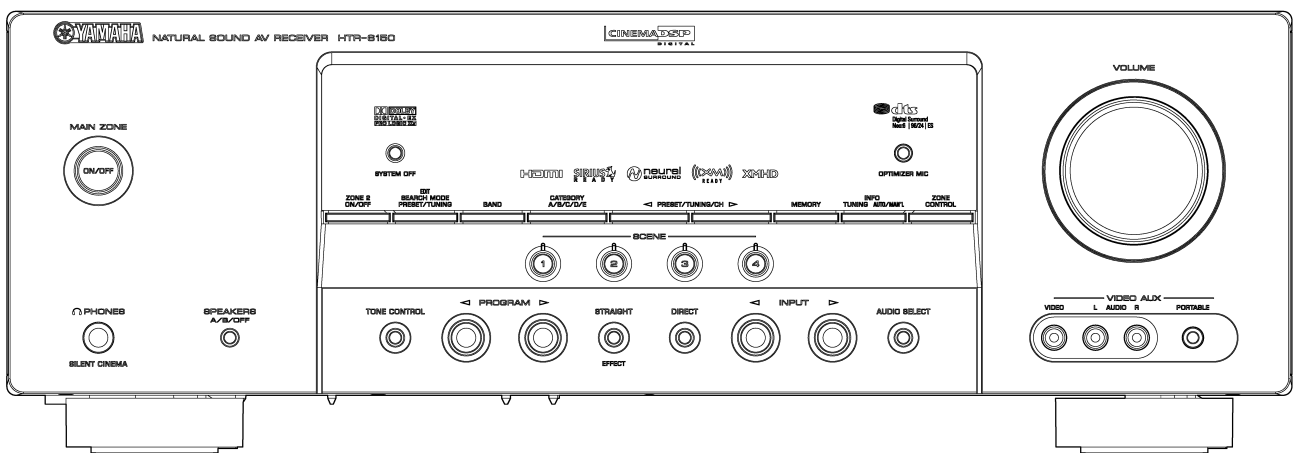
RX-V563 (U, C models)



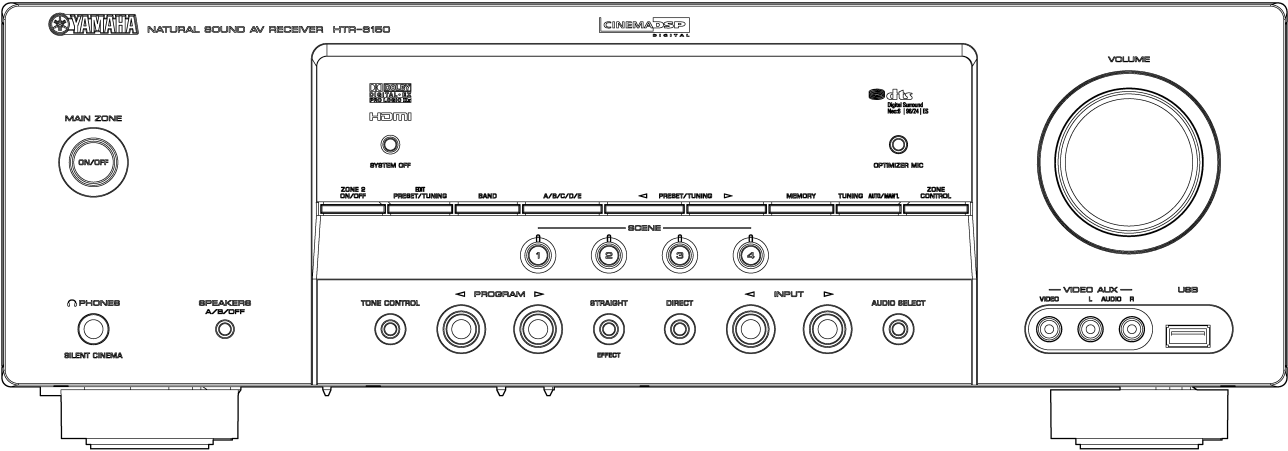
RX-V563 (R, T, K, A, G, E, F, L models)



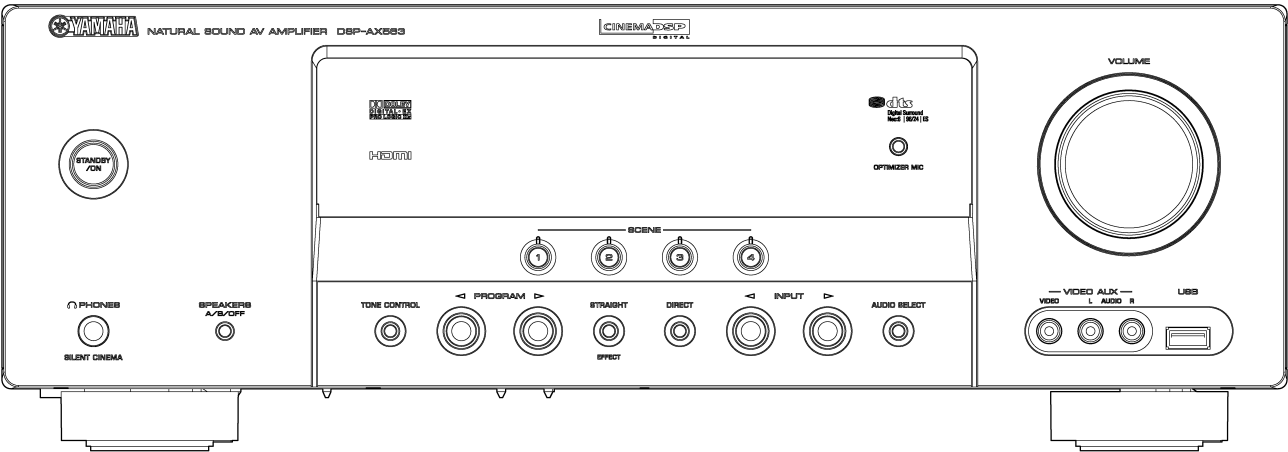
HTR-6150 (U, C models)



HTR-6150 (F model)

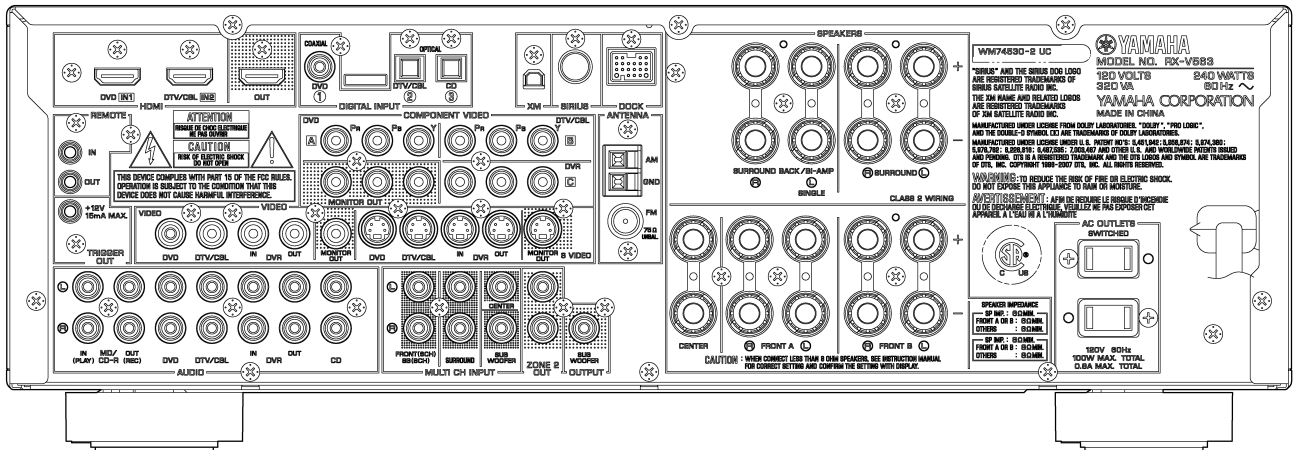
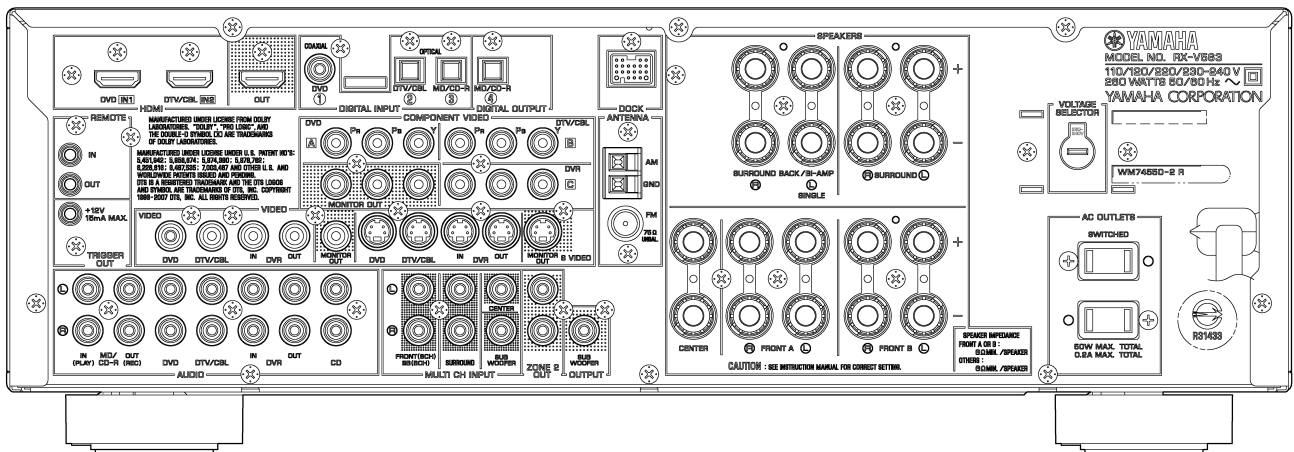
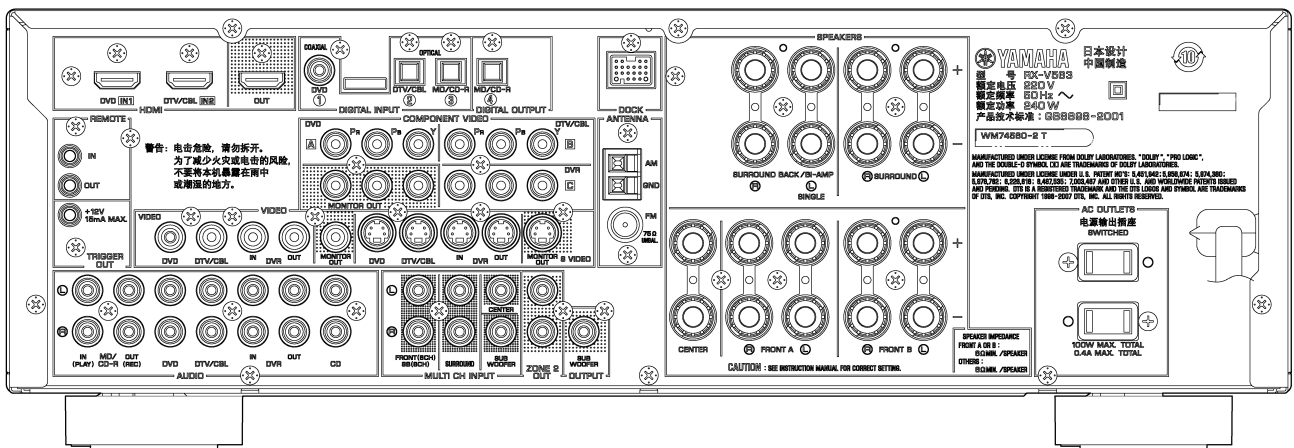


DSP-AX563 (B model)

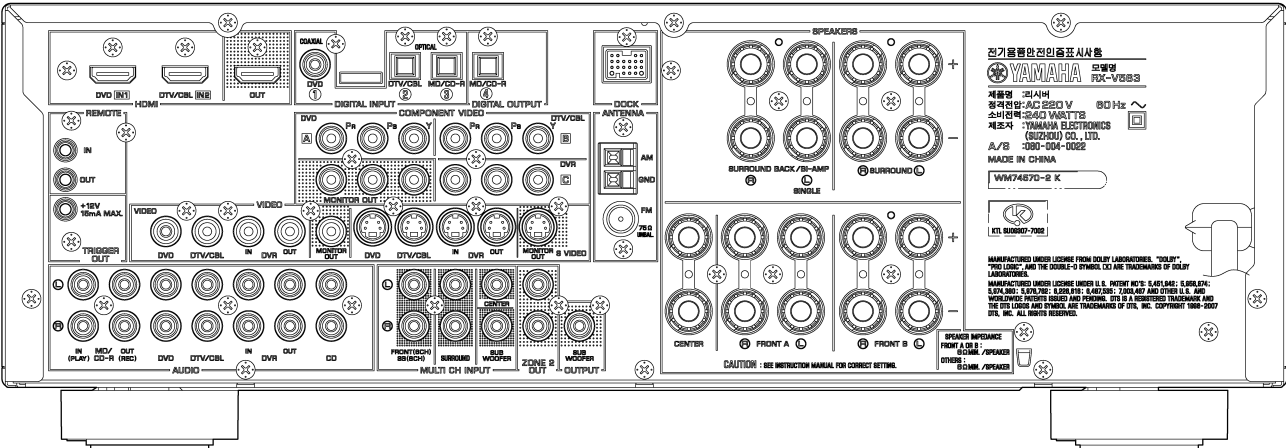


RX-V563/HTR-6150/
DSP-AX563

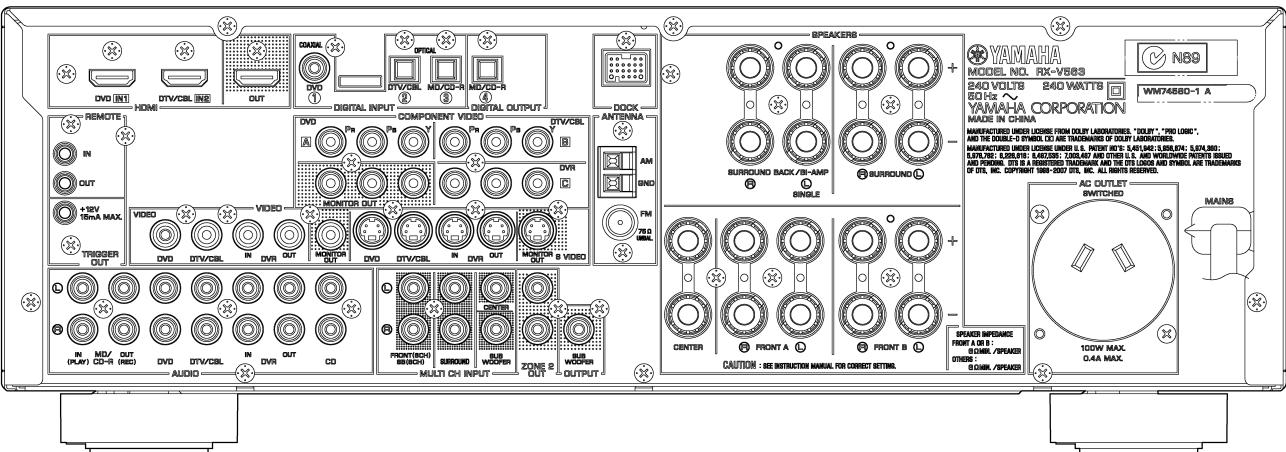
RX-V563 (U, C models)

**RX-V563 (R model)****RX-V563 (T model)**

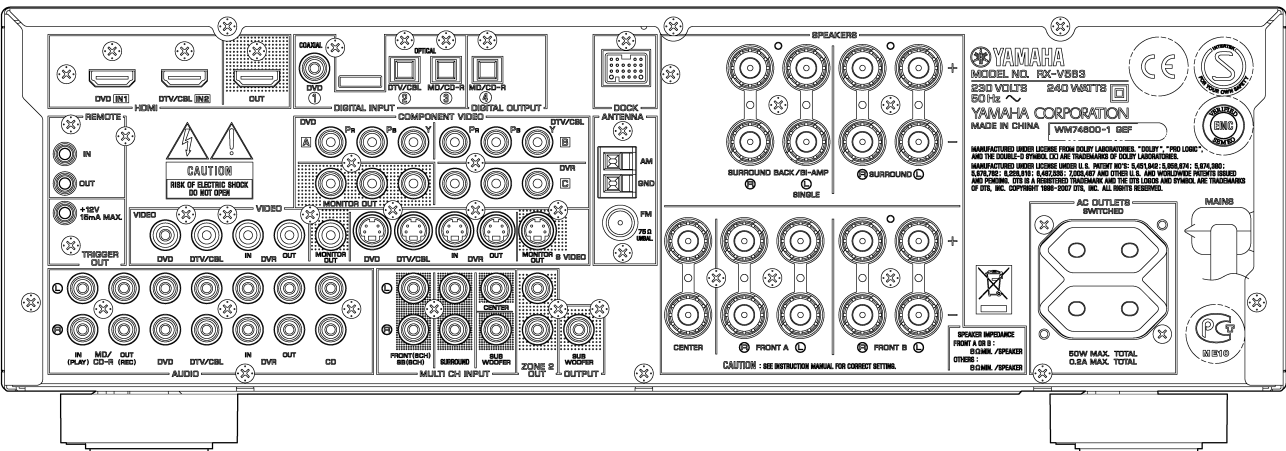
RX-V563 (K model)



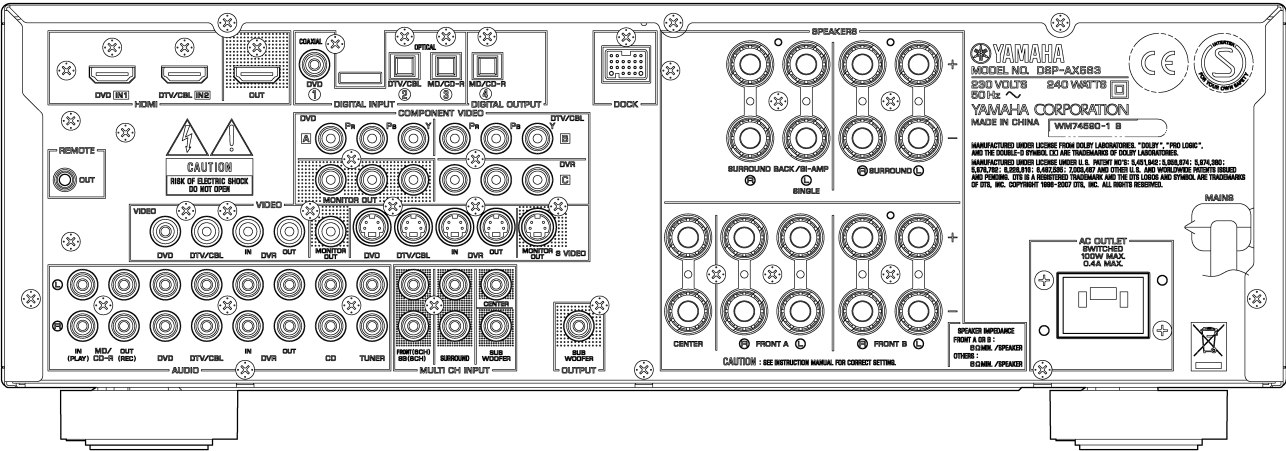
RX-V563 (A model)



RX-V563 (G, E, F models)



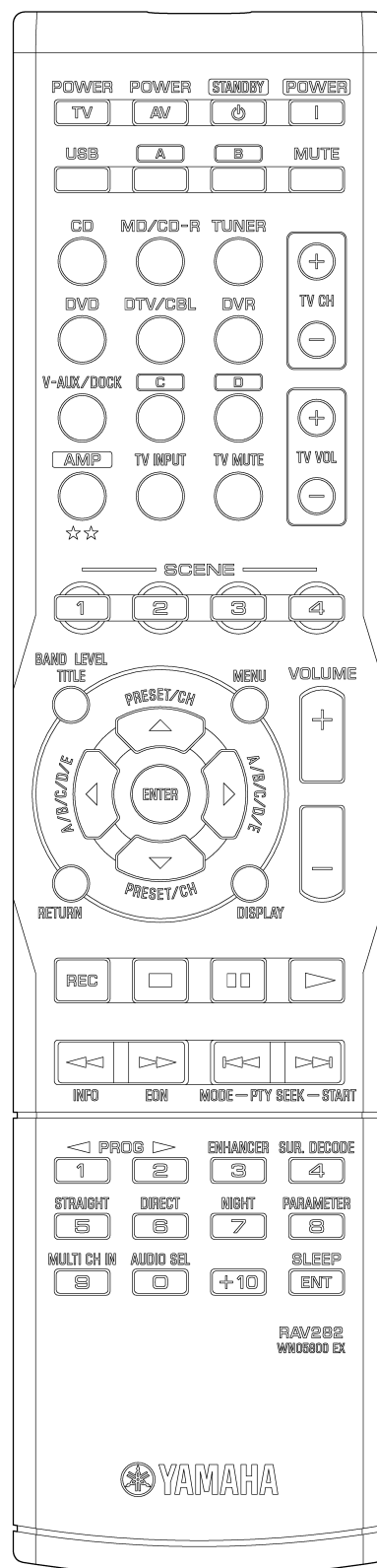
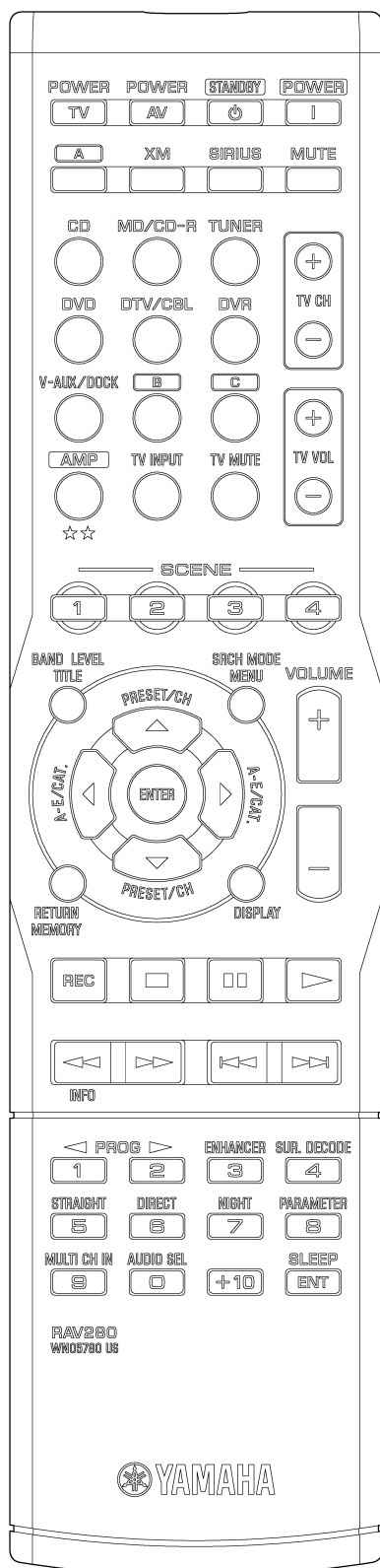
DSP-AX563 (B model)



RX-V563/HTR-6150/
DSP-AX563

■ REMOTE CONTROL PANEL

- RAV280**
 RX-V563 (U, C models)
 HTR-6150 (U, C models)
- RAV282**
 RX-V563 (R, T, K, A, G, E, F, L models)
 HTR-6150 (F model)
 DSP-AX563 (B model)



SPECIFICATIONS

Audio Section

Minimum RMS Output Power (Power Amp. Section)

(1 kHz, 0.9 % THD)

FRONT L/R, CENTER, SURROUND L/R, SURROUND
BACK L/R

U, C models (8 ohms) 90 W/ch

R, T, K, A, B, G, E, F, L models (6 ohms) 90 W/ch

Maximum Power (JEITA) (1 kHz, 0.9 % THD, 6 ohms)

FRONT L/R, CENTER, SURROUND L/R, SURROUND
BACK L/R

R, T, K, L models 115 W/ch

Dynamic Power Per Channel (IHF) (FRONT L/R drive)

U, C models

(8/6/4/2 ohms) 90/110/130/150 W

R, T, K, A, B, G, E, F, L models

(6/4/2 ohms) 100/110/125 W

Dynamic Headroom

U, C models (8 ohms) 0.18 dB

Input Sensitivity/Input Impedance (1 kHz, 100 W / 8 ohms)

CD, etc. 200 mV / 47 k-ohms

MULTI CH INPUT

FRONT L/R, CENTER, SURROUND L/R, SUBWOOFER
..... 200 mV / 47 k-ohms

Maximum Input Signal (1 kHz, 0.5 % THD, Effect on)

CD, etc. 2.0 V or more

Output Level/Output Impedance

REC OUT 200 mV / 1.2 k-ohms

SUBWOOFER (2ch STEREO and FRONT SP: Small)

..... 4 V / 1.2 k-ohms

Headphone Jack Rated Output/Impedance

CD, etc. (1 kHz, 200 mV, 8 ohms) 400 mV / 470 ohms

Frequency Response (10 Hz to 100 kHz)

CD, etc. to FRONT L/R 0 / -3 dB

Total Harmonic Distortion (1 kHz, 50 W)

Direct to FRONT L/R SP OUT

U, C models (8 ohms) 0.06 % or less

R, T, K, A, B, G, E, F, L models (6 ohms) .. 0.06 % or less

Signal to Noise Ratio (IHF-A Network)

Direct STEREO to Input shorted SP OUT

200 mV 98 dB or more

250 mV 100 dB or more

Residual Noise (IHF-A Network)

FRONT L/R SP OUT 150 μ V or less

Channel Separation

CD, etc. (Input 5.1 k-ohms shorted, 1 kHz / 10 kHz)

..... 60 dB or more / 45 dB or more

Tone Control Characteristics

BASS

Boost/Cut $\pm$ 10 dB (100 Hz)

TREBLE

Boost/Cut $\pm$ 10 dB (20 kHz)

Filter Characteristics

FRONT, CENTER, SURROUND, SURROUND BACK small
(H.P.F.)

..... fc=40/60/80/90/100/110/120/160/200 Hz, 12 dB/oct.

SUBWOOFER (L.P.F.)

..... fc=40/60/80/90/100/110/120/160/200 Hz, 24 dB/oct.

Video Section

Video Signal Type

Gray back

U, C, R, K models NTSC

T, A, B, G, E, F, L models PAL

Video conversion

..... NTSC/PAL

Composite Video Signal Level

..... 1 Vp-p / 75 ohms

S-Video Signal Level

Y 1 Vp-p / 75 ohms

C 0.286 Vp-p / 75 ohms

Component Signal Level

Y 1 Vp-p / 75 ohms

Pb/Pr 0.7 Vp-p / 75 ohms

Video Maximum Input Level

..... 1.5 Vp-p or more

Signal to Noise Ratio

..... 50 dB or more

Monitor Out Frequency Response

Component video signal 5 Hz to 60 MHz, -3 dB

HDMI Ver. 1.2a

FM Section [U, C, R, T, K, A, G, E, F, L models]

Tuning Range

U, C models 87.5 to 107.9 MHz

R, L models 87.5 to 108.0 / 87.50 to 108.00 MHz

T, K, A, G, E, F models 87.50 to 108.00 MHz

50dB Quieting Sensitivity (IHF) (1 kHz, 100 % Mod.)

Mono 2.8 μ V (20.2 dBf)

Signal to Noise Ratio (IHF)

Mono / Stereo 73 dB / 70 dB

Harmonic Distortion (1 kHz)

Mono / Stereo 0.5 % / 0.5 %

Antenna Input 75 ohms unbalanced

AM Section [U, C, R, T, K, A, G, E, F, L models]

Tuning Range

U, C models 530 to 1,710 kHz

R, L models 530 to 1,710 / 531 to 1,611 kHz

T, K, A, G, E, F models 531 to 1,611 kHz

Antenna Input Loop antenna

General

Power Supply

U, C models AC 120 V, 60 Hz

R model AC 110, 120/220, 230-240 V, 50/60 Hz

T model AC 220 V, 50 Hz

K model AC 220 V, 60 Hz

A model AC 240 V, 50 Hz

B, G, E, F models AC 230 V, 50 Hz

L model AC 220, 230-240 V, 50/60 Hz

Power Consumption

U, C models 240 W / 320 VA

R model 260 W

T, K, A, B, G, E, F, L models 240 W

Standby Power Consumption (reference data)

U, C, T, K, A, B, G, E, F models 0.8 W

Maximum Power Consumption (5ch drive, 10 % THD)

R, L models 490 W

AC Outlets

2 switched outlets

U, C models 100 W max. total

R, T, G, E, F, L models 50 W max. total

1 switched outlet

A, B models 100 W max.

Dimensions (W x H x D)

..... 435 x 151 x 351.6 mm (17-1/8" x 5-15/16" x 13-13/16")

Weight 9.0 kg (19 lbs. 13 oz.)

Finish

[RX-V563]

Gold color R, T models

Black color U, C, R, A, G, E, F models

Titanium color K, G, E, F, L models

Silver color A, L models

[HTR-6150]

Black color U, C, F models

Silver color F model

[DSP-AX563]

Black color B model

Titanium color B model

Accessories Remote control x 1

Batteries (R03, AAA, UM-4) x 2

Indoor FM antenna x 1 (U, C, R, T, K, A, G, E, F, L models)

AM loop antenna x 1 (U, C, R, T, K, A, G, E, F, L models)

Optimizer microphone x 1

* Specifications are subject to change without notice due to product improvements.

※ 参考仕様および外観は予告なく変更されることがあります。

- U U.S.A. model

C Canadian model

R General model

T Chinese model

K Korean model

A Australian model
- B British model

G European model

E South European model

F Russian model

L Singapore model



Manufactured under license from Dolby Laboratories.
“Dolby”, “Pro Logic”, and the double-D symbol are trademarks of Dolby Laboratories.

SILENT™
CINEMA

“SILENT CINEMA” is a trademark of YAMAHA CORPORATION.

iPod™

“iPod” is a trademark of Apple, Inc., registered in the U.S. and other countries.

Bluetooth™

Bluetooth is a registered trademark of the Bluetooth SIG and is used by Yamaha in accordance with a license agreement.



“HDMI”, the “HDMI” logo and “High-Definition Multimedia Interface” are trademarks or registered trademarks of HDMI Licensing LLC.



DTS-ES | NEO:6 | 96/24. Product “DTS” and “DTS-ES | NEO:6” are registered trademarks of DTS, Inc.
“96/24” is a trademark of DTS, Inc.



The XM name and related logos are registered trademarks of XM Satellite Radio Inc.

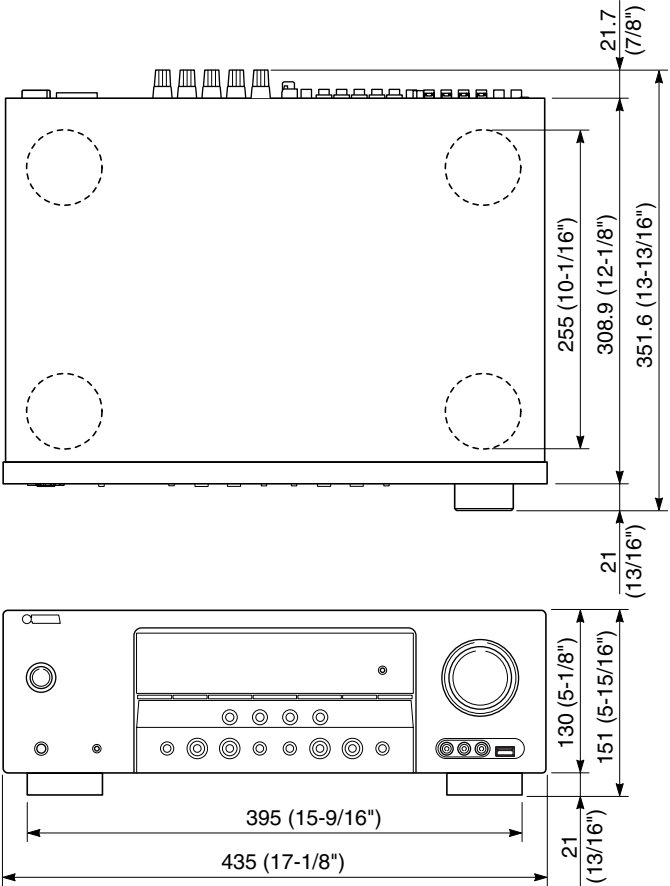


Neural Surround™ name and related logos are trademarks owned by Neural Audio Corporation.



©2006 SIRIUS Satellite Radio Inc. “SIRIUS”, “Sirius Connect”, the SIRIUS dog logo, channel names and logos are trademarks of SIRIUS Satellite Radio Inc.

• DIMENSIONS



Unit: mm (inch)

• SCENE TEMPLATE

SCENE name	Contents		Source	Program		NIGHT	Select (Default)	
				Mode	Sub-mode		U, C models	R, T, K, A, B, G, E, F, L models
DVD Viewing	DVD	Movie	DVD	STRAIGHT	–	SYSTEM	O (SCENE 1)	O
DVD Movie Viewing			DVD	MOVIE	Movie Dramatic	SYSTEM	O	O (SCENE 1)
DVD Live Viewing		Music Live	DVD	MUSIC	Pop/Rock	SYSTEM	O	O
DVR Viewing	DVR		DVR	MOVIE	Movie Dramatic	SYSTEM	O	O
Disc Hi-fi Listening	DVD-Audio / SA-CD / CD	Music Disc	DVD	DIRECT STEREO	–	SYSTEM	O	O
Music Disc Listening			DVD	STEREO	2ch Stereo	SYSTEM	O	O (SCENE 2)
Disc Listening			DVD	STEREO	7ch Stereo	SYSTEM	O (SCENE 2)	O
CD Hi-fi Listening	CD	Music Disc	CD	DIRECT STEREO	–	SYSTEM	O	O
CD Listening			CD	STEREO	7ch Stereo	SYSTEM	O	O
CD Music Listening			CD	STEREO	2ch Stereo	SYSTEM	O	O
Radio Listening	TUNER/RADIO	FM/AM	FM/AM (TUNER)	MUSIC ENHANCER	7ch Enhancer	SYSTEM	O (SCENE 4)	O (SCENE 4)
XM Listening		XM	XM	MUSIC ENHANCER	7ch Enhancer	SYSTEM	O	–
SIRIUS Listening		SIRIUS	SIRIUS	MUSIC ENHANCER	7ch Enhancer	SYSTEM	O	–
Dock Listening	DAP	iPod Bluetooth	DOCK (V-AUX)	MUSIC ENHANCER	7ch Enhancer	SYSTEM	O	O
USB Audio Listening		USB	USB	MUSIC ENHANCER	7ch Enhancer	SYSTEM	–	O
TV Viewing	TV		DTV/CBL	STRAIGHT	–	SYSTEM	O (SCENE 3)	O (SCENE 3)
TV Sports Viewing			DTV/CBL	ENTERTAINMENT	TV Sports	SYSTEM	O	O
Game Playing	GAME		V-AUX	ENTERTAINMENT	Game	SYSTEM	O	O

• SOUND/SURROUND SELECT MENU

Sound Field Parameters

		DSP LEVEL MIN, [MID], MAX	MUSIC ENHANCER LOW, [HIGH]
STEREO	2ch Stereo		
	7ch Stereo		
MUSIC	Pop/Rock	O	
	Hall	O	
	Jazz	O	
ENTERTAIN	Game	O	
	TV Sports	O	
MOVIE	Movie Spacious	O	
	Movie Dramatic	O	
MUSIC ENHANCER	Music Enh. 2ch		O
	Music Enh. 7ch		O

Surround Decoders

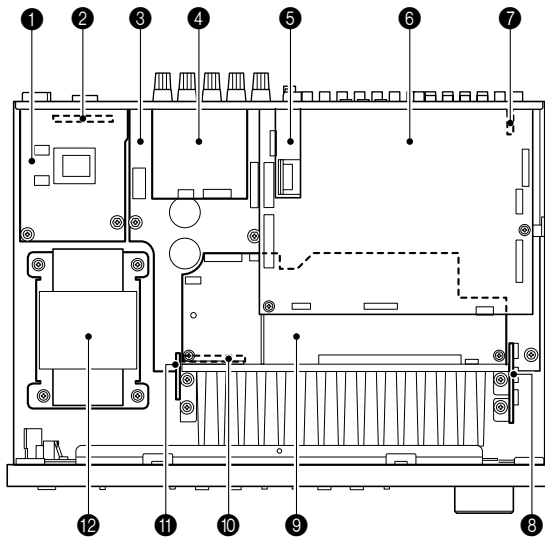
		PANORAMA ON, [OFF]	DIMENSION -3, [STD], +3	CENTER WIDTH 0, 1, 2, [3], 4, 5, 6, 7	CENTER IMAGE 0.0, [0.3], 1.0
DECODING FORMAT	Dolby Digital				
	DTS				
POST DECODING FORMAT	Dolby Pro Logic				
	Dolby Pro Logic IIx, II Music	O	O	O	
	Dolby Pro Logic IIx, II Movie				
	Dolby Pro Logic IIx, II Game				
	Neo:6 Cinema				
	Neo:6 Music				O
	Neural Surround (U, C models)				

• SET MENU TABLE

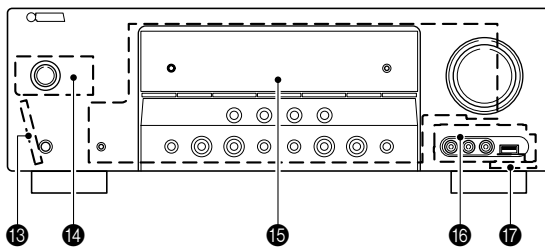
CATEGORY	MAIN MENU	SUB MENU	SELECT MENU	VALUE [INITIAL]	
AUTO SETUP	Use this feature to automatically adjust speaker and system parameters.	1 SOUND MENU	FRONT B FRONT		
			FRONT LARGE		
MANUAL SETUP			CENTER	SMALL / [LARGE]	
			SUR. LR SMALL	NONE / [SMALL] / LARGE	
			SUR. BLR SMLx2	NONE / SMLx1 / [SMLx2] / LRGx1 / LRGx2	
			BASS OUT BOTH	SWFR / FRONT / [BOTH]	
			CROSSOVER 80 Hz	40 / 60 / [80] / 90 / 100 / 110 / 120 / 160 / 200 Hz	
			SWFR PHASE NRM	[NRM (normal)] / REV (reverse)	
			B) SP LEVEL	FL *****	-10 to +10 dB, [0 dB], 1 dB step
				FR *****	
				C *****	
				SWFR *****	
				SUR. L *****	
				SUR. R *****	
				SBL *****	
				SBR *****	
			C) SP DISTANCE	UNIT feet	feet / meters
				FRONT L 10.0 ft	1.0 to 80.0 ft, [10.0 ft], 0.5 ft step
				FRONT R 10.0 ft	
				CENTER 8.5 ft	1.0 to 80.0 ft, [8.5 ft], 0.5 ft step
				SWFR 10.0 ft	1.0 to 80.0 ft, [10.0 ft], 0.5 ft step
				SUR. L 8.0 ft	
				SUR. R 8.0 ft	1.0 to 80.0 ft, [8.0 ft], 0.5 ft step
SB L 8.0 ft					
SB R 8.0 ft					
FRONT L 3.00 m	0.30 to 24.00 m, [3.00 m], 0.10 m step				
FRONT R 3.00 m					
CENTER 2.60 m	0.30 to 24.00 m, [2.60 m], 0.10 m step				
SWFR 3.00 m	0.30 to 24.00 m, [3.00 m], 0.10 m step				
SUR. L 2.40 m					
SUR. R 2.40 m	0.30 to 24.00 m, [2.40 m], 0.10 m step				
SB L 2.40 m					
SB R 2.40 m					
D) CENTER GEQ	TEST TONE OFF	[OFF] / ON			
	100 Hz -- -- 0 dB				
	300 Hz -- -- 0 dB				
	1 kHz -- -- 0 dB	-6.0 dB to +6.0 dB, [0 dB], 0.5 dB step			
	3 kHz -- -- 0 dB				
	10 kHz -- -- 0 dB				
	SP LFE 0 dB				
	HP LFE 0 dB	-20 dB to 0 dB, [0 dB], 1 dB step			
	SP D. R MAX	MIN / STD / [MAX]			
	HP D. R MAX				
	G) AUDIO SET	MUTE TYP FULL	[FULL] / -20 dB		
		A. DELAY 0 ms	0 to 160 ms, [0 ms], 1 ms step		
MAX VOL. +16 dB		+16 dB / +10 to -30 dB, [+16 dB], 5 dB step			
INI. VOL. OFF		OFF / MUTE / -80 to +16 dB, [OFF], 1 dB step			
S. AUDIO		[RX-V563 / HTR-6150 / DSP-AX563] / OTHER			
H) HDMI SET	>AUTO LAST	[AUTO] / LAST			
	EXTD AUTO	[AUTO] / PLIIXMovie / PLIIXMusic / EX/ES / OFF			
2 INPUT MENU	A) INPUT ASSIGN	IN (1) [COAXIAL] DVD	CD / MD/CD-R / [DVD] / DTV/CBL / V-AUX / DVR / TUNER (B model)		
		IN (2) [OPTICAL] DTV/CBL	CD / MD/CD-R / DVD / [DTV/CBL] / V-AUX / DVR / TUNER (B model)		
		IN (3) [OPTICAL] CD	[CD] / MD/CD-R / DVD / DTV/CBL / V-AUX / DVR / TUNER (B model)		
		HDMI1 DVD	[DVD] / DTV/CBL / V-AUX / DVR		
		HDMI2 DTV/CBL	DVD / [DTV/CBL] / V-AUX / DVR		
	B) INPUT RENAME	CD / MD/CD-R / DVD / DTV/CBL / V-AUX / DVR		Input is possible to 8 characters	
				Input possible Character type: Capital/ A to Z, Small/ a to z, Figure/ 0 to 9, Space, Marks/ # * + , - . / : < > ?	
		C) VOLUME TRIM	CD / DTV/CBL / V-AUX	CD / MD/CD-R / TUNER / DVD / DTV/CBL / V-AUX / DVR / DOCK / USB (X, X models) / MULTI CH / XM (U, C models) / SIRIUS (U, C models)	
			-6.0 to +6.0 dB, [0.0 dB], 1.0 dB step		
			[AUTO] / LAST		
3 OPTION MENU	D) DECODER MODE	[AUTO] / DTS			
		DVD / DTV/CBL / V-AUX / DVR / [LAST]			
		[6CH] / 8CH			
	E) MULTI CH SET	BGV LAST	[DVD] / DTV/CBL / DVR / V-AUX		
		INPUT CH 6CH	* Setting is possible only when 8ch is selected using "INPUT CH".		
		FRONT DVD	-4 to 0, [0], 1 step		
	A) DISPLAY SET	DIMMER 0	[ON] / OFF		
		VIDEO CONV. ON	[CONT] / ONCE		
		FL SCROLL CONT	-5 (upward) to +5 (downward), [0], 1step		
		OSD SHIFT 0	ON / 10s / [30s]		
		OSD-SOURCE 30s	ON / 10s / [30s]		
		OSD-AMP 30s	[OFF] / ON		
	B) MEMORY GUARD	MEMORY GUARD OFF	[AUTO] / LAST		
	C) AUDIO SELECT	>AUTO LAST	[NO] / YES		
	D) PARAM. INI				
	E) BLUETOOTH SET				
	(U, C models)	F) XM RADIO SET	XM ANT.	NONE / 0 to 100 %	
		G) SIRIUS SET	PARENTAL LOCK		
		F) USB PLAY STYLE	REPEAT OFF	[OFF] / SINGLE / ALL	
SHUFFLE OFF			[OFF] / ON		
SIGNAL INFO	AUDIO	FORMAT (Signal format)	Analog / --- / --- / --- / --- / --- / --- / ---		
		SAMPLING			
		CHANNEL			
		BITRATE	3/2/0.1 (front/surround/LFE)		
		FLAG	DTS, Dolby Digital, or PCM (HDMI -> DVI)		
		HDMI SIGNAL	(1080p -> 1080p)		
	VIDEO	HDMI RES.	DEVICE OVER / HDCP ERROR / OUT OF RES.		
		HDMI ERROR (HDMI MESSAGE)			

INTERNAL VIEW

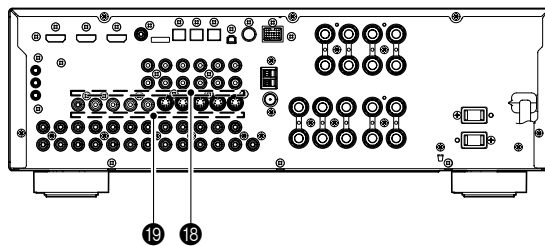
• Top view



• Front view



• Rear view



- 1 VIDEO (3) P.C.B.
- 2 VIDEO (5) P.C.B. (R, L models)
- 3 MAIN (1) P.C.B.
- 4 VIDEO (4) P.C.B.
- 5 Tuner
- 6 DSP P.C.B.
- 7 VIDEO (6) P.C.B.
- 8 OPERATION (8) P.C.B.
- 9 OPERATION (2) P.C.B.
- 10 MAIN (2) P.C.B.
- 11 OPERATION (9) P.C.B.
- 12 Power Transformer
- 13 OPERATION (3) P.C.B.
- 14 OPERATION (7) P.C.B.
- 15 OPERATION (1) P.C.B.
- 16 OPERATION (5) P.C.B. (U, C models)
- 17 OPERATION (4) P.C.B. (R, T, K, A, B, G, E, F, L models)
- 18 VIDEO (2) P.C.B.
- 19 VIDEO (1) P.C.B.

■ DISASSEMBLY PROCEDURES

(Remove parts in the order as numbered.)

Disconnect the power cable from the AC outlet.

1. Removal of Top Cover

- a. Remove 5 screws (①), 4 screws (②) and 1 screw (③). (Fig. 1)
- b. Slide the top cover rearward to remove it. (Fig. 1)

2. Removal of Front Panel Unit

- a. Remove 6 screws (④). (Fig. 1)
- b. Remove CB71 (R, T, K, A, B, G, E, F, L models), CB83, CB366, CB601, CB602, CB608 and CB703. (Fig. 1)
- c. Release hook and then remove the front panel unit. (Fig. 1)

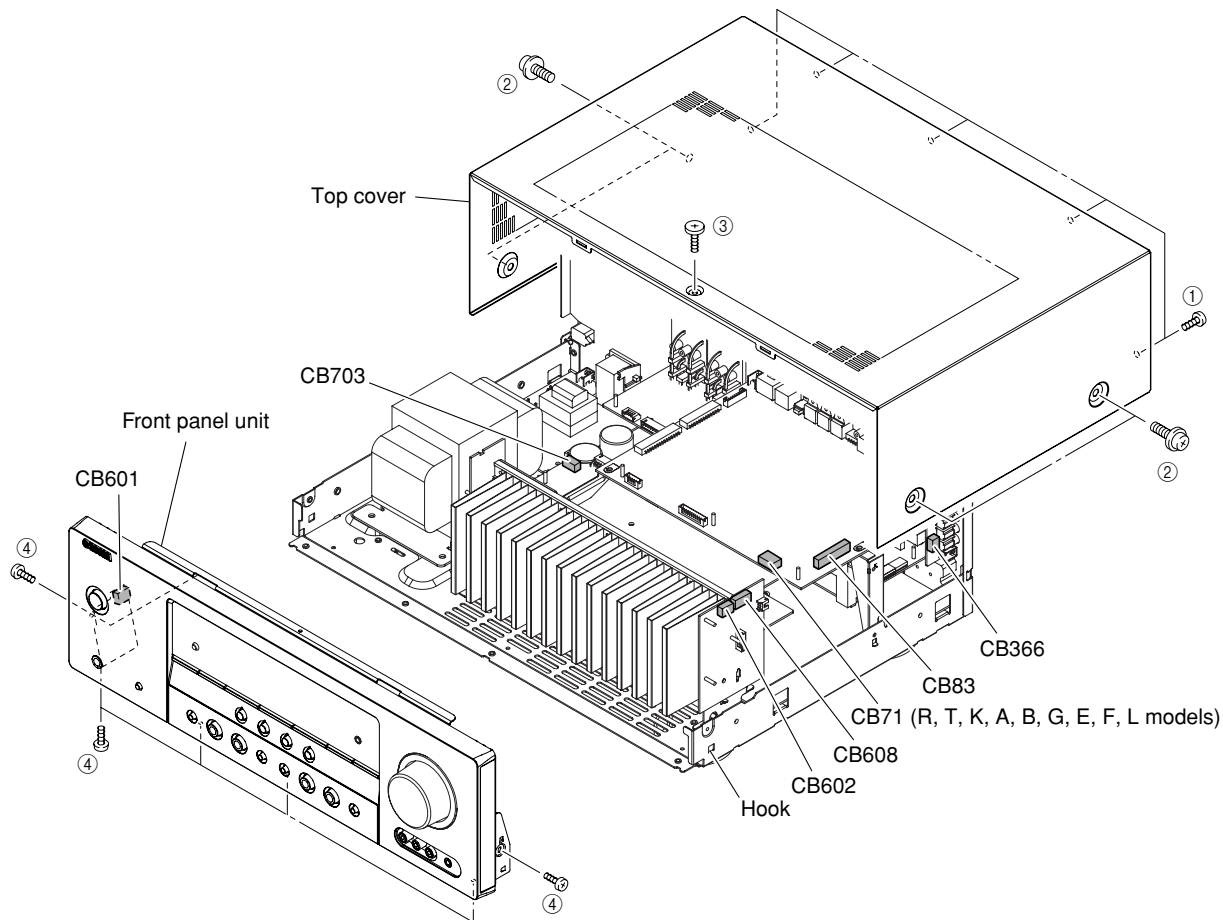


Fig. 1

3. Removal of DSP P.C.B.

- Note:** U, C, F models
After replacement of DSP P.C.B. or writing of the firmware, make sure to activate the self-diagnostic function and change the "M6 Model ID" setting to the same model name as this unit (RX-V563 or HTR-6150).
- a. Remove 2 screws (⑤). (Fig. 2)
 - b. Remove 11 screws (U, C models) / 10 screws (R, T, K, A, B, G, E, F, L models) (⑥). (Fig. 3)
 - c. Remove CB21, CB22, CB31, CB32, CB81, CB82 and CB84. (Fig. 2)
 - d. Remove DSP P.C.B. (Fig. 2)

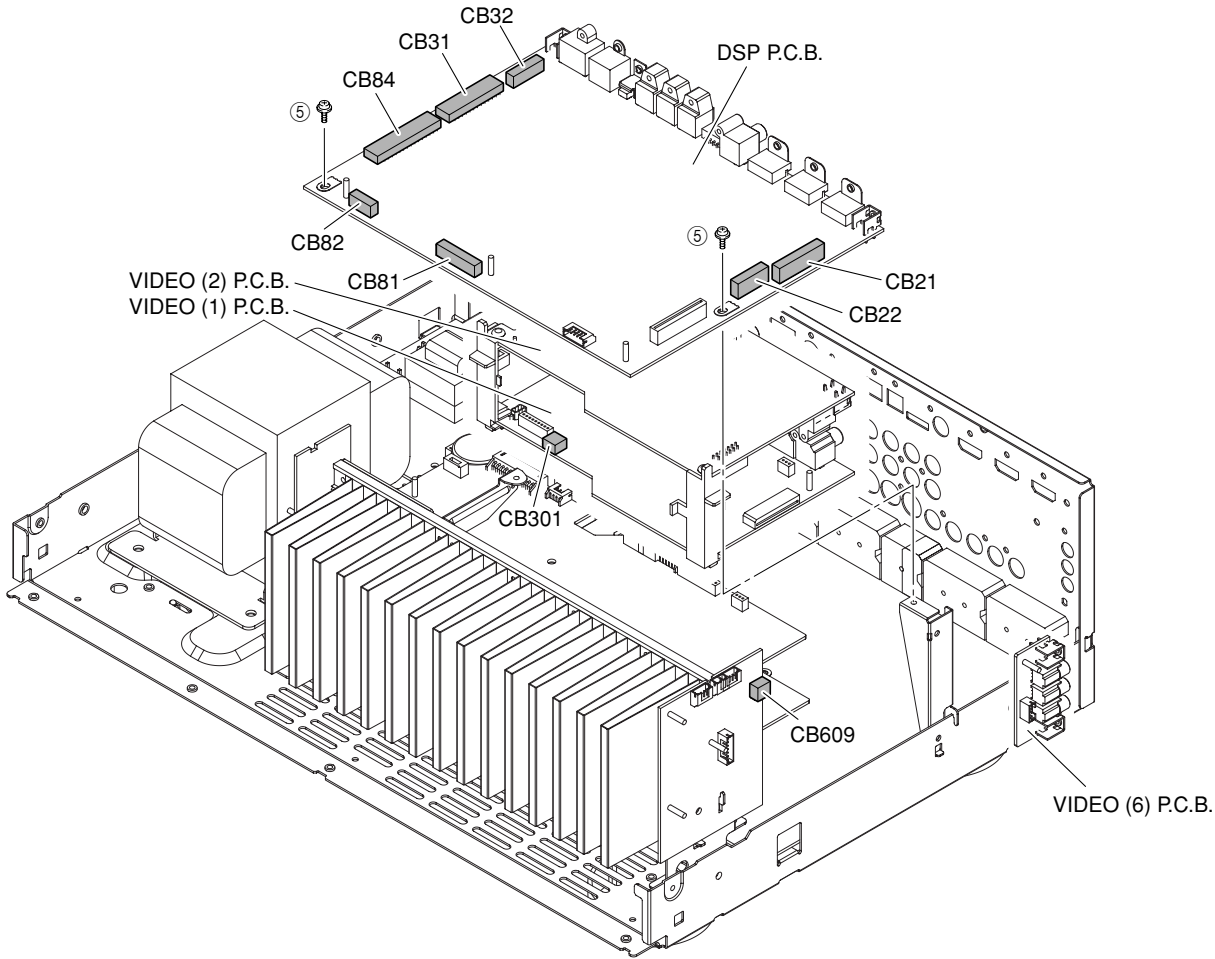


Fig. 2

4. Removal of VIDEO (1), (2) and (6) P.C.B.s

- a. Remove 2 screws (⑦). (Fig. 3)
- b. Remove VIDEO (6) P.C.B. (Fig. 2)
- c. Remove 9 screws (⑧). (Fig. 3)
- d. Remove CB301 and CB609. (Fig. 2)
- e. Remove VIDEO (1) and (2) P.C.B.s. (Fig. 2)

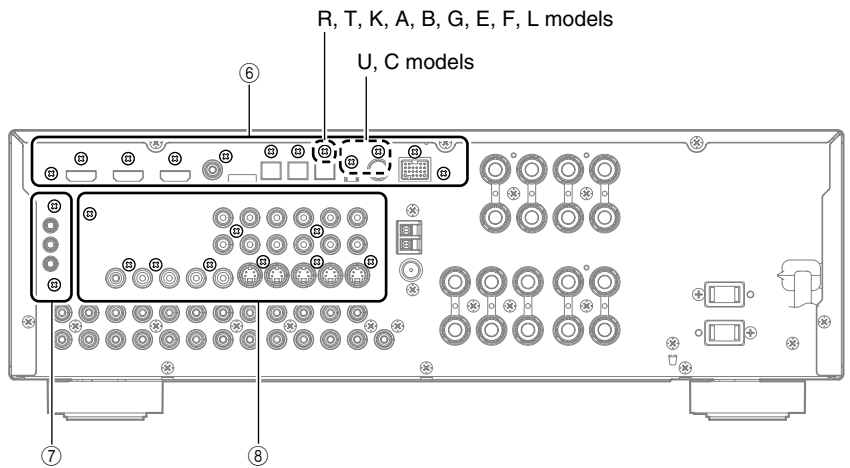


Fig. 3

5. Removal of VIDEO (4) P.C.B.

- a. Remove 2 screws (⑨). (Fig. 4)
- b. Remove CB351 and CB353. (Fig. 4)
- c. Remove VIDEO (4) P.C.B. (Fig. 4)

6. Removal of FM/AM Tuner

- a. Remove 2 screws (⑩). (Fig. 4)
- b. Remove CB403. (Fig. 4)
- c. Remove FM/AM tuner. (Fig. 4)

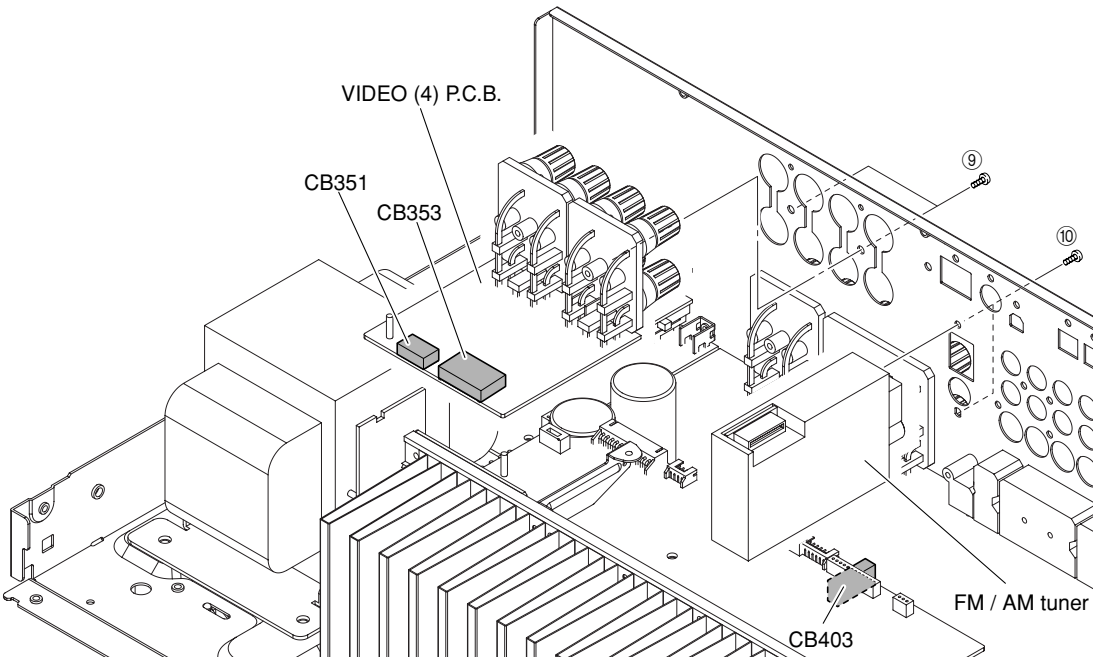


Fig. 4

When checking the P.C.B.:

- a. Remove the top cover. (Fig. 1)
- b. Remove DSP P.C.B.. (Fig. 2)
- c. Remove 6 screws (11). (Fig. 5)
- d. Remove 2 screws (12). (Fig. 5)
- e. Remove 3 screws (13). (Fig. 6)
- f. Remove 2 screws (14). (Fig. 5)
- g. Remove 4 screws (15). (Fig. 5)
- h. Place the P.C.B. upright. (Fig. 7)
- i. The P.C.B. removed from the chassis does not work because its grounding is loose.
Be sure to connect the ground of rear panel and MAIN (1) P.C.B. (G5004, G5005, G5006 and G3401) and DSP P.C.B. (G801 and G802) to the chassis with a ground lead or the like. (Fig. 7)

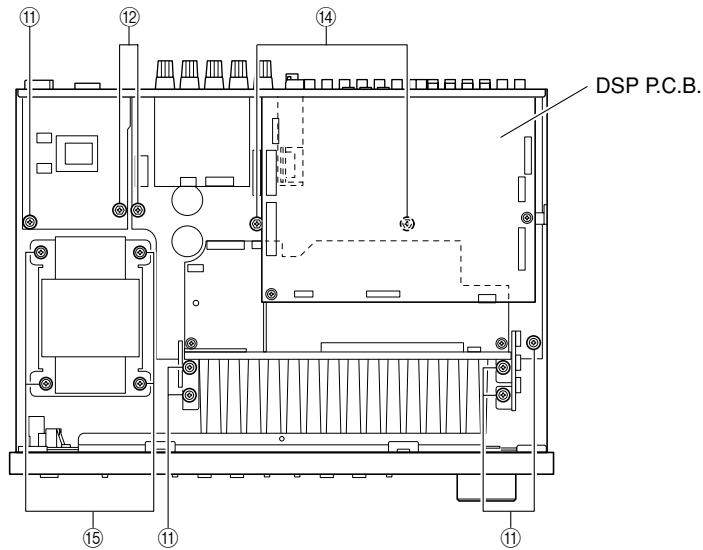


Fig. 5

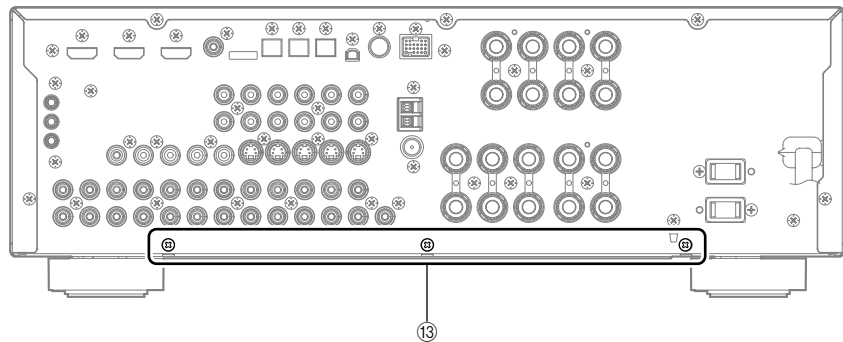


Fig. 6

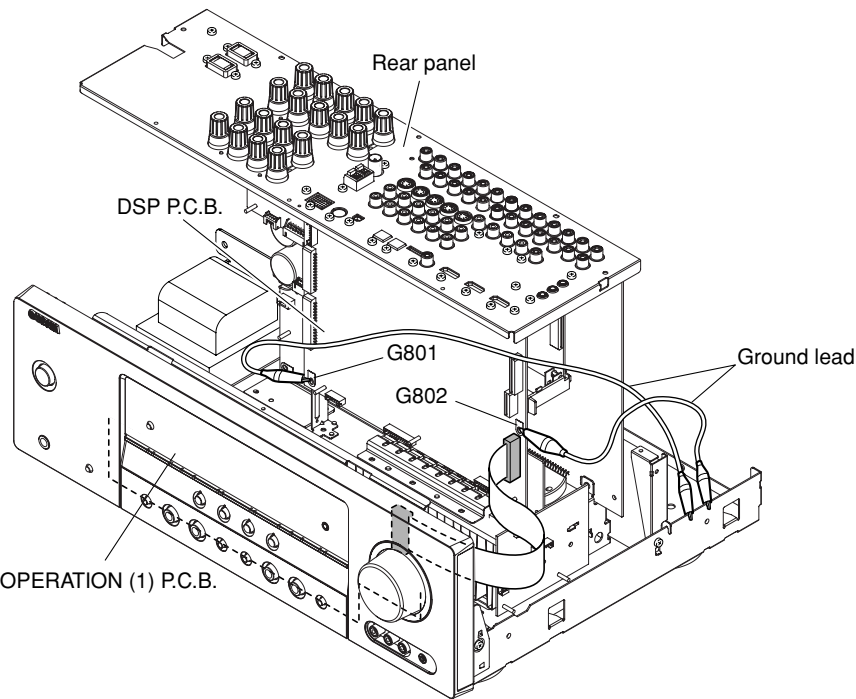
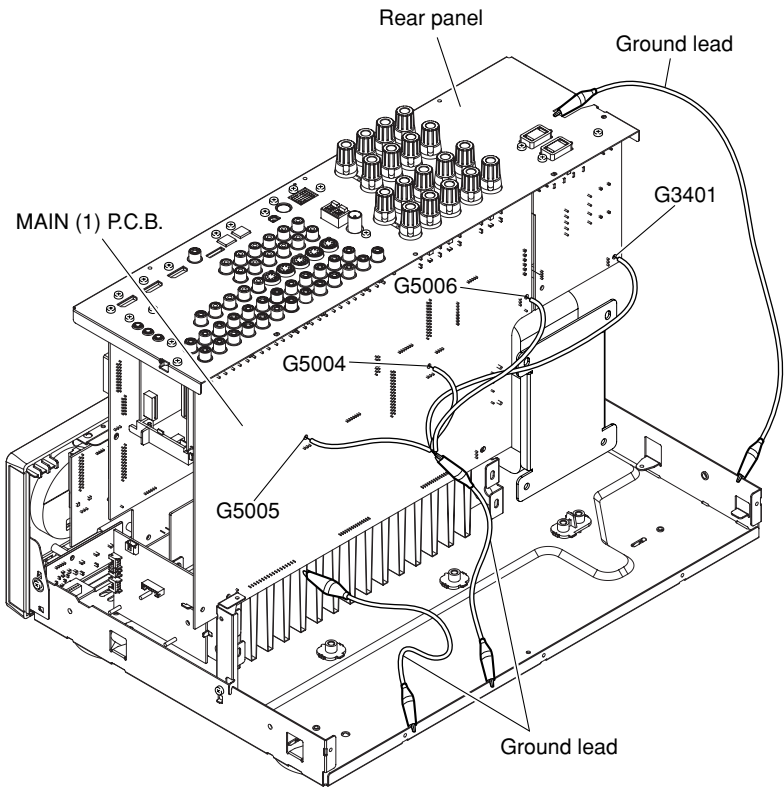


Fig. 7

■ UPDATING FIRMWARE

Note: U, C, F models

After replacement of DSP P.C.B. or writing of the firmware, make sure to activate the self-diagnostic function and change the "M6 Model ID" setting to the same model name as this unit (RX-V563 or HTR-6150).

After replacing the following parts, be sure to write the latest firmware.

- P.C.B. ass'y DSP P.C.B.
- IC52 FLASH ROM of DSP P.C.B.

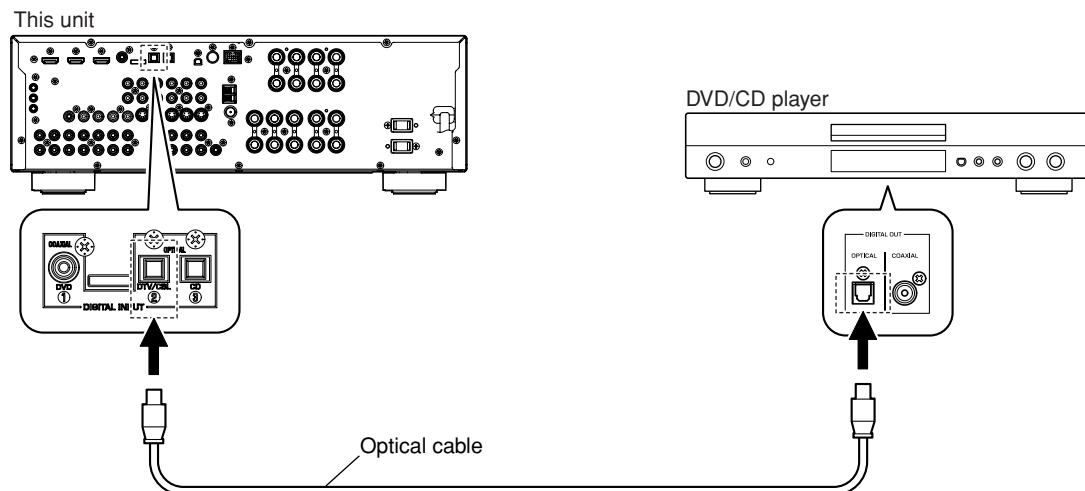
● Required Tools

- DVD or CD player (with DIGITAL OUTPUT (OPTICAL or COAXIAL) jack)
- Optical cable (when OPTICAL jack is used)
- Digital audio pin cable (when COAXIAL jack is used)
- Firmware CD
 - * To make the firmware CD, download the latest firmware from the specified download source to PC.

● Operation Procedures

1. Connect this unit and DVD/CD player as shown below. (Fig. 1)

Example of connection between digital OPTICAL jacks



Example of connection between digital COAXIAL jacks

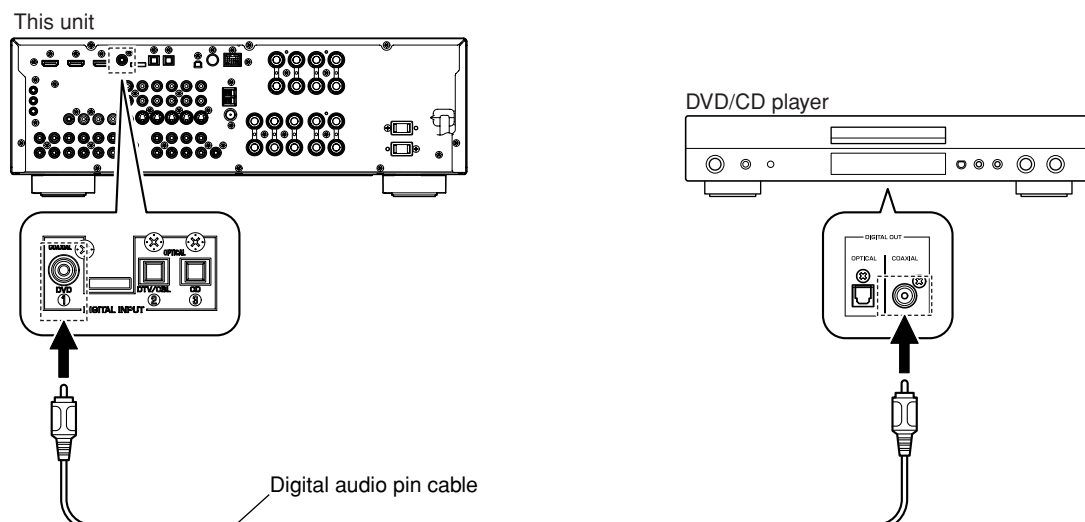


Fig. 1

2. While simultaneously pressing the "MAIN ZONE ON/OFF" (RX-V563, HTR-6150) / "STANDBY/ON" (DSP-AX563) and "SPEAKERS A/B/OFF" keys of this unit, connect the power cable of this unit to the AC outlet. (Fig. 2)
The FIRMWARE UPDATE mode is activated and "SPDIF Upgrade" is displayed. (Fig. 2)

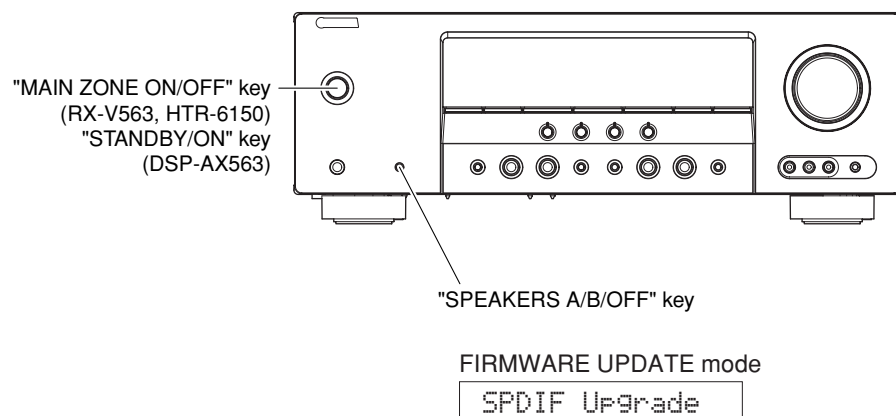


Fig. 2

3. Connect the power cable of DVD/CD player to the AC outlet.
4. Press the "STANDBY/ON" key of the DVD/CD player.
5. Press the "EJECT" key of the DVD/CD player to open the disc tray.
6. Place the firmware CD in the disc tray and close the disc tray.
7. Press the "PLAY" key of the DVD/CD player.
Then writing of the firmware is started. (Fig. 3)
8. When writing of the firmware is completed, "Upgrade OK", "Please..." and "Turn off!!" are displayed repeatedly. (Fig. 3)



Fig. 3

- * When the version of the firmware to be written is the same as the one existing in this unit, "Same Version", "Please..." and "Turn off!!" are displayed repeatedly. (Upgrading is not necessary.)

If the display remains unchanged for more than 10 seconds after starting the firmware CD play procedure, perform the firmware CD play procedure again from the beginning.

If "FILE CORRUPTED" is displayed after "Address:XXXXXX", make sure that the firmware CD is not corrupted and perform steps 1 to 8 of "Operation Procedures" again.

If "Upgrade Failed" is displayed, perform Steps 1 to 8 of "Operation Procedures" again.

9. Press the "STOP" key of the DVD/CD player.
10. Press the "EJECT" key of the DVD/CD player to open the disc tray.
11. Remove the firmware CD from the disc tray and close the disc tray.
12. Turn off the power of the DVD/CD player and disconnect the power cable from the AC outlet.
13. Turn off the power by pressing the "MAIN ZONE ON/OFF" (RX-V563, HTR-6150) / "STANDBY/ON" (DSP-AX563) key of this unit.

● Initializing of this unit

- * After updating the firmware, be sure to initialize this unit.
1. Connect the power cable of this unit to the AC outlet.
 2. Press the "MAIN ZONE ON/OFF" (RX-V563, HTR-6150) / "STANDBY/ON" (DSP-AX563) key while simultaneously pressing the "STRAIGHT" and "AUDIO SELECT" keys. (Fig. 4)
The self-diagnostic function is activated.

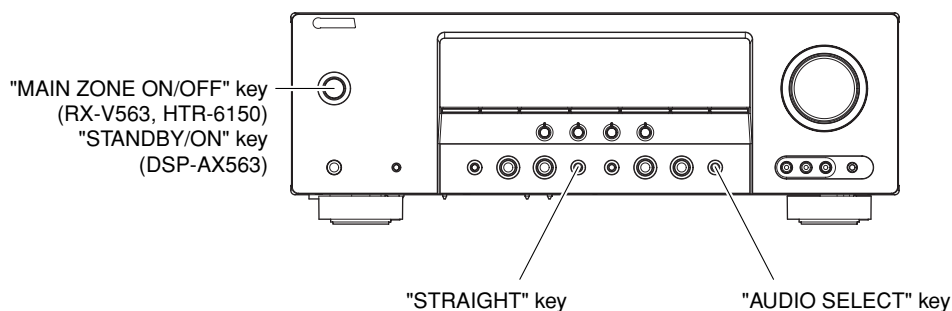


Fig. 4

3. Select the main menu "R. FACTORY PRESET".
4. Select the "PRESET RSRV".

PRESET INHIBIT (Initialization inhibited)

R1.PRESET INHI



PRESET RESERVED (Initialization reserved)

R2.PRESET RSRV

5. Turn off the power of this unit and disconnect the power cable from the AC outlet.

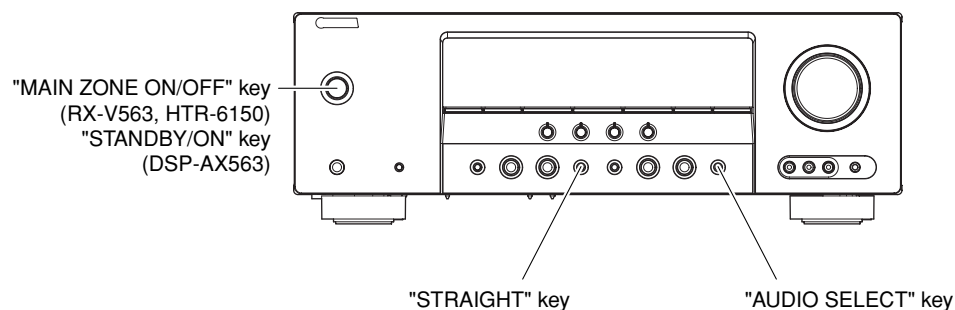
● Confirmation of firmware version and checksum

To confirm that the firmware is updated successfully, check the firmware version and checksum value by using the self-diagnostic function menu "S. ROM VER/SUM".

For more information, refer to "SELF-DIAGNOSTIC FUNCTION".

* When the displayed firmware version and checksum are different from written firmware version and checksum, follow the steps from 1 to 13 of "Operation Procedures" again.

1. Reconnect the power cable of this unit to the AC outlet.
2. Press the "MAIN ZONE ON/OFF" (RX-V563, HTR-6150) / "STANDBY/ON" (DSP-AX563) key while simultaneously pressing the "STRAIGHT" and "AUDIO SELECT" keys. (Fig. 5)
Then the self-diagnostic function is activated.
3. Select the self-diagnostic function menu "S1. Version".
Confirm the displayed firmware version is the same as the written firmware version. (Fig. 5)



Example:

S1. VER. E048

Fig. 5

4. Select the self-diagnostic function menu "S2. All checksum/S3. Program checksum".
Confirm the displayed checksum is the same as the written firmware checksum. (Fig. 6)
(The checksum value is found where downloading is specified to.)

Example:

S2.A.SUM:EDA1

S3.P.SUM:FE77

Fig. 6

5. Turn off the power of this unit and disconnect the power cable from the AC outlet.

● **Confirmation of model name (U, C, F models)**

After replacement of DSP P.C.B. or writing of the firmware, make sure to activate the self-diagnostic function and change the “M6 Model ID” setting to the same model name as this unit (RX-V563 or HTR-6150).

1. Connect the power cable of this unit to the AC outlet.
2. Press the “MAIN ZONE ON/OFF” (RX-V563, HTR-6150) / “STANDBY/ON” (DSP-AX563) key while simultaneously pressing the “STRAIGHT” and “AUDIO SELECT” keys. (Fig. 7)
The self-diagnostic function is activated.
3. Select the self-diagnostic function menu “M6. Model ID”.

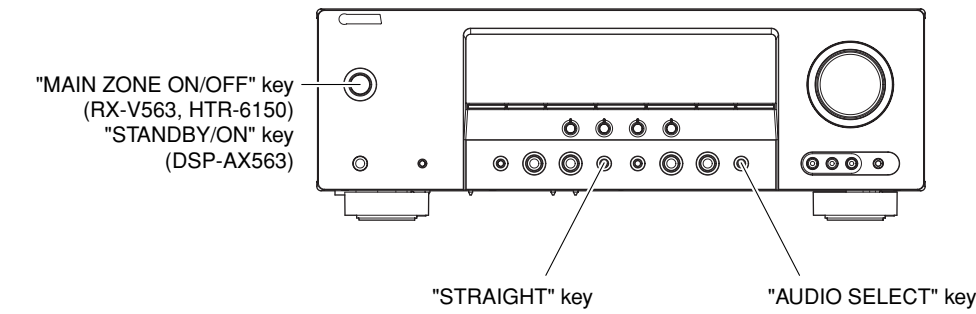


Fig. 7

4. Press “PRESET/TUNING<” or “PRESET/TUNING>”key and select the model name.

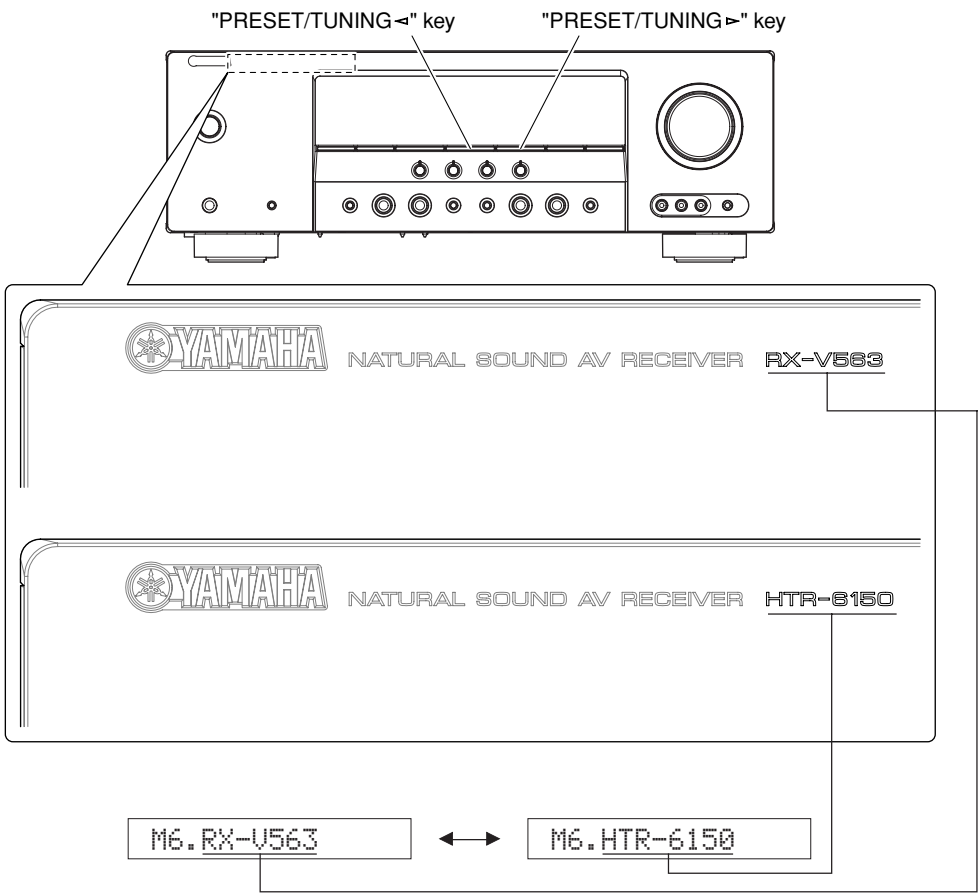


Fig. 8

■ SELF-DIAGNOSTIC FUNCTION

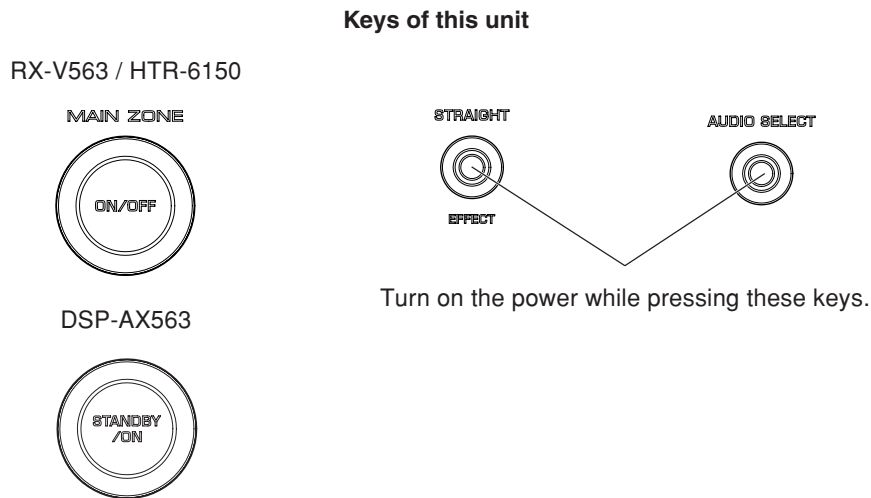
This unit has self diagnosis functions that are intended for inspection, measurement and location of faulty point.
There are 19 main menu items, each of which has sub-menu items.
Listed in the table below are menu items and sub-menu items.
Note that not all menu items listed will apply to the models covered in this service manual.

No.	Main menu	Sub-menu
A	BYPASS	1 ANLOG BYPAS
		2 DSP BYPASS
B	AUDIO CHECK	1 AUDIO CHECK
		2 ANALOG AUDIO PLAYBACK
		3 MUTE ALL
		4 MUTE SYS IC
		5 MUTE TR
C	SPEAKERS SET	1 FRNT : SML0dB
		2 CENTER : NONE
		3 LFE/B : FRNT
		4 TONE : MAX
		5 TONE : MIN
D	XCH-INPUT	1 6chINPUT 6Ω
		2 8chINPUT 6Ω
		3 6chINPUT 8Ω
		4 8chINPUT 8Ω
		5 LIM : PLDET : THM (ex. 05.255:255: 64)
E	MIC CHECK	1 MIC CHECK
F	FL/OSD CHECK	1 VFD CHECK
		2 VFD DISP OFF
		3 VFD DISP ALL
		4 VFD DIMMER
		5 CHECK PATTERN
G	TEST TONE	1 TEST ALL
		2 TEST FRNT L
		3 TEST CENTER
		4 TEST FRNT R
		5 TEST SURR R
		6 TEST SURB R
		7 TEST SURB L
		8 TEST SURR L
		9 TEST LFE
H	XM STATUS (U, C models)	1 1k – 1dB/44
		2 1k –61dB/44
		3 MUTE /44
		4 XM TONE/44
		5 ISO TONE/44
		6 1k – 1dB/32
		7 1k –61dB/32
		8 MUTE /32
		9 XM TONE/32
		10 ISOTONE/32
		11 BUSPWR (BUS power) : OFF
I	iPod	1 DOCK : xx xxx
		2 DOCK IGNORE
		3 Bluetooth version
		4 Clear Bluetooth pairing info.
J	USB (R, T, K, A, B, G, E, F, L models)	1 USBFile1/xx
		2 USBFile2/xx
		3 High Speed TEST_PACKET mode
		4 High Speed TEST_SE0_NAK mode
K	SIRIUS (U, C models)	1 SIRIUS connection check
		2 SIRIUS antenna status
		3 SIRIUS loop back test
		4 SIRIUS SSP version display (only for SIRIUS certification engineer)
		5 SIRIUS firmware #1 version display (only for SIRIUS certification engineer)
		6 SIRIUS Firmware #2 version display (only for SIRIUS certification engineer)
		7 SIRIUS FW product_id version display (only for SIRIUS certification engineer)
		8 SIRIUS FW sequence_id version display (only for SIRIUS certification engineer)

No.	Main menu	Sub-menu
L	VIDEO CONVERSION	1 V–IN (Video info.)
		2 V–CONV S–V (Conversion S-video)
		3 V–CONV CVBS (Conversion CVBS)
		4 V–CONV OFF (Conversion OFF)
		5 V–TestPtt rn (Video test pattern)
M	HDMI Check	1 HDMI SPDIF (SPDIF audio playback)
		2 HDMI NONE
		3 HDMI IN1
		4 HDMI IN2
		5 I2C : xx xxx (I2C access check)
		6 Model ID for EDID setting
N	AD DATA CHECK	1 PD : xxx DI : xxx (ex. N1PD: 45DI: 0)
		2 V1 : xxx V2 : xxx (ex. N2V1: 94V2:128)
		3 TH : xxx PL : xxx (ex. N3TH: 64PL:255)
		4 PI : xxx DE : xxx (ex. N4PI: 0DE: 0)
		5 K0 : xxx K1 : xxx (ex. N5K0:254K1:254)
O	PROTECTION	1 PRD : xxx/xxx (ex. 01.PRD: 23/ 70)
		2 PV1 : xxx/xxx (ex. 02.PV1: 68/161)
		3 PV2 : xxx/xxx (ex. 03.PV2:104/181)
		4 THM : xxx/xxx (ex. 04.THM: 0/131)
		5 L66 : xxx/xxx (PLDET 6ch 6ohms : xxx/xxx) (ex. 05.L66: 0/ 0)
		6 L86 : xxx/xxx (PLDET 8ch 6ohms : xxx/xxx) (ex. 06.L86: 0/ 0)
		7 L68 : xxx/xxx (PLDET 6ch 8ohms : xxx/xxx) (ex. 07.L68: 0/ 0)
		8 L88 : xxx/xxx (PLDET 8ch 8ohms : xxx/xxx) (ex. 08.L88: 0/ 0)
		9 PRI : xxx/xxx (PRI : xxx/xxx) (ex. 09.PRI: 0/100)
		10 PDE : xxx/xxx (PDET : xxx/xxx) (ex. 010PDE: 0/255)
P	PROTECTION HIST.	1 History 1 (ex. PRU: xxx)
		2 History 2 (ex. THM: xxx)
		3 History 3 (ex. PRI: xxx)
		4 History 4
Q	RESERVED	
R	FACTORY PRESET	1 PRESET INHI
		2 PRESET RSRV
S	ROM VER/SUM	1 Microprocessor version
		2 All checksum
		3 Program checksum
		4 SPI checksum
		5 SPD checksum
		6 XM version (U, C models)
		7 SIRIUS version (U, C models)
		8 FlashROM test
		9 SDRAM test
		10 EEPROM test

• Starting Self-diagnostic Function

Press the “MAIN ZONE ON/OFF” (RX-V563, HTR-6150) / “STANDBY/ON” (DSP-AX563) key while simultaneously pressing those two keys of this unit as indicated in the figure below.



• Starting Self-diagnostic Function in the protection cancel mode

If the protection function works and causes hindrance to trouble diagnosis, cancel the protection function as described below, and it will be possible to enter the self-diagnostic function mode. (The protection functions other than the excess current detect function will be disabled.)

Press the “MAIN ZONE ON/OFF” (RX-V563, HTR-6150) / “STANDBY/ON” (DSP-AX563) key while simultaneously pressing those two keys indicated in the figure above. At this time, keep pressing those two keys for 3 seconds or longer. In this mode, the [SLEEP] segment of the FL display of this unit flashes to indicate that the mode is self-diagnostic function mode with the protection functions disabled.

CAUTION!

Using this product with the protection function disabled may cause damage to this unit. Use special care for this point when using this mode.

• Canceling Self-diagnostic Function

1. Before canceling self-diagnostic function, execute setting for FACTORY PRESET of main menu No.R (Memory initialization inhibited or Memory initialized).
 - * In order to keep the user memory stored, be sure to select PRESET INHIBITED (Memory initialization inhibited).
2. Turn off the power by pressing the “MAIN ZONE ON/OFF” (RX-V563, HTR-6150) / “STANDBY/ON” (DSP-AX563) key of this unit.

• Display provided when Self-diagnostic Function started

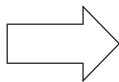
On the FL display of this unit, an opening message (including the protection history) appears for a few seconds followed by the self-diagnostic function menu display (1. ANALOG BYPASS).

When there is no history of protection function:

When there is no protection history

NO PROTECTION

After a few seconds



A1. ANALOG BYPAS

When there is a history of protection function due to excess current

PRI PRT:xxx

AD value when the protection function is working

Cause: An excessive current flowed through the power amplifier.**Supplementary information:**

As current of the power amplifier is detected, the abnormal channel can be identified by checking the current detect transistor.

Turning on the power without correcting the abnormality will cause the protection function to work immediately and the power supply will instantly be shut off.

Note)

- Applying the power to this unit without correcting the abnormality can be dangerous and cause additional circuit damage. To avoid this, if “PRI” and “PRD” protection function has been activated 3 times continuously, the power will not turn on even when the “STANDBY/ON” key is pressed. In order to turn on the power again, disconnect the power cable of this unit from the AC outlet once and then reconnect it again.
- The output transistors in each power amplifier channel should be checked for damage before applying power to this unit.
- Power amplifier current should be monitored by measuring DC voltage across the emitter resistors for each channel.

When there is a history of protection function due to abnormal DC output

PRD PRT:xxx

AD value when the protection function is working

Cause: DC output of the power amplifier is abnormal.**Supplementary information:**

The protection function worked due to a DC voltage appearing at the speaker terminal.

A cause could be a defect in the amplifier.

If the power is turned on with the abnormality unsolved, the protection function works in 3 seconds to turn off the power.

When there is a history of protection function due to abnormal voltage in the power supply section

PRV1 PRT:xxx

AD value when the protection function is working

Cause: The voltage in the power supply section is abnormal.**Supplementary information:**

The protection function worked due to a defect or overload in the power supply.

If the power is turned on with the abnormality unsolved, the protection function works in 1 second to turn off the power.

When there is a history of protection function due to abnormal voltage in the power supply section

PRV2 PRT:xxx

AD value when the protection function is working

Cause: The voltage in the power supply section is abnormal.**Supplementary information:**

The protection function worked due to a defect or overload in the power supply.

If the power is turned on with the abnormality unsolved, the protection function works in 1 second to turn off the power.

When there is a history of protection function due to excessive heat sink temperature

THM PRT:xxx

AD value when the protection function is working

Cause: The temperature of the heat sink is excessive.**Supplementary information:**

The protection function worked due to the temperature limit being exceeded.

Causes could be poor ventilation or a defect related to the thermal sensor.

If the power is turned on with the abnormality unsolved, the protection function works in 1 second to turn off the power.
For detection of each protection function, refer to main menu described later.

History of protection function**When the protection function has worked, its history is stored in memory with a backup.**

Even if no abnormality is noted while servicing the unit, an abnormality which has occurred previously can be defined as long as the backup data has been stored.

The history of the protection function is cleared when self-diagnostic function is cancelled by selecting PRESET RESERVED (Memory initialized) of main menu No. R or when the backup data is erased.

• Operation procedure of Main menu and Sub-menu

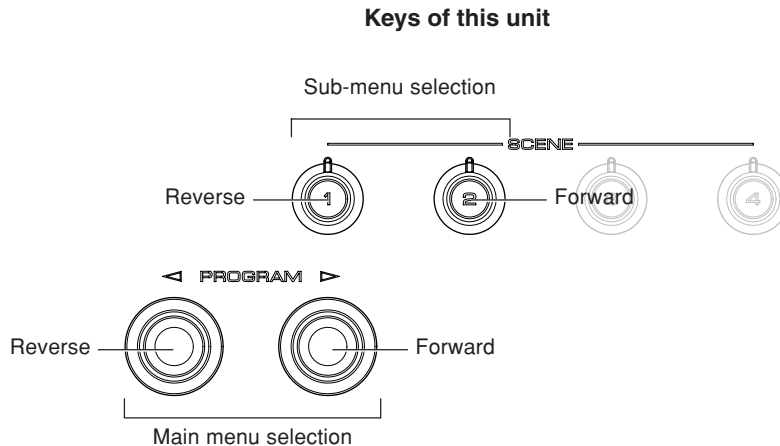
There are 19 main menu items, each of having sub-menu items.

Main menu selection:

Select the main menu using “▷” (forward) and “◁” (reverse) keys of PROGRAM.

Sub-menu selection:

Select the sub-menu using “SCENE 2” (forward) and “SCENE 1” (Reverse) keys.



• Functions in Self-Diagnostic Function mode

In addition to the self-diagnostic function menu items, functions as listed below are available.

- Power on/off
- Master volume
- Muting
- Speakers A/B/OFF
- Input selection
- Audio select
- Tone control

* Functions related to the tuner and the set menu are not available.

• Initial settings used to start Self-Diagnostic Function

The following initial settings are used when starting self-diagnostic function.

When self-diagnostic function is canceled, these settings are restored to those before starting self-diagnostic function.

- Master volume: -20 dB
- Input: DVD (MULTI CHANNEL INPUT OFF)
- Effect level: 0 dB
- Main menu: 1. ANALOG BYPASS

• Details of Self-Diagnostic Function menu

A. BYPASS

Using the sub-menu, it is possible to select ANALOG BYPASS output or DSP BYPASS output.

ANALOG BYPASS

The analog input sound signal is output to FRONT L/R with EFFECT OFF.

A1.ANLOG BYPAS

INPUT: DVD ANALOG

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
		FRONT	CENTER	SURROUND	
Both ch, -20 dBm	+6.0 dB	+11.5 dBm	-∞	-∞	-∞

DSP BYPASS

The digital input sound signal is output to FRONT L/R with EFFECT OFF.

A2.DSP BYPASS

INPUT: DVD ANALOG

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
		FRONT	CENTER	SURROUND	
Both ch, -20 dBm	+6.0 dB	+11.5 dBm	-∞	-∞	-∞

B. AUDIO CHECK

AUDIO CHECK

The input sound signal is output.

* When the inputted sound signal is 2 ch L/R, it is distributed as follows when output.

L ch: FRONT L, CENTER, SURROUND L, LFE (L ch +10 dB)

R ch: SURROUND R

B1.AUDIO CHECK

INPUT: DVD ANALOG

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
		FRONT	CENTER	SURROUND	
Both ch, -20 dBm	+6.0 dB	+11.5 dBm	+11.5 dBm	+11.5 dBm	0 dBm

ANALOG AUDIO PLAYBACK

The input sound signal is output.

B2.ANALOG PLAY

MUTE SYSTEM IC

Sound signals of all channels are muted by System IC (MAIN P.C.B.).

B4.MUTE SYS IC

MUTE ALL

Sound signals of all channels are muted by System IC (MAIN P.C.B.) and Transistor (Q5008-5011 MAIN P.C.B.).

B3.MUTE ALL

MUTE TRANSISTOR

Sound signals of all channels are muted by Transistor (Q5008-5011 MAIN P.C.B.).

B5.MUTE TR

C. SPEAKER SET

The analog switch settings for each sub-menu are as shown in the table below.

FRONT : SML 0dB	SMALL	LARGE	LARGE	SWFR
CENTER : NONE	LARGE	NONE	LARGE	SWFR
LFE/B : FRNT	LARGE	SMALL	SMALL	FRONT
TONE : MAX	LARGE	LARGE	LARGE	SWFR
TONE : MIN	LARGE	LARGE	LARGE	SWFR

LARGE: This mode is used for a speaker with high bass reproduction performance (a large unit).

Full bandwidth signals are output.

SMALL: This mode is used for a speaker with low bass reproduction performance (a small unit).

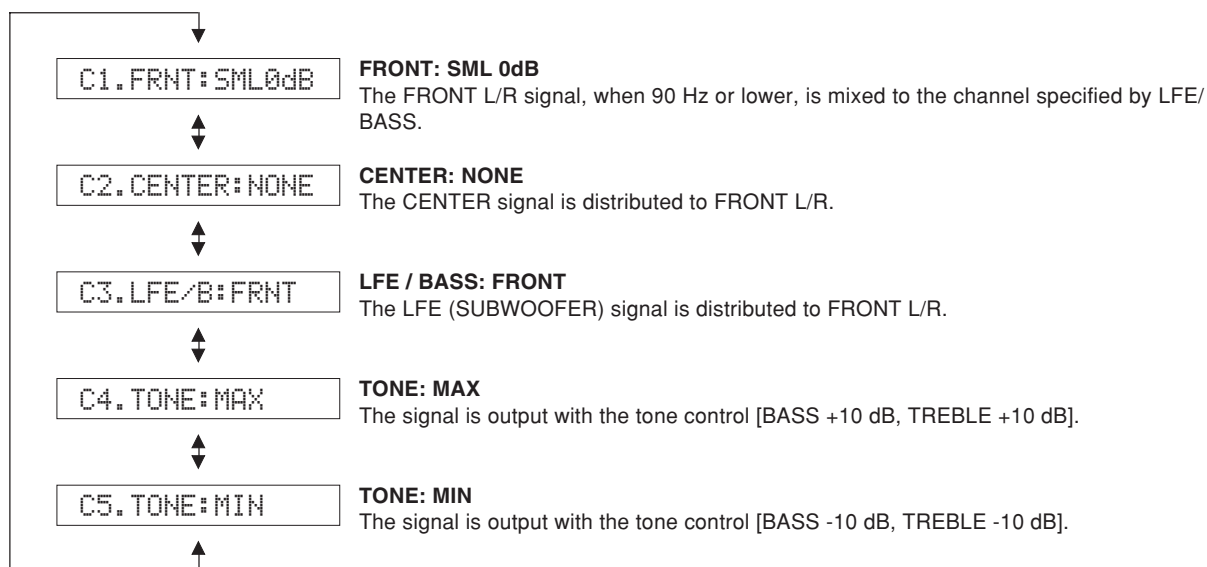
The signals of 90 Hz or less are mixed into the channel specified by LFE/BASS.

NONE: This mode is used for no center speaker.

The center content is reduced by 3 dB and distributed to FRONT L/R.

SWFR: LFE of 5.1 ch signal or LFE/BASS lower than 90 Hz is output through SUBWOOFER OUT.

FRONT: LFE of 5.1 ch signal or LFE/BASS lower than 90 Hz is distributed to FRONT L/R.



INPUT: DVD ANALOG

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Sub-menu	Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
			FRONT	CENTER	SURROUND	
FRONT : SML 0dB	Both ch, -20 dBm	+6.0 dB	+11.5 dBm	-∞	-∞	-3.5 dBm
CENTER : NONE	Both ch, -20 dBm	+6.0 dB	+11.5 dBm	-∞	-∞	-∞
LFE/B : FRNT	Both ch, -20 dBm	+6.0 dB	+11.5 dBm	-∞	-∞	-∞
TONE : MAX	Both ch, -20 dBm	+6.0 dB	+14.5 dBm	-∞	-∞	-∞
TONE : MIN	Both ch, -20 dBm	+6.0 dB	+8.5 dBm	-∞	-∞	-∞

D. XCH INPUT

The input source [MULTI CHANNEL INPUT] is selected.

It is possible to select the 6-ohm/8-ohm by using the sub-menu.

6 ch INPUT 6-ohm

D1.6chINPUT 6Ω

INPUT: MULTI CH INPUT

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Sub-menu	Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
			FRONT	CENTER	SURROUND	
6 ch INPUT 6-ohm	Both ch, -20 dBm	+6.0 dB	+11.5 dBm	+11.5 dBm	+11.5 dBm	-3.5 dBm

8 ch INPUT 6-ohm

D2.8chINPUT 6Ω

INPUT: MULTI CH INPUT

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Sub-menu	Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
			FRONT	CENTER	SURROUND	
6 ch INPUT 8-ohm	Both ch, -20 dBm	+6.0 dB	+11.5 dBm	+11.5 dBm	+11.5 dBm	-3.5 dBm

6 ch INPUT 8-ohm

D3.6chINPUT 8Ω

INPUT: MULTI CH INPUT

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Sub-menu	Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
			FRONT	CENTER	SURROUND	
6 ch INPUT 8-ohm	Both ch, -20 dBm	+6.0 dB	+11.5 dBm	+11.5 dBm	+11.5 dBm	-3.5 dBm

8 ch INPUT 8-ohm

D4.8chINPUT 8Ω

INPUT: MULTI CH INPUT

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Sub-menu	Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
			FRONT	CENTER	SURROUND	
6 ch INPUT 8-ohm	Both ch, -20 dBm	+6.0 dB	+11.5 dBm	+11.5 dBm	+11.5 dBm	-3.5 dBm

LIM/PLDET/THM

LIM: Setting value of LIM (Limiter control)

* Do not change the setting value because this item is only for the use of development staff.

PLDET: Power limiter detection

The A/D conversion value during operation is displayed.

THM: Thermo protection detection

The A/D conversion value during operation is displayed.

(Reference voltage: 3.3 V=255)

D5.255:255: 64

THM (Thermo protection detection)
PLDET (Power limiter detection)
LIM (Limiter control)

E. MIC CHECK

The signals input through the microphone are output of FRONT L/R via A/D and D/A.

E1.MIC CHECK

F. FL CHECK

Use this program to check the FL display section and video control section. When checking the video control section, connect a TV monitor to this unit with a component video cable, S video cable and video pin cable. Selection of the FL display section or video control section varies according to the submenu operation as shown below.

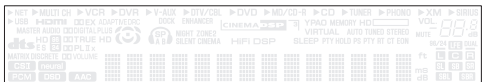
For audio signal processing, use STRAIGHT.

Checking FL display section

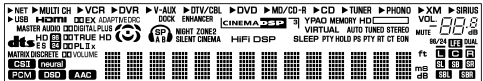
Initial display



All segments OFF



All segments ON (dimmer 100 %)



All segments ON (dimmer 50 %)



Lighting of segments in lattice



Lighting in lattice

Short

Normal

Check of the Video control section. (Monitor out)

Initial display (OSD OFF)

OSD OFF

OSD characters ON

OSD characters ON

OSD characters ON

OSD characters

OSD 128 CHAR PATTERN



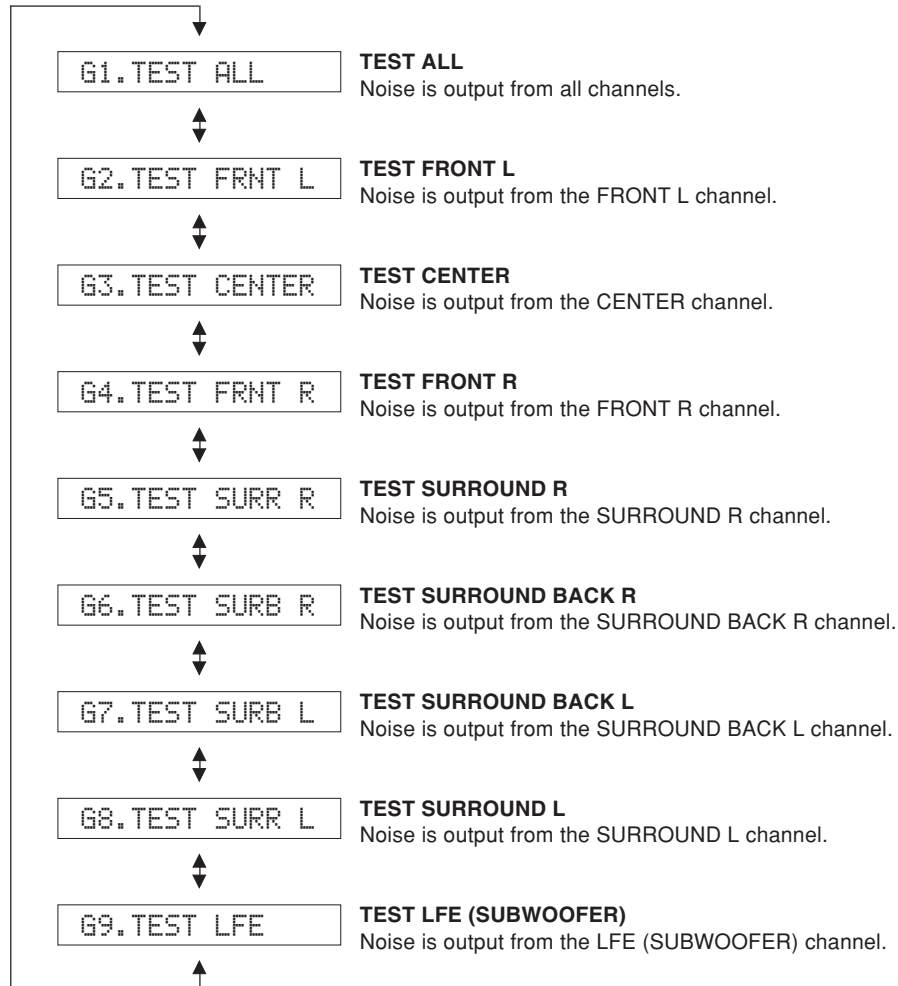
RX-V563/HTR-6150/
DSP-AX563

G. TEST TONE

The outputs the noise through the channels specified by the submenu.

The noise frequency for LFE (SUBWOOFER) is 35 to 80 Hz.

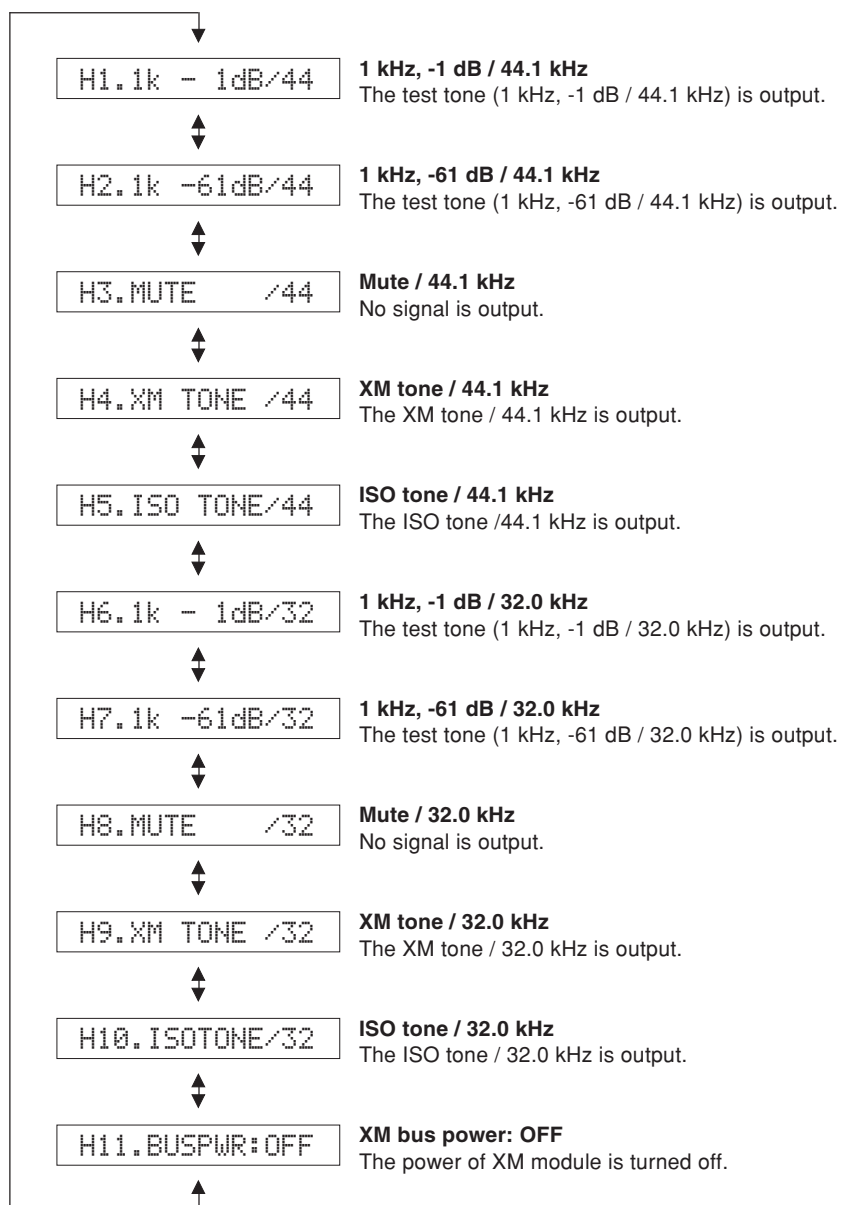
Other than that, the noise frequency is 500 to 2 kHz.



H. XM STATUS (U, C models)

The output check of XM radio is executed.

(Connect XM radio antenna module to this unit before executing.)



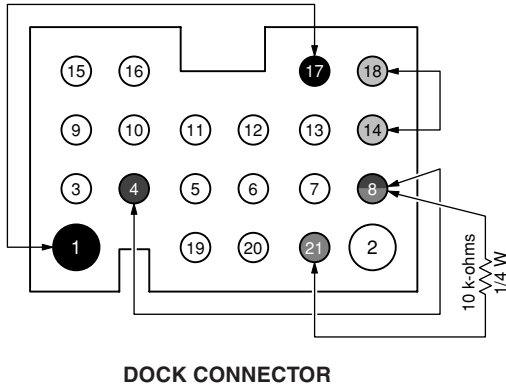
I. iPod

This menu is used to test the DOCK connector without the iPod itself. After turning off the power to this unit short between pins No. 14 (TX) and No. 18 (RX), between pins No. 1 (PWR) and No. 17 (ACCPW), between pins No. 4 (iPDET) and No. 8 (DGND) and between pins No. 21 (DKID) and No. 8 (DGND) of the DOCK connector. (Make sure that the power is turned off when shorting pins.)

Start the self-diagnostic function and select this menu.

The check result is displayed according to the following display specifications.

Note) Be sure to return the shorted pins to their original condition after executing this test.



I1.DOCK:NG NNN

All Y = "OK"
Others = "NG"

Check item	Result		Display
UART loop back test	OK		Y
	NG		N
iPAP (iPod accessory power) detection	IC83 pin No.5	High	Y
		Low	N
iPDET (iPod installation to DOCK) detection	IC82 pin No.5	Low (iPod universal dock)	Y
		High (Bluetooth adapter)	N
DKID (DOCK ID) detection	IC82 pin No.4	10 k-ohms, 1/4 W pull down	Y
		Other	N

DOCK ignore

When DOCK and iPod are connected, the input source [DOCK (iPod)] is made ineffective and [V-AUX] is selected.

I2.DOCK IGNORE

Bluetooth version

When the Bluetooth DOCK is connected, the firmware version of that Bluetooth module is displayed.

I3.BTYS:x.xxx

Clear Bluetooth pairing information

While the Bluetooth DOCK is connected, initialization of the Bluetooth DOCK pairing information is inhibited/reserved. Use “PRESET/TUNING<” and “PRESET TUNING>” keys for operation.

Initialization inhibited

I4.BT CLR: INHI



Initialization reserved

I4.BT CLR: RSRV

Initialization inhibited

User memory initialization is not executed. Select this sub-menu to protect the user memory.

Initialization reserved

Initialization of the use memory is reserved. (Actually, initialization is executed the next time that the power is turned on.) Select this sub-menu to reset to the original factory settings or to reset the use memory. Any protection history will be cleared.

J. USB (R, T, K, A, B, G, E, F, L models)

The music file recorded in the USB flash memory is reproduced.

- a. Copy the 2 music files from PC into the roof folder of the USB flash memory.
- b. Insert the USB flash memory to the USB terminal of this unit.

USB FILE1

Reproduced at this time is the first piece of the music file in the USB flash memory connected to the USB terminal on the front panel.

J1.USBFile1/OK

- OK: Connected/Playback
- NG: No music file

USB FILE2

Reproduced at this time is the second piece of the music file in the USB flash memory connected to the USB terminal on the front panel.

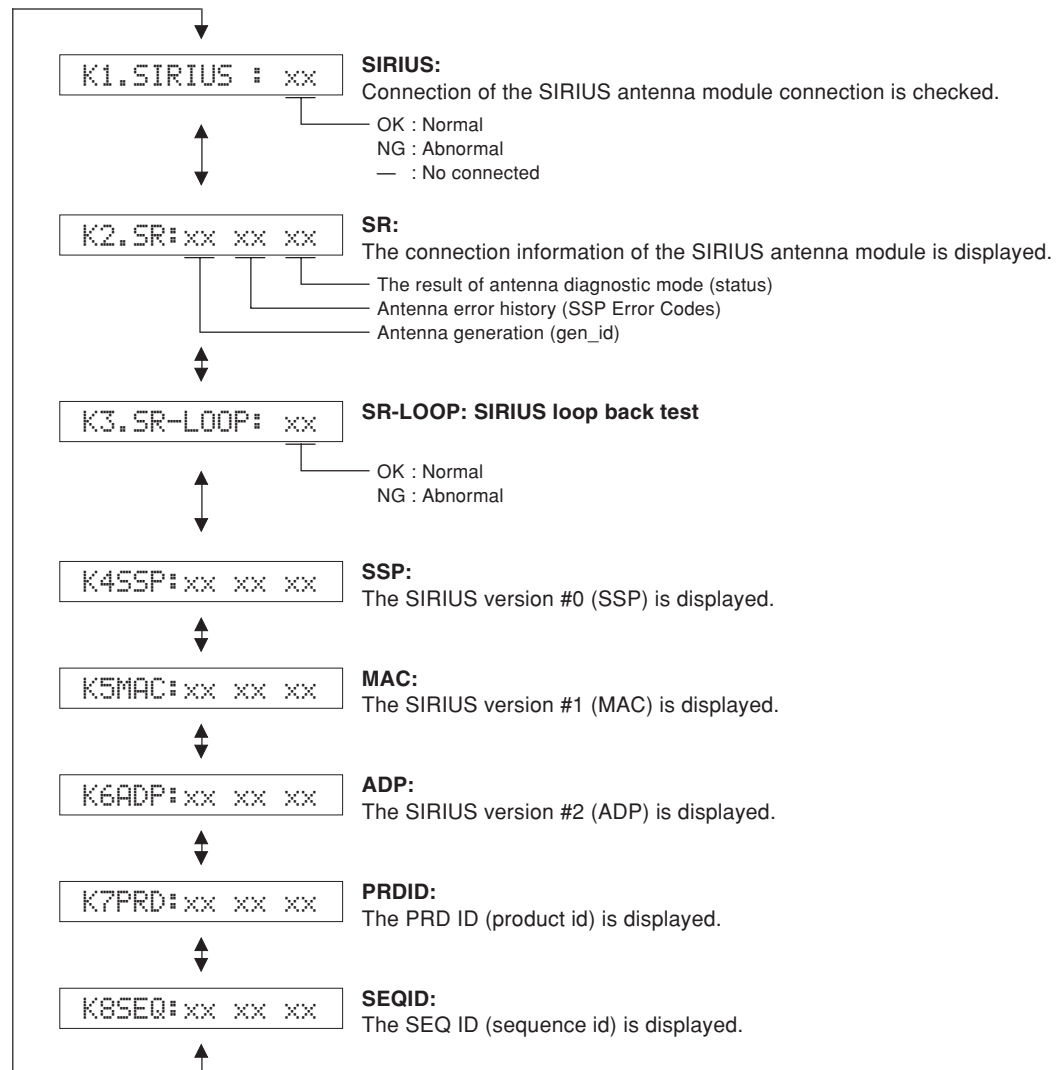
J2.USBFile2/OK

- OK: Connected/Playback
- NG: No music file

K. SIRIUS (U, C models)

The SIRIUS antenna module is checked.

(Connect SIRIUS antenna module to this unit before executing.)



L. VIDEO CONVERSION

The video circuit is checked by the sub-menu operation.

Video INFO.

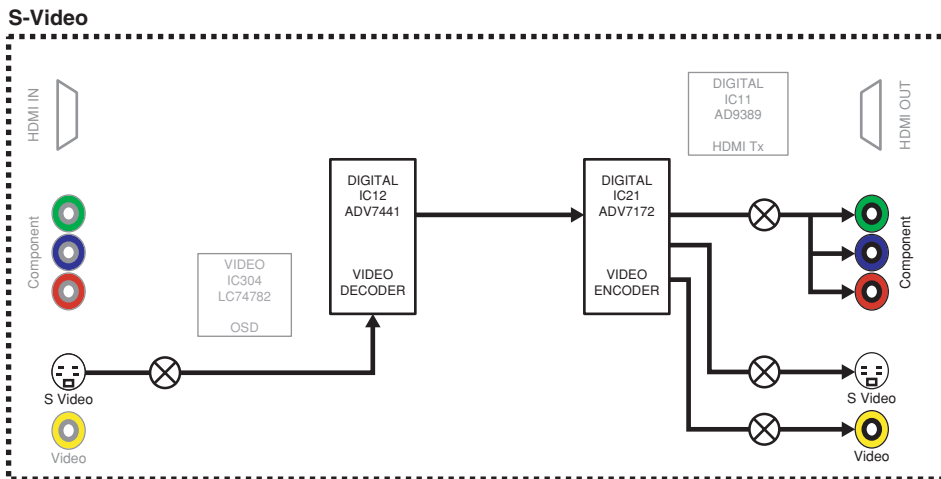
The information of video signal is displayed.

L1. V-IN:

CONVERSION S-Video

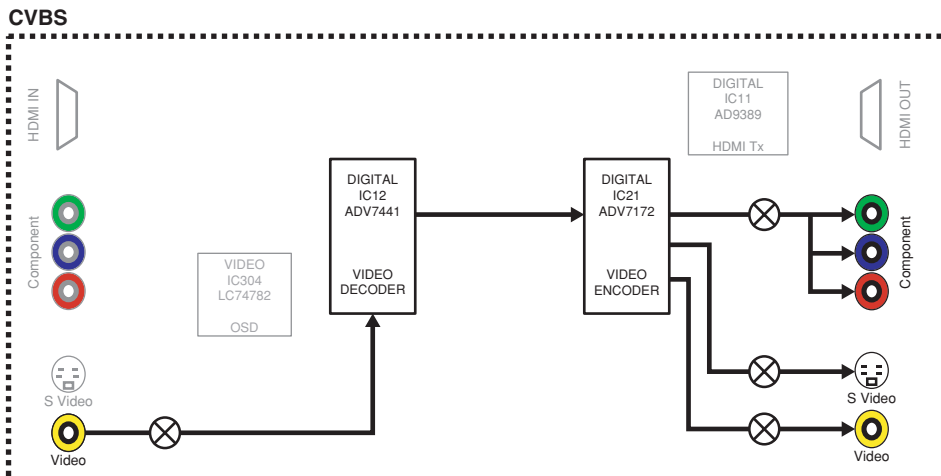
The signal passage as shown below is checked.

L2. V-CONV S-V

**CONVERSION CVBS**

The signal passage as shown below is checked.

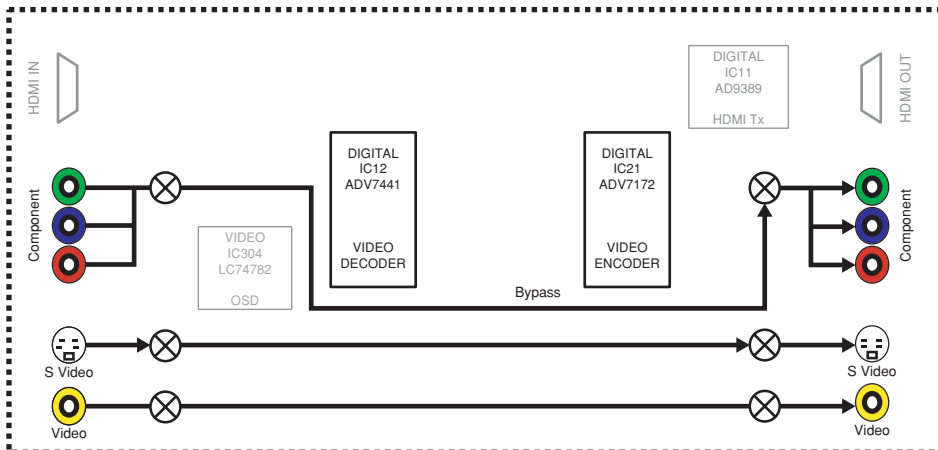
L3. V-CONV CVBS



CONVERSION OFF

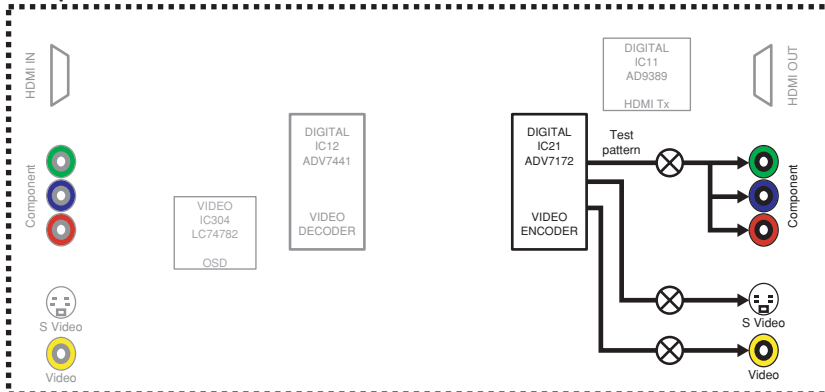
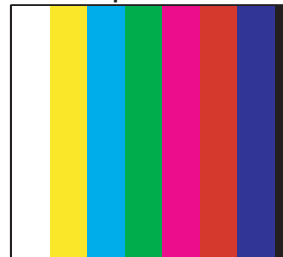
The signal passage as shown below is checked.

L4.V-CONV OFF

Conversion OFF**Test pattern**

The test pattern is output from IC84 (DIGITAL P.C.B.).

L5.V-TestPtttrn

Test pattern**IC21 Test pattern**

M. HDMI SELECT

The audio signals input to HDMI IN are selected by the sub-menu and output.

HDMI SPDIF (SPDIF audio playback)

SPDIF signal is output.

M1.HDMI SPDIF

HDMI NONE

No signal is output.

M2.HDMI NONE

HDMI IN1

HDMI “IN 1” is output.

M3.HDMI IN1

HDMI IN2

HDMI “IN 2” is output.

M4.HDMI IN2

I2C : xx xxx (I2C access check)

M5.I2C:NG NYVY

All Y = "OK"
Others = "NG"

Check item	Result	Display
HDMI Rx	OK	Y
(IC12 DSP P.C.B.)	NG	N
HDMI Tx	OK	Y
(IC11 DSP P.C.B.)	NG	N
VIDEO ENCODER	OK	Y
(IC21 DSP P.C.B.)	NG	N

Model ID for EDID setting (U, C, F models)

After replacement of DSP P.C.B or writing of the firmware, make sure to change the “M6 Model ID” setting to the same model name as this unit (RX-V563 or HTR-6150).

Press “PRESET/TUNING<” or “PRESET TUNING>” key for selection.

M6.RX-V563 ↔ M6.HTR-6150

R, T, K, A, G, E, L models

M6.RX-V563

B model

M6.DSP-AX563

RX-V563/HTR-6150/
DSP-AX563

N. A/D DATA CHECK

This menu is used to display the A/D conversion value of the microprocessor which detects panel keys of the main unit and protection functions in using the sub-menu.

When K0/K1 menu is selected, keys become non-operable due to detection of the values of all keys. However, it is possible to advance to the next sub-menu by turning the VOLUME of the main unit. When using this function, note that turning the VOLUME more than 1 click would cause the volume value to change.

During signal processing, the condition before execution is maintained.

* The figures in the diagram are given as reference only.

PD/DI

PD: PRD (Power amplifier DC protection detection)

The output of power amplifier DC (DC voltage) is detected.

Normal value: 27 to 70 (Reference voltage: 3.3 V=255)

* If PRD is out of the normal value range, the protection function works to turn off the power.

DI: DOCK ID (DOCK ID detection)

(Reference voltage: 3.3 V=255)

DOCK detection for AD port (IC82 AD converter pin no. 4)

Pull-up resistance 10 k-ohms

DOCK type	DOCK (Bluetooth)	Reserved	Reserved	DOCK (iPod)	Reserved	(Develop- ment)	No connect
Ohm	0.56k	2.7k	5.6k	10.0k	18.0k	39.0k	—
DKID (Pin no. 21)	5-25	50-60	85-100	120-140	150-170	195-210	245-255

N1PD: 45DI: 0

V1/V2

V1: PRV1 (Voltage protection detection)

Voltage detects: ACL, 10V, VP, +6.3H and +3.3H

Normal value: 68 to 161 (Reference voltage: 3.3 V=255)

V2: PRV1 (Voltage protection detection)

Voltage detects: AC2, +12, -12, +5D, +5I, +5V and -5V

Normal value: 104 to 181 (Reference voltage: 3.3 V=255)

* If PRD and PRV are out of the normal value range, the protection function works to turn off the power.

N2V1: 94V2:128

TH/PL

TH: THM (Thermo protection detection)
 The temperature of the heat sink is detected.
 Normal value: 0 to 136 (Reference voltage: 3.3 V=255)

* If THM is out of the normal value range, the protection function works to turn off the power.

PL: PLDET (Power limiter detection)
 The output voltage of power amplifier is detected.

N3TH: 64PL:255

U, C models (Reference voltage: 3.3 V=255)

	During normal operation	Value for starting limiter operation	Value for canceling limiter operation
PLDET	255	77	108
LIM H: 255 / L: 102	H	L	H

(LIM: Limiter control)

R, T, K, A, B, G, E, F, L models (Reference voltage: 3.3V=255)

	During normal operation	Value for starting limiter operation	Value for canceling limiter operation
PLDET	255	108	139
LIM H: 255 / L: 90	H	L	H

(LIM: Limiter control)

PI/DE

PI: PRI (Current protection detection)
 The current of the power amplifier is detected.
 Normal value: 0 to 100 (Reference voltage: 3.3 V=255)

DE: PDET (Sub-trans power detection)
 Normal value: 0 to 255 (Reference voltage: 3.3 V=255)

* If PRI and PDET are out of the normal value range, the protection function works to turn off the power.

N4PI: 0DE: 0

K0/K1**K0/K1:** KEY0/KEY1 (Panel key of main unit)A/D value of the key fails to function properly when the standard value is deviated by ± 4 .

In this case, check the constant of partial pressure resistor, solder condition, etc. Refer to table.

(Reference voltage: 3.3 V=255)

N5K0:254K1:254

U, C, R, T, K, A, G, E, F, L models

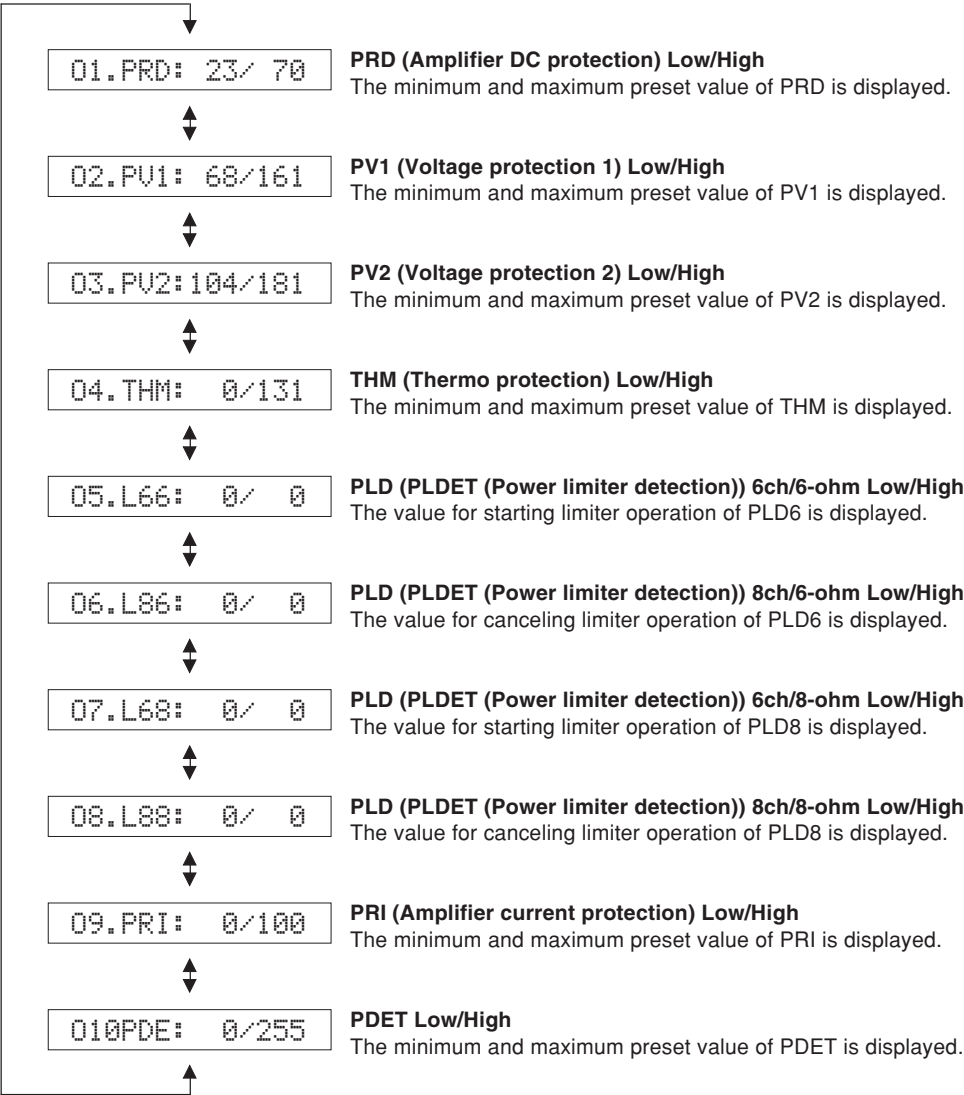
Displayed	K0	K1
0 + 4	—	—
23 ± 4	SPEAKERS A/B/OFF	—
42 ± 4	TONE CONTROL	AUDIO SELECT
66 ± 4	PROGRAM <	INPUT >
92 ± 4	PROGRAM >	INPUT <
112 ± 4	STRAIGHT EFFECT	DIRECT
134 ± 4	A/B/C/D/E	PRESET/TUNING <
156 ± 4	BAND	PRESET/TUNING >
176 ± 4	ZONE2 ON/OFF	MEMORY
195 ± 4	EDIT PRESET/TUNING	INFO TUNING AUTO/MAN'L
215 ± 4	SYSTEM OFF	ZONE CONTROL

B model

Displayed	K0	K1
0 + 4	—	—
23 ± 4	SPEAKERS A/B/OFF	—
42 ± 4	TONE CONTROL	AUDIO SELECT
66 ± 4	PROGRAM <	INPUT >
92 ± 4	PROGRAM >	INPUT <
112 ± 4	STRAIGHT EFFECT	DIRECT
134 ± 4	—	—
156 ± 4	—	—
176 ± 4	—	—
195 ± 4	—	—
215 ± 4	—	—

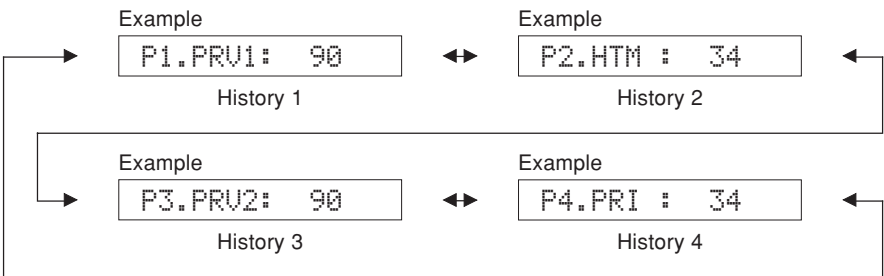
O. PROTECTION

The A/D setting value of each protection is displayed.
(Reference voltage: 3.3 V=255)



P. PROTECTION HISTORY

Four protection histories are displayed.



Q. RESERVED**R. FACTORY PRESET**

This menu is used to reserve/inhibit initialization of the user memory (Parameters and set menu contents, etc. of the sound field program).

The signals are processed using EFFECT OFF (The L/R signal is output using ANALOG BYPASS).

R1.PRESET INHI

PRESET INHIBIT (Initialization inhibited)

User memory initialization is not executed. Select this sub-menu to protect the user memory.



R2.PRESET RSRV

PRESET RESERVED (Initialization reserved)

Initialization of the use memory is reserved. (Actually, initialization is executed the next time that the power is turned on.)

Select this sub-menu to reset to the original factory settings or to reset the use memory.

Any protection history will be cleared.

CAUTION: Before setting to the PRESET RESERVED, write down the existing preset memory content of the tuner in a table as shown below.

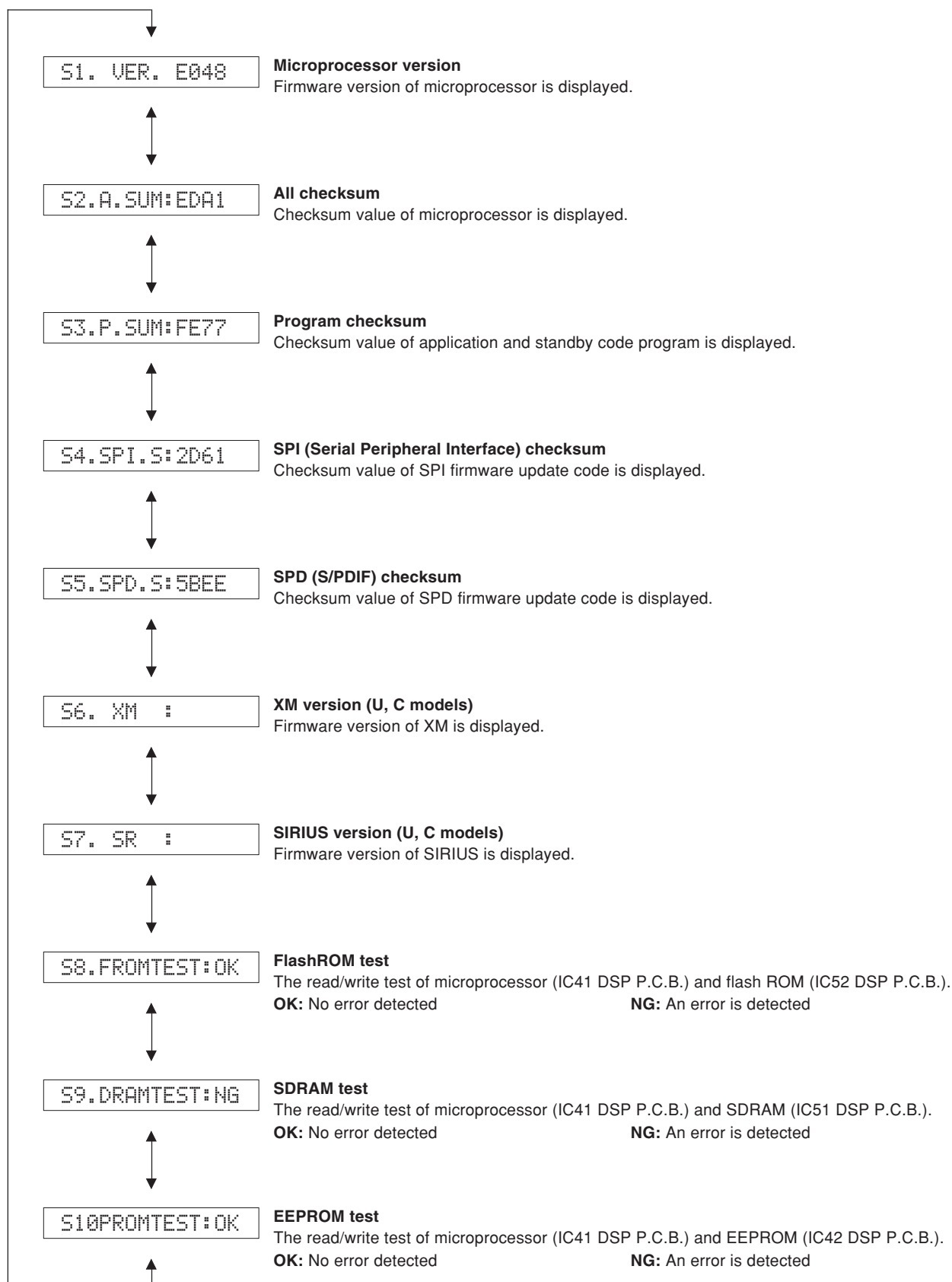
(This is because setting to the PRESET RESERVED will cause the user memory content of the tuner to be erased.)

Preset Group	P1	P2	P3	P4	P5	P6	P7	P8
A								
B								
C								
D								
E								

S. ROM VER/SUM

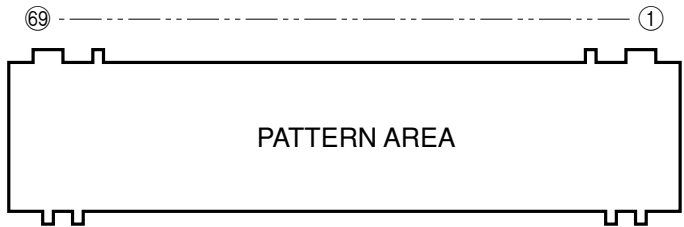
The version and checksum are displayed. The signal is processed using EFFECT OFF.

The checksum is obtained by adding the data at every 8-bit for each program area and expressing the result as a 4-figure hexadecimal data.



■ DISPLAY DATA

● V6001: 17-BT-32GNK (OPERATION P.C.B.)



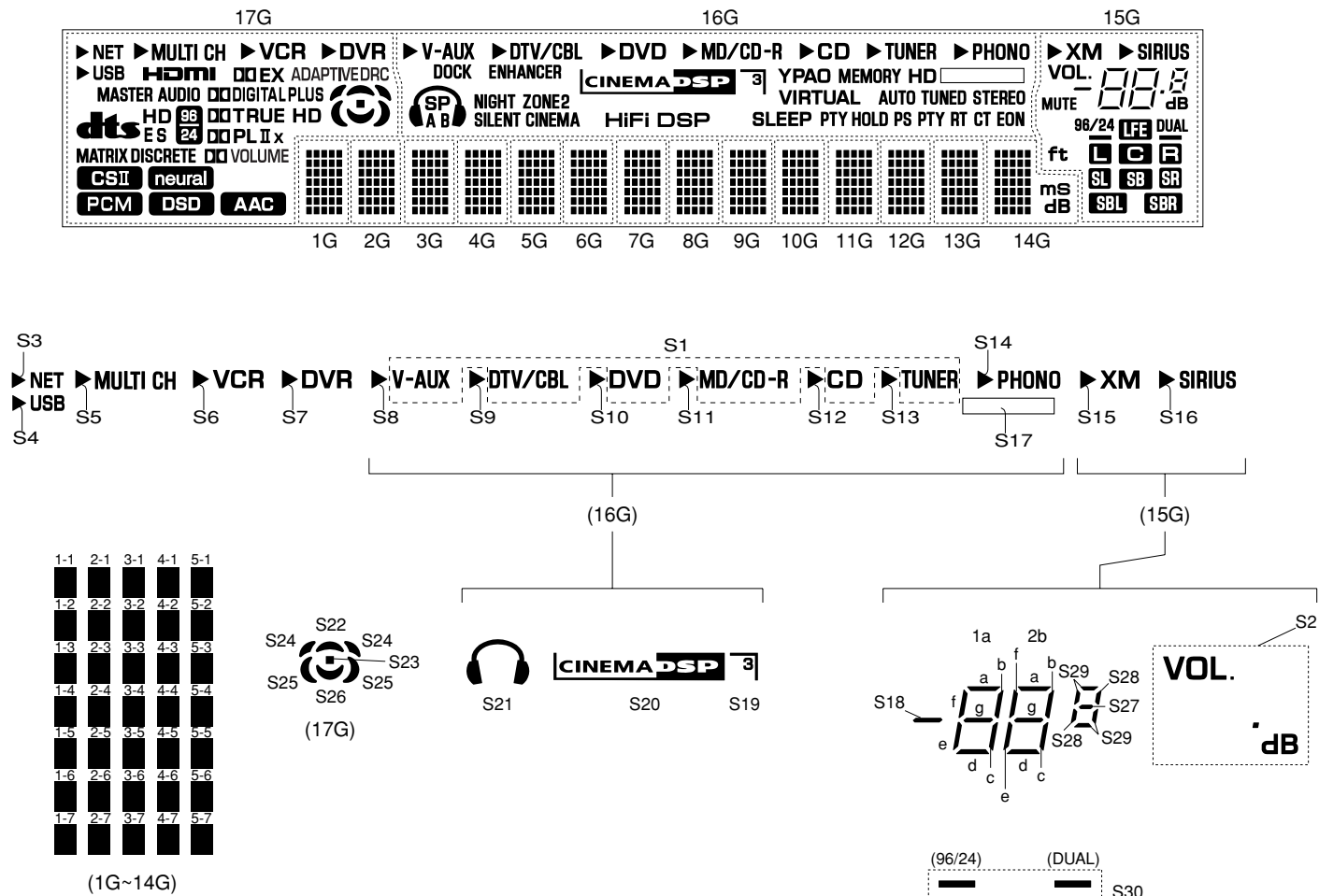
● PIN CONNECTION

Pin No.	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35
Connection	F2	NX	NP	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31

Pin No.	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Connection	P32	P33	P34	P35	P36	P37	NX	NX	NX	NX	NX	NX	NX	17G	16G	15G	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NP	NP	NX	F1

Note : 1) F1, F2 Filament pin 2) NP No pin 3) NX No extend pin 4) 1G~17G Grid pin

● GRID ASSIGNMENT

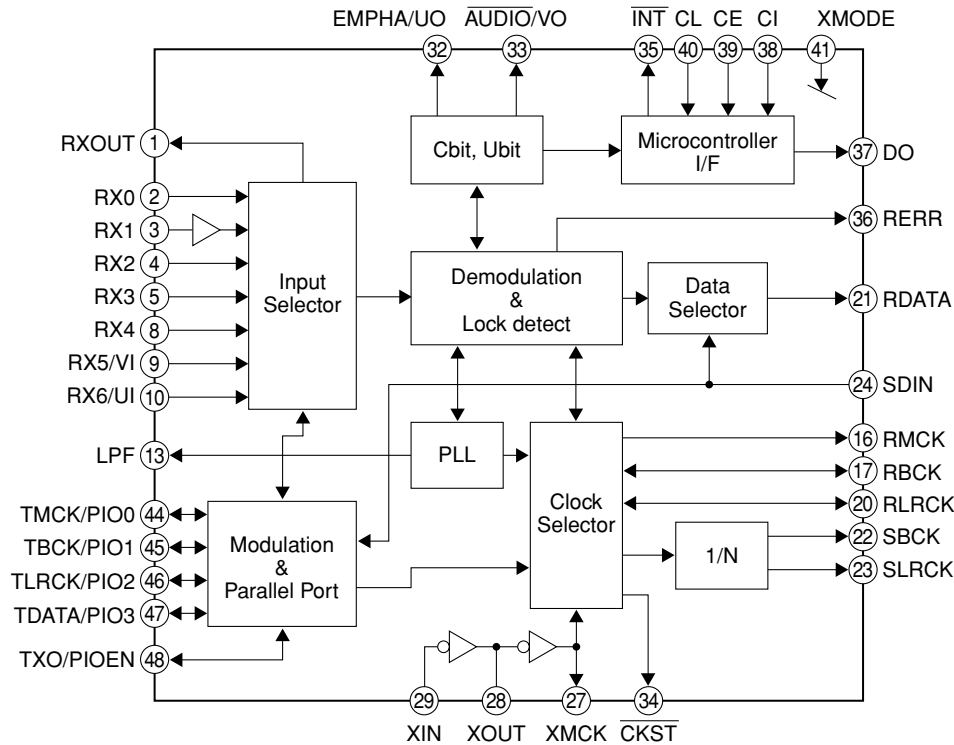


● ANODE CONNECTION

	17G	16G	15G	14G	13G~1G
1P	NET	S1	XM	1-1	1-1
2P	MULTI CH	PHONO	SIRIUS	2-1	2-1
3P	VCR	S8	S15	3-1	3-1
4P	DVR	S9	S16	4-1	4-1
5P	USB	S10	S2	5-1	5-1
6P	S3	S11	S18	1-2	1-2
7P	S5	S12	1a	2-2	2-2
8P	S6	S13	1b	3-2	3-2
9P	S7	S14	1c	4-2	4-2
10P	S4	DOCK	1d	5-2	5-2
11P	HDMI	ENHANCER	1e	1-3	1-3
12P	DOEX	S21	1f	2-3	2-3
13P	ADAPTIVEDRC	SP	1g	3-3	3-3
14P	MASTER AUDIO	A	2a	4-3	4-3
15P	dts	B	2b	5-3	5-3
16P	HD (ES)	NIGHT	2c	1-4	1-4
17P	ES	ZONE2	2d	2-4	2-4
18P	96/24	SILENT CINEMA	2e	3-4	3-4
19P	DIGITAL	S20	2f	4-4	4-4
20P	PLUS	S19	2g	5-4	5-4
21P	DO TRUE HD	HIFI DSP	S27	1-5	1-5
22P	DO PL	YPAO	S28	2-5	2-5
23P	II	MEMORY	S29	3-5	3-5
24P	x	HD	MUTE	4-5	4-5
25P	MATRIX	S17	96/24	5-5	5-5
26P	DISCRETE	VIRTUAL	DUAL	1-6	1-6
27P	DO VOLUME	AUTO	ft	2-6	2-6
28P	CSII	TUNED	S30	3-6	3-6
29P	neural	STEREO	LFE	4-6	4-6
30P	PCM	SLEEP	L	5-6	5-6
31P	DSD	PTY (HOLD)	G	1-7	1-7
32P	AAC	HOLD	R	2-7	2-7
33P	S22	PS	SL	3-7	3-7
34P	S23	PTY (RT)	SB	4-7	4-7
35P	S24	RT	SR	5-7	5-7
36P	S25	CT	SBL	mS	—
37P	S26	EON	SBR	dB	—

IC DATA

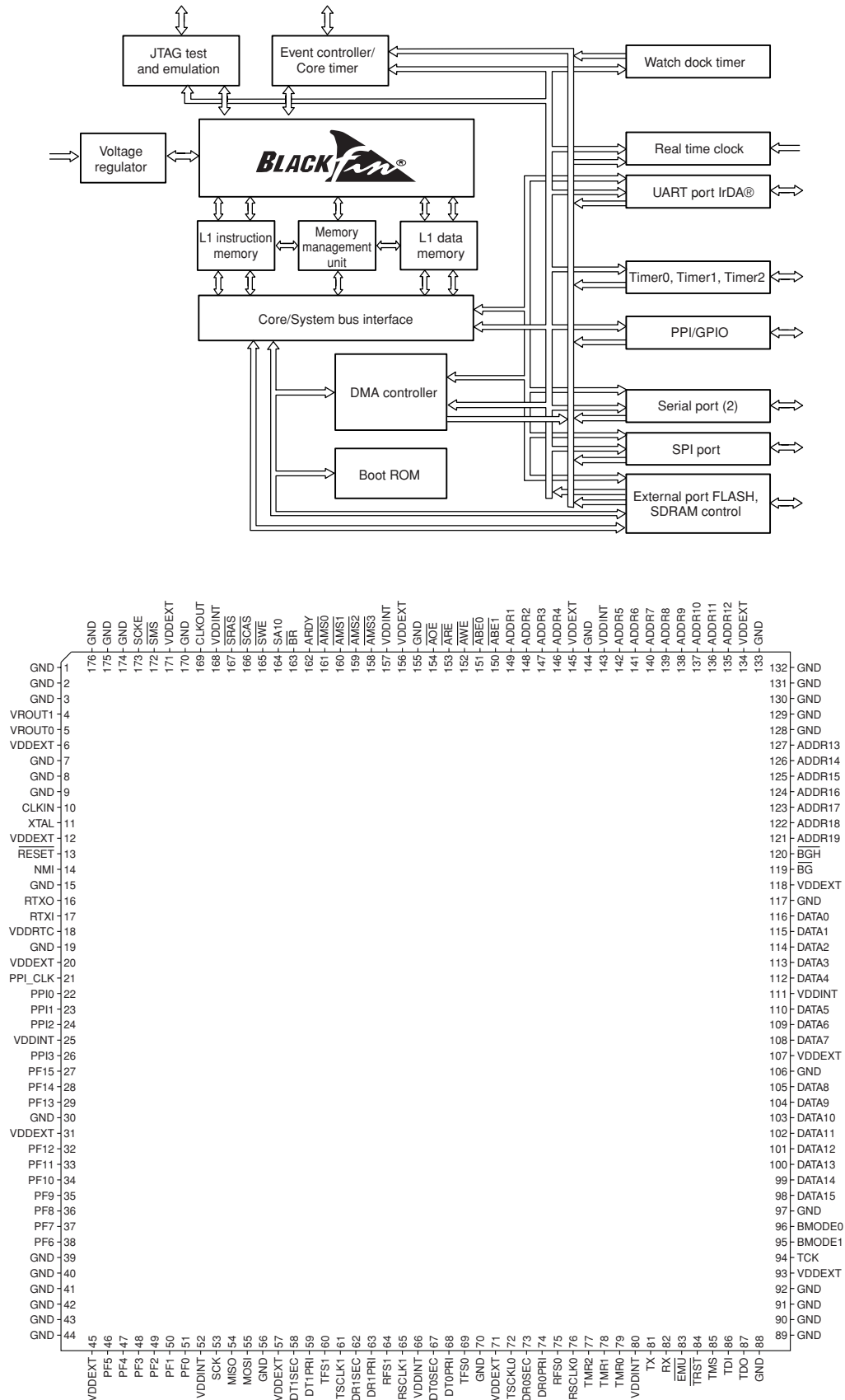
IC31: LC89057W-VF4AD-E (DSP P.C.B.)
Digital audio interface transceiver



Pin No.	Function Name	I/O	Detail of Function
1	RXOUT	O	Output pin of input bi-phase selection data
2	RX0	Is	Input pin of TTL-compatible digital data
3	RX1	I	Digital data input pin with built-in amplifier that supports coaxial
4	RX2	Is	Input pin of TTL-compatible digital data
5	RX3	Is	Input pin of TTL-compatible digital data
6	DGND		Digital GND
7	DVDD		Digital power supply (3.3 V)
8	RX4	Is	Input pin of TTL-compatible digital data
9	RX5	Is	TTL-compatible digital data / Validity flag input pin for modulation
10	RX6	Is	TTL-compatible digital data / User data input pin for modulation
11	DVDD		Digital power supply for PLL
12	DGND		Digital GND for PLL
13	LPF	O	PLL loop filter connection pin
14	AVDD		Analog power supply for PLL (3.3 V)
15	AGND		Analog GND for PLL
16	RMCK	O	R system clock output pin (256 fs, 512 fs, XIN, VCO)
17	RBCK	O/I	R bit clock input/output pin (64 fs)
18	DGND		Digital GND
19	DVDD		Digital power supply (3.3 V)
20	RLRCK	O/I	R LR clock input/output pin (fs)
21	RDATA	O	Output pin of serial audio data
22	SBCK	O	S bit clock output pin (32 fs, 64 fs, 128 fs) (No connected.)
23	SLRCK	O	S LR clock output pin (fs/2, fs, 2 fs) (No connected.)
24	SDIN	Is	Input pin of serial audio data
25	DGND		Digital GND
26	DVDD		Digital power supply (3.3 V)
27	XMCK	O	Oscillation amplifier output pin
28	XOUT	O	Quartz resonator connection output pin
29	XIN	I	Quartz resonator connection, input pin of external supply clock (24.576 MHz or 12.288 MHz)
30	DVDD		Digital power supply (3.3 V)
31	DGND		Digital GND
32	EMPHA/UO/CD	I/O	Emphasis information / U data output / C data output / Chip address setting pin
33	AUDIO/VO	I/O	Non-PCM detection / V flag output / Chip address setting pin
34	CKST/PT	I/O	Output of clock switch transitional period signal / Preamble B output / Demodulation master or slave function switch pin
35	INT	I/O	Interrupt output for microprocessor (Possible to select an interrupt factor.) / Modulation or general-purpose I/O switch pin
36	RERR	O	PLL clock error, data error flag output
37	DO	O	Microprocessor I/F, read data output pin (3-state)
38	DI	Is	Microprocessor I/F, write data input pin
39	CE	Is	Microprocessor I/F, chip enable input pin
40	CL	Is	Microprocessor I/F, clock input pin"
41	XMODE	Is	System reset input pin
42	DGND		Digital GND
43	DVDD		Digital power supply (3.3 V)
44	PIO0	O	Sport input select
45	PIO1	O	
46	PIO2	O	Audio direct stereo ON
47	PIO3	O	Audio clock select
48	PIOEN	I/O	Modulation data output / General-purpose I/O enable output pin

- 1) Withstand voltage input/output: I or O = -0.3 to 3.6 V, Is = -0.3 to 5.5 V
- 2) Pins 32 and 33 are input pins for chip address setting, when pin 41 = "L".
- 3) Pin 34 is a demodulation function master or an input pin for slave setting, when pin 41 = "L".
- 4) Pin 35 is a modulation function or an input pin for general-purpose I/O function switch setting, when pin 41 = "L".
- 5) ON/OFF for all power supplies must be done at the same timing as a latch-up countermeasure.

IC41: AD91089SKBC CPU (DSP P.C.B.)
Microprocessor



Memory Interface

Pin No.	Function Name	I/O	Detail of Function
121	ADDR19	O	Address bus for async/Sync access
122	ADDR18		
123	ADDR17		
124	ADDR16		
125	ADDR15		
126	ADDR14		
127	ADDR13		
135	ADDR12	O	Address bus for async/Sync access
136	ADDR11		
137	ADDR10		
138	ADDR9		
139	ADDR8		
140	ADDR7		
141	ADDR6		
146	ADDR4	O	Address bus for async/Sync access
147	ADDR3		
148	ADDR2		
149	ADDR1		
98	DATA15	I/O	Daea bus for async access
99	DATA14		
100	DATA13		
101	DATA12		
102	DATA11		
103	DATA10		
104	DATA9		
105	DATA8	I/O	Daea bus for async access
108	DATA7		
109	DATA6		
110	DATA5		
112	DATA4	I/O	Daea bus for async access
113	DATA3		
114	DATA2		
115	DATA1		
116	DATA0	O	Byte enables/Data masks for async/Sync access
150	ABE1		
151	ABE0	I	Bus request (This pin should be pulled HIGH if not used.)
163	BR		
119	BG	O	Bus grant
120	BGH	O	Bus grant hang

Asynchronous memory control

Pin No.	Function Name	I/O	Detail of Function
158	AMS3	O	Banks select
159	AMS2		
160	AMS1		
161	AMS0		
162	ARDY	I	hardware ready control (This pin should be pulled HIGH if not used.)
154	AOE	O	Output enable
153	ARE	O	Read enable
152	AWE	O	Write enable

Synchronous memory control

Pin No.	Function Name	I/O	Detail of Function
167	SRAS	O	Row address strobe
166	SCAS	O	Column address strobe
165	SWE	O	Write enable
173	SCKE	O	Clock enable
169	CLKOUT	O	Clock output
164	SA10	O	A10 pin
172	SMS	O	Bank select

Timers

Pin No.	Function Name	I/O	Detail of Function
79	TMR0	I/O	Timer0
78	TMR1	I/O	Timer1/PPI frame sync1
77	TMR2	I/O	Timer2/PPI frame sync2

PPI port

Pin No.	Function Name	I/O	Detail of Function
22	PPI0	I/O	PPI3-0
23	PPI1		
24	PPI2		
26	PPI3		
21	PPI_CLK	I	PPI clock/External timer reference

Port F:

GPIO/Parallel peripheral interface port/SPI/Timers

Pin No.	Function Name	I/O	Detail of Function
51	PF0	I/O	GPIO/SPI slave select input
50	PF1	I/O	GPIO/SPI slave select enable 1/ Timer alternate clock input
49	PF2	I/O	GPIO/SPI slave select enable 2
48	PF3	I/O	GPIO/SPI slave select enable 3/ PPI frame sync 3
47	PF4	I/O	GPIO/SPI slave select enable 4/ PPI 15
46	PF5	I/O	GPIO/SPI slave select enable 5/ PPI 14
38	PF6	I/O	GPIO/SPI slave select enable 6/ PPI 13
37	PF7	I/O	GPIO/SPI slave select enable 7/ PPI 12
36	PF8	I/O	GPIO/PPI 11
35	PF9	I/O	GPIO/PPI 10
34	PF10	I/O	GPIO/PPI 9
33	PF11	I/O	GPIO/PPI 8
32	PF12	I/O	GPIO/PPI 7
29	PF13	I/O	GPIO/PPI 6
28	PF14	I/O	GPIO/PPI 5
27	PF15	I/O	GPIO/PPI 4

JTAG port

Pin No.	Function Name	I/O	Detail of Function
94	TCK	I	JTAG clock
87	TDO	O	JTAG serial data out
86	TDI	I	JTAG serial data in
85	TMS	I	JTAG mode select
84	TRST	I	JTAG reset (This pin is should be pulled LOW if JTAG is not used.)
83	EMU	O	Emulation output

SPI port

Pin No.	Function Name	I/O	Detail of Function
55	MOSI	I/O	Master out slave in
54	MISO	I/O	Master in slave out (This pin is should be pulled HIGH through a 4.7 k-ohms resistor if booting via the SPI port.)
53	SCK	I/O	SPI clock

Serial ports

Pin No.	Function Name	I/O	Detail of Function
76	RSCLK0	I/O	SPORT0 receive serial clock
75	RFS0	I/O	SPORT0 receive frame sync
74	DR0PRI	I	SPORT0 receive data primary
73	DR0SEC	I	SPORT0 receive data secondary
72	TSCLK0	I/O	SPORT0 transmit serial clock
69	TFS0	I/O	SPORT0 transmit frame sync
68	DTOPRI	O	SPORT0 transmit data primary
67	DT0SEC	O	SPORT0 transmit data secondary
65	RSCLK1	I/O	SPORT1 receive serial clock
64	RFS1	I/O	SPORT1 receive frame sync
63	DR1PRI	I	SPORT1 receive data primary
62	DR1SEC	I	SPORT1 receive data secondary
61	TSCLK1	I/O	SPORT1 transmit serial clock
60	TFS1	I/O	SPORT1 transmit frame sync
59	DT1PRI	O	SPORT1 transmit data primary
58	DT1SEC	O	SPORT1 transmit data secondary

UART port

Pin No.	Function Name	I/O	Detail of Function
82	RX	I	UART receive
81	TX	O	UART transmit

Real-time clock

Pin No.	Function Name	I/O	Detail of Function
17	RTXI	I	RTC crystal input (This pin should be pulled LOW when not used.)
16	RTXO	O	RTC crystal output

Clock

Pin No.	Function Name	I/O	Detail of Function
10	CLKIN	I	Clock/Crystal input (This pin needs to be at a level or clocking.)
11	XTAL	O	Crystal output

Mode controls

Pin No.	Function Name	I/O	Detail of Function
13	RESET	I	Reset (This pin is always active during core power-on.)
14	NMI	I	Nonmaskable interrupt (This pin should be pulled LOW when not used.)
95	BMODE1	I	Boot mode strap (These pins must be pulled to the state required for the desired boot mode.)
96	BMODE0		

Voltage regulator

Pin No.	Function Name	I/O	Detail of Function
4	VROUT1	O	External FET drive
5	VROUT0		

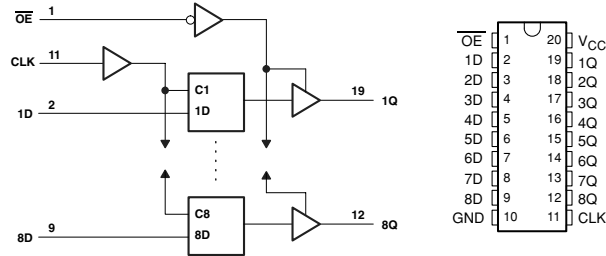
Supplies

Pin No.	Function Name	I/O	Detail of Function
6	VDDEXT	P	I/O power supply
12			
20			
31			
45			
57			
71			
93			
107			
118			
134			
145			
156			
171			
25	VDDINT	P	Core power supply
52			
66			
80			
111			
143			
157			
168			
18	VDDRTC	P	Real-time clock power supply

Pin No.	Function Name	I/O	Detail of Function
1	GND	G	External ground
2			
3			
7			
8			
9			
15			
19			
30			
39			
40			
41			
42			
43			
44			
56			
70			
88			
89			
90			
91			
92			
97			
106			
117			
128			
133			
144			
155			
170			
171			
172			
173			
174			
175			
176			

- **Microprocessor extended port**

IC57-IC59: SN74LV574APWR (DSP P.C.B.)
Octal edge-triggered D-type flip-flops with 3-state outputs

**IC57**

Pin No.	Port Name	Function Name	Detail of Function
1	/OE	/EXPE	Extended port enable
2	1D	D00	Data bus 00
3	2D	D01	Data bus 01
4	3D	D02	Data bus 02
5	4D	D03	Data bus 03
6	5D	D04	Data bus 04
7	6D	D05	Data bus 05
8	7D	D06	Data bus 06
9	8D	D07	Data bus 07
10	GND	DGND	Ground of external
11	LCK	NPGA_EXSTB	Bank select 1
12	8Q	—	—
13	7Q	R2A_CLK	E-Vol control clock
14	6Q	R2A_DATA	E-Vol control data
15	5Q	VIDEO_MTVR1	DVR REC output inhibit
16	4Q	/DAC_CS	DA converter chip select
17	3Q	/ADC_CS	AD converter chip select
18	2Q	/VFD_CS	VFD (Front display) chip select
19	1Q	/DIR_CS	Audio CODEC chip select
20	VCC	VCC	Power supply +3.3V

IC58

Pin No.	Port Name	Function Name	Detail of Function
1	/OE	/EXPE	Extended port enable
2	1D	D00	Data bus 00
3	2D	D01	Data bus 01
4	3D	D02	Data bus 02
5	4D	D03	Data bus 03
6	5D	D04	Data bus 04
7	6D	D05	Data bus 05
8	7D	D06	Data bus 06
9	8D	D07	Data bus 07
10	GND	DGND	Ground of external
11	CLK	NPGA_EXSTB	Bank select 1
12	8Q	PRY	Power relay control
13	7Q	XM_POWER	XM power enable
14	6Q	/Z2MT	Zone2 L/R mute
15	5Q	/SBMT	Surround back L/R mute
16	4Q	/SWMT	Subwoofer mute
17	3Q	/CMT	Center mute
18	2Q	/SMT	Surround L/R mute
19	1Q	/FMT	Front L/R mute
20	VCC	VCC	Power supply +3.3V

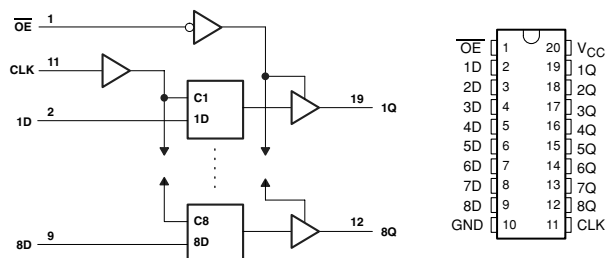
IC59

Pin No.	Port Name	Function Name	Detail of Function
1	/OE	/EXPE	Extended port enable
2	1D	D00	Data bus 00
3	2D	D01	Data bus 01
4	3D	D02	Data bus 02
5	4D	D03	Data bus 03
6	5D	D04	Data bus 04
7	6D	D05	Data bus 05
8	7D	D06	Data bus 06
9	8D	D07	Data bus 07
10	GND	DGND	Ground of external
11	CLK	NPGA_EXSTB	Bank select 0
12	8Q	ADC_SELECT_C	Selector C
13	7Q	ADC_SELECT_B	Selector B
14	6Q	ADC_SELECT_A	Selector A
15	5Q	SBRY	Speaker relay SB
16	4Q	HPRY	Headphone relay
17	3Q	CSRY	Speaker relay C/SW
18	2Q	MRYB	Speaker relay F/B
19	1Q	MRYA	Speaker relay F/A
20	VCC	VCC	Power supply +3.3V

IC56:

SN74AHCT574AWR (DSP P.C.B.)

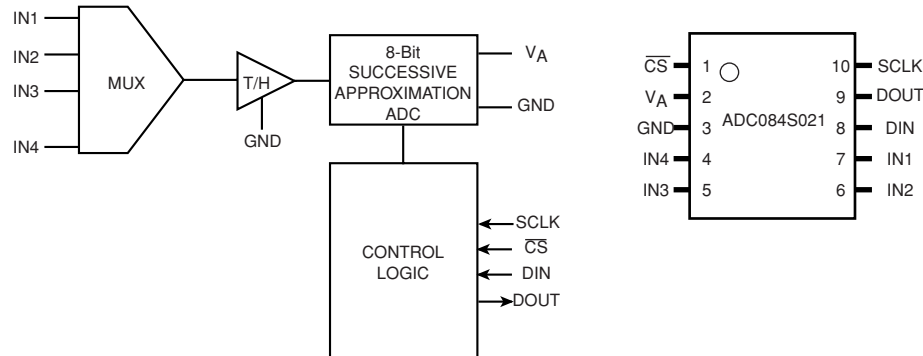
Octal edge-triggered D-type flip-flops with 3-state outputs



Pin No.	Port Name	Function Name	Detail of Function
1	/OE	/EXPE	Extended port enable
2	1D	D00	Data bus 00
3	2D	D01	Data bus 01
4	3D	D02	Data bus 02
5	4D	D03	Data bus 03
6	5D	D04	Data bus 04
7	6D	D05	Data bus 05
8	7D	D06	Data bus 06
9	8D	D07	Data bus 07
10	GND	DGND	Ground of external
11	CLK	NPGA_EXSTB	Bank select 0
12	8Q	5VIDEO_VIA	Video input selector A
13	7Q	5VIDEO_VIB	Video input selector B
14	6Q	5VIDEO_VIC	Video input selector C
15	5Q	/5VIDEO_MTMON	Monitor output inhibit
16	4Q	/5VIDEO_CMON	Component output inhibit
17	3Q	5VIDEO_CBYPASS	Component bypass
18	2Q	5VIDEO_CMP1	Component select 1
19	1Q	5VIDEO_CMP0	Component select 2
20	VCC	VCC	Power supply +5V

- **Microprocessor ADC select port**

IC81: ADC084S021C1MM (DSP P.C.B.)
4-channel, 200 kSPS, 8-bit A/D converter



Pin No.	Port Name	Function Name	Detail of Function
1	/CS	/ADC_CS	CS for microprocessor
2	VA	+3.3S	Power supply +3.3V
3	GND	DGND	Ground of external
4	IN4	ADC_COM2	SPI bus COM (IC83)
5	IN3	ADC_COM1	SPI bus COM (IC82)
6	IN2	KEY1	Key input 1
7	IN1	KEY0	Key input 0
8	DIN	SPIMI	Master output/slave input
9	DOUT	SPIMO	Master input/slave output
10	SCLK	SPISCK	SPI clock

Key detection for A/D port

Key input (A/D) pull-up resistance 10 k-ohms

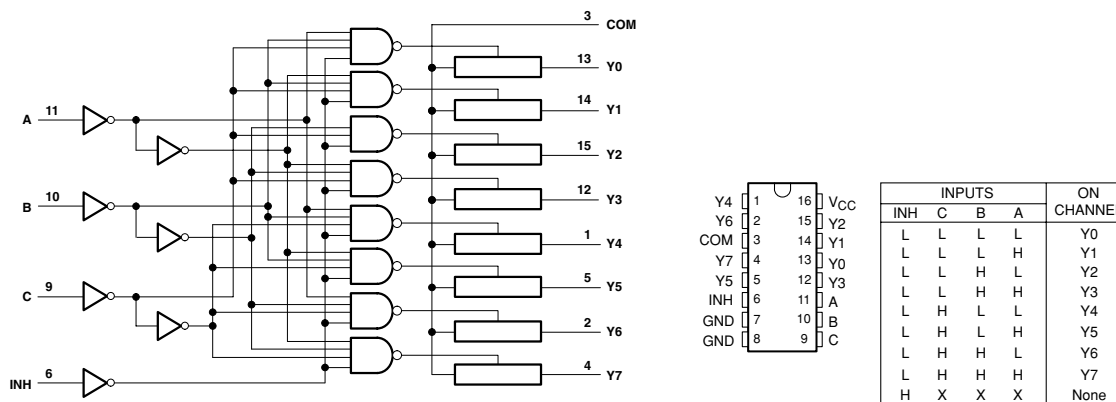
U, C, R, T, K, A, G, E, F, L models

Ohm	0	+ 1.0 k	+ 1.0 k	+ 1.5 k	+ 2.2 k	+ 2.2 k	+ 3.3 k	+ 4.7 k	+ 6.8 k	+ 10.0 k	+ 22.0 k
V	0–0.2	0.2–0.4	0.4–0.7	0.7–1.0	1.0–1.3	1.3–1.6	1.6–1.9	1.9–2.1	2.1–2.4	2.4–2.7	2.7–3.0
KEY INPUT 0 (7 pin)	–	SPEAKERS A/B/OFF	tone CONTROL	PROGRAM <	PROGRAM >	STRAIGHT EFFECT	A/B/C/D/E	BAND	ZONE2 ON/OFF	EDIT PRESET/TUNING	SYSTEM OFF
KEY INPUT 1 (6 pin)	–	–	AUDIO SELECT	INPUT >	INPUT <	DIRECT	PRESET/TUNING <	PRESET/TUNING >	MEMORY	INFO TUNING AUTO/MAN'L	ZONE CONTROL

B model

Ohm	0	+ 1.0 k	+ 1.0 k	+ 1.5 k	+ 2.2 k	+ 2.2 k	+ 3.3 k	+ 4.7 k	+ 6.8 k	+ 10.0 k	+ 22.0 k
V	0–0.2	0.2–0.4	0.4–0.7	0.7–1.0	1.1–1.3	1.3–1.6	1.6–1.9	1.9–2.1	2.1–2.4	2.4–2.7	2.7–2.9
KEY INPUT 0 (7 pin)	–	SPEAKERS A/B/OFF	tone CONTROL	PROGRAM <	PROGRAM >	STRAIGHT EFFECT	–	–	–	–	–
KEY INPUT 1 (6 pin)	–	–	AUDIO SELECT	INPUT >	INPUT <	DIRECT	–	–	–	–	–

IC82, IC83: SN74LV4051APWR (DSP P.C.B.)
8-channel analog multiplexers/demultiplexers



IC82

Pin No.	Port Name	Function Name	Detail of Function
1	Y4	/TUNER_TUNED	Tuner tuned detection
2	Y6	XM_ANT	XM antenna
3	COM	ADC_COM1	SPI bus COM (IC81)
4	Y7	DOCK_ID	DOCK detection (Normal DOCK or Bluetooth adapter)
5	Y5	IP_DET	iPod detection
6	INH	DGND	Ground of external
7	GND	DGND	Ground of external
8	GND	DGND	Ground of external
9	C	SELECT C	ADC selector C
10	B	SELECT B	ADC selector B
11	A	SELECT A	ADC selector A
12	Y3	THM	Temperature detection
13	Y0	DEST1	Destination detection
14	Y1	PRV1	Power supply protection 1
15	Y2	PRD	AMP DC protection
16	Vcc	+3.3S	Power supply +3.3V

DOCK detection for AD port (IC82 AD converter pin no. 4)

Pull-up resistance 10 k-ohms

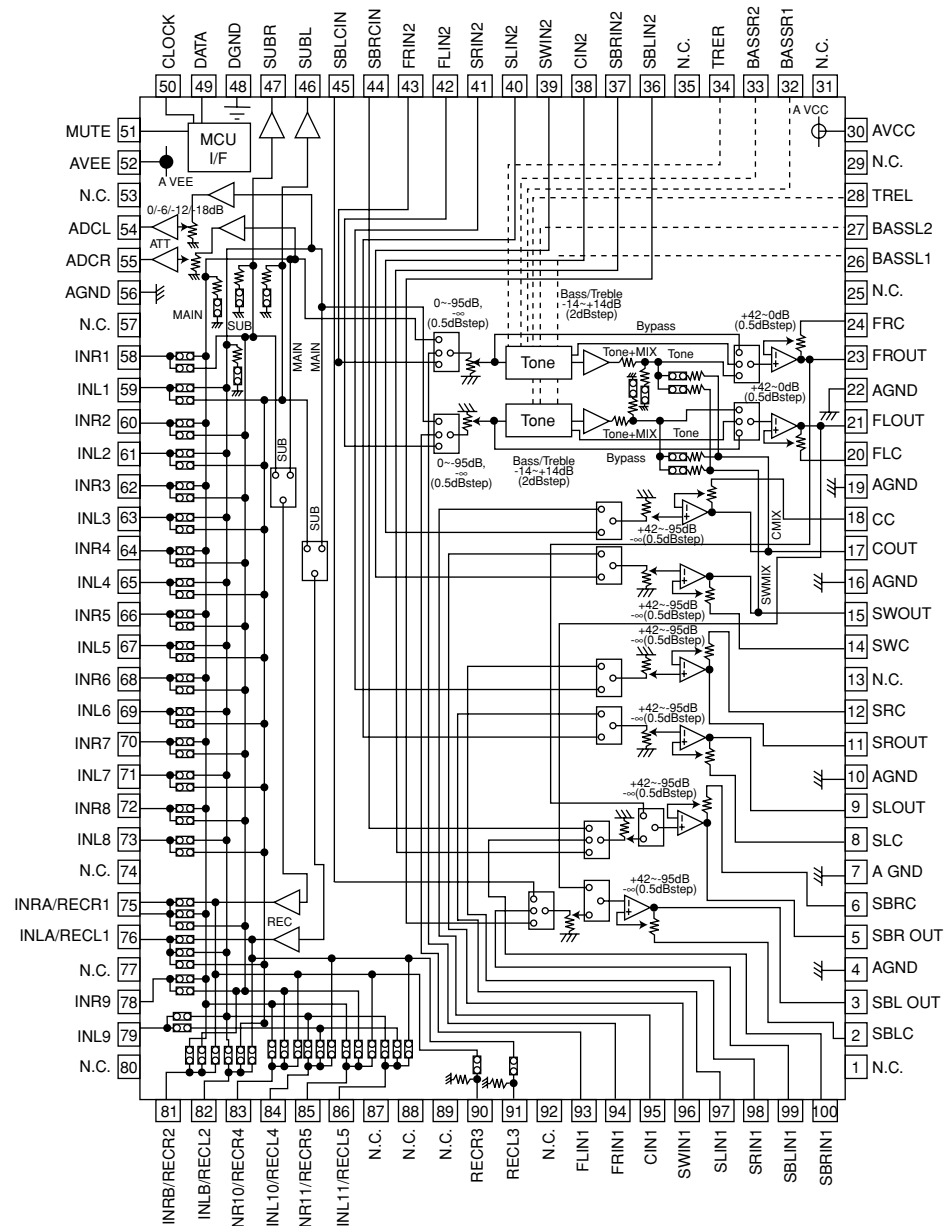
DOCK connector	DOCK (Bluetooth)	Reserved	Reserved	DOCK (iPod)	Reserved	(Development)	No connect
Ohm	0.56k	2.7k	5.6k	10.0k	18.0k	39.0k	—
DKID (Pin no. 21)	5-25	50-60	85-100	120-140	150-170	195-210	245-255

IC83

	Port Name	Function Name	Detail of Function
1	Y4	/TUNER_STEREO	Tuner stereo detection
2	Y6	XM_LINK	XM link
3	COM	ADC_COM2	SPI bus COM (IC81)
4	Y7	/HP_DET	Headphone detect
5	Y5	IP_AP	iPod
6	INH	DGND	Ground of external
7	GND	DGND	Ground of external
8	GND	DGND	Ground of external
9	C	SELECT C	ADC selector C
10	B	SELECT B	ADC selector B
11	A	SELECT A	ADC selector A
12	Y3	PRI	AMP current protection
13	Y0	DEST2	—
14	Y1	PRV2	Power supply protection 2
15	Y2	PLDET	Output voltage of power amplifier detection
16	Vcc	+3.3S	Power supply +3.3V

IC401 : R2A15218FP (MAIN P.C.B.)

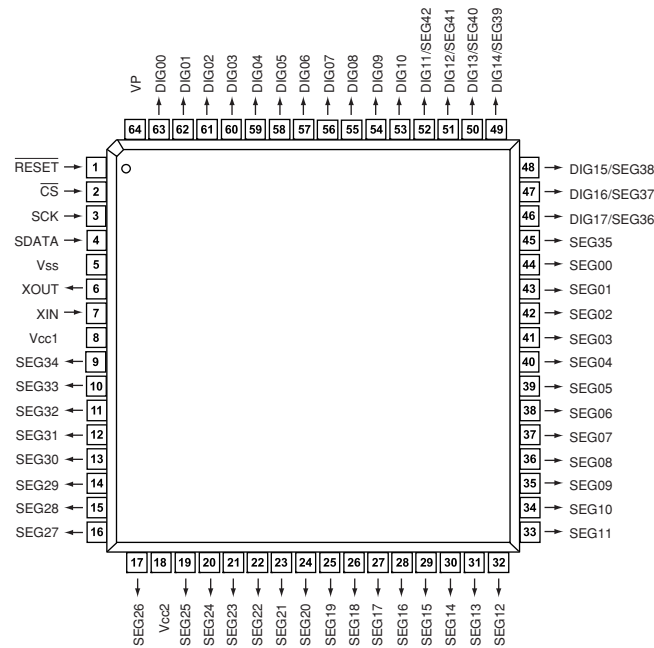
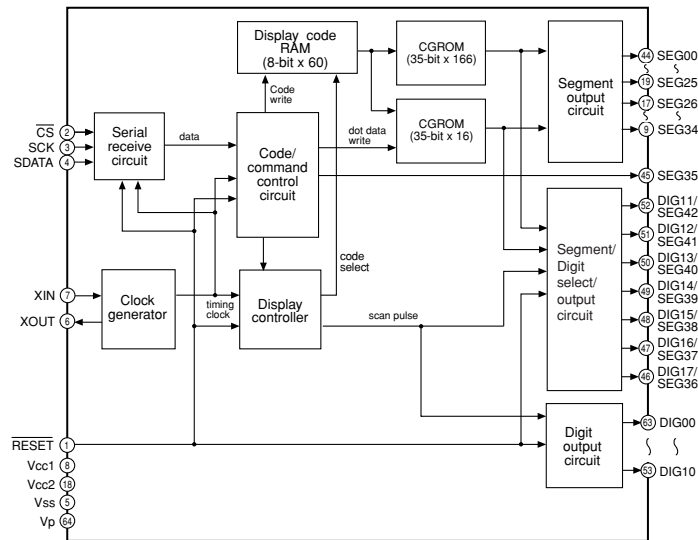
8 ch electronic volume with 11 input selector and tone control



Pin No.	Function Name	Detail of Function
1	NC	
2	SBLC	Connects capacitor for reducing click noise of L/R/C/SW/SL/SR/SBL/SBR channel volume
3	SBL OUT	Output pin of FL/FR/C/SW/SL/SR/SBL/SBR channel
4	AGND	Analog ground of internal circuit
5	SBR OUT	Output pin of FL/FR/C/SW/SL/SR/SBL/SBR channel
6	SBRC	Connects capacitor for reducing click noise of L/R/C/SW/SL/SR/SBL/SBR channel volume
7	AGND	Analog ground of internal circuit
8	SLC	Connects capacitor for reducing click noise of L/R/C/SW/SL/SR/SBL/SBR channel volume
9	SLOUT	Output pin of FL/FR/C/SW/SL/SR/SBL/SBR channel
10	AGND	Analog ground of internal circuit
11	SROUT	Output pin of FL/FR/C/SW/SL/SR/SBL/SBR channel
12	SRC	Connects capacitor for reducing click noise of L/R/C/SW/SL/SR/SBL/SBR channel volume
13	NC	
14	SWC	Connects capacitor for reducing click noise of L/R/C/SW/SL/SR/SBL/SBR channel volume
15	SWOUT	Output pin of FL/FR/C/SW/SL/SR/SBL/SBR channel
16	AGND	Analog ground of internal circuit
17	COUT	Output pin of FL/FR/C/SW/SL/SR/SBL/SBR channel
18	CC	Connects capacitor for reducing click noise of L/R/C/SW/SL/SR/SBL/SBR channel volume
19	AGND	Analog ground of internal circuit
20	FLC	Connects capacitor for reducing click noise of L/R/C/SW/SL/SR/SBL/SBR channel volume
21	FLOUT	Output pin of FL/FR/C/SW/SL/SR/SBL/SBR channel
22	AGND	Analog ground of internal circuit
23	FROUT	Output pin of FL/FR/C/SW/SL/SR/SBL/SBR channel
24	FRC	Connects capacitor for reducing click noise of L/R/C/SW/SL/SR/SBL/SBR channel volume
25	NC	
26	BASSL1	Frequency characteristic setting pin of L/R channel tone control (Bass)
27	BASSL2	
28	TREL	Frequency characteristic setting pin of L/R channel tone control (Treble)
29	NC	
30	AVCC	Positive power supply to internal circuit
31	NC	
32	BASSR1	Frequency characteristic setting pin of L/R channel tone control (Bass)
33	BASSR2	
34	TRER	Frequency characteristic setting pin of L/R channel tone control (Treble)
35	NC	
36	SBLIN2	Input pin of L/R/C/SW/SL/SR/SBL/SBR channel (Multi IN 1/2)
37	SBRIN2	
38	CIN2	
39	SWIN2	
40	SLIN2	
41	SRIN2	
42	FLIN2	
43	FRIN2	
44	SBRCIN	Input pin for SBL/SBR channel volume
45	SBLCIN	
46	SUBL	Output pin for L/R channel SUB output
47	SUBR	
48	DGND	Digital ground of internal circuit
49	DATA	Input pin of control data
50	CLOCK	Input pin of control clock

Pin No.	Function Name	Detail of Function
51	MUTE	Outside mute control pin
52	AVEE	Negative power supply to internal circuit
53	NC	
54	ADCL	Output pin for L/R channel ADC
55	ADCR	
56	AGND	Analog ground of internal circuit
57	NC	
58	INR1	Input pin of L/R channel (Input selector)
59	INL1	
60	INR2	
61	INL2	
62	INR3	
63	INL3	
64	INR4	
65	INL4	
66	INR5	
67	INL5	
68	INR6	
69	INL6	
70	INR7	
71	INL7	
72	INR8	
73	INL8	
74	NC	
75	INRA/RECR1	Input pin of L/R channel (Input selector) / Output pin for L/R channel REC output
76	INLA/RECL1	
77	NC	
78	INR9	Input pin of L/R channel (Input selector)
79	INL9	
80	NC	
81	INRB/RECR2	Input pin of L/R channel (Input selector) / Output pin for L/R channel REC output
82	INLB/RECL2	
83	INR10/RECR4	
84	INL10/RECL4	
85	INR11/RECR5	
86	INL11/RECL5	
87	NC	
88	NC	
89	NC	
90	RECR3	Output pin for L/R channel REC output
91	RECL3	
92	NC	
93	FLIN1	Input pin of L/R/C/SW/SL/SR/SBL/SBR channel (Multi IN 1/2)
94	FRIN1	
95	CIN1	
96	SWIN1	
97	SLIN1	
98	SRIN1	
99	SBLIN1	
100	SBRIN1	

IC603: M66003-0131FP-R (OPERATION P.C.B.)
18 digit 5x7 segment VFD controller/driver



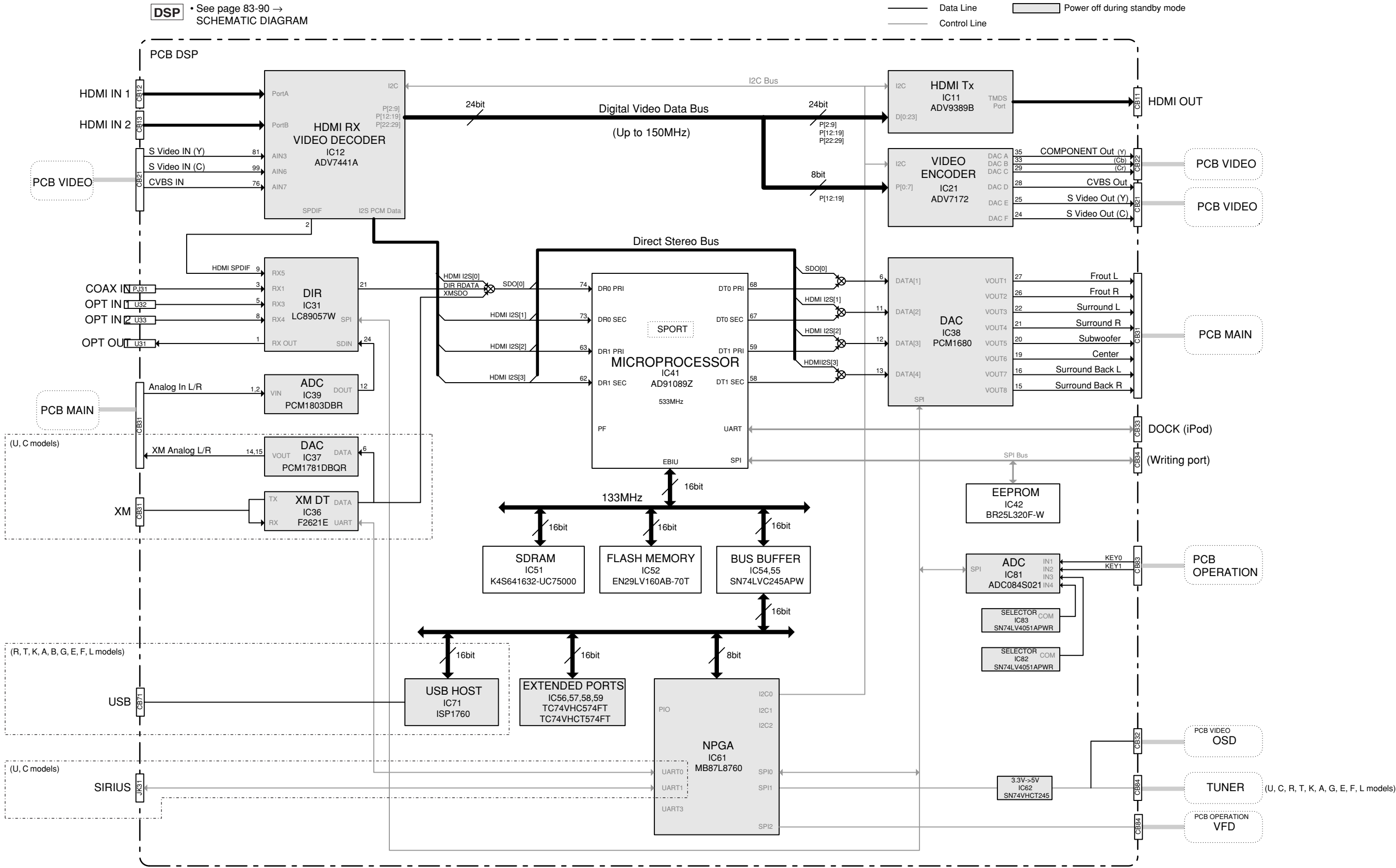
Pin No.	Port Name	Function Name	I/O	Detail of Function
1	/RESET	Reset	Reset input	When "L", M66003 is initialized
2	/CEFL	CS	Chip select input	When "L", communication with the MCU is possible When "H", any instruction from the MCU is neglected
3	CKFL	SCK	Shift clock input	Serial input data is taken and shifted by the positive edge of SCK
4	DTFL	SDATA	Serial data input	
5	VSS	Vss		GND (0V)
6	XOUT	XOUT	Clock output	When use as a CR oscillator, connect external resistor and capacitor / When use an external clock, input external clock to XIN, and XOUT must be opened
7	XIN	XIN	Clock input	
8	VDD	Vcc1		Positive power supply for internal logic
9	P1I	SEG34	Segment output	Positive power supply for DIG and SEG outputs
10	P2	SEG33	Segment output	
11	P3	SEG32	Segment output	
12	P4	SEG31	Segment output	
13	P5	SEG30	Segment output	
14	P6	SEG29	Segment output	
15	P7	SEG28	Segment output	
16	P8	SEG27	Segment output	
17	P9	SEG26	Segment output	
18	VDD	Vcc2		Connect to segment (anode) pins of VFD
19	P10	SEG25	Segment output	
20	P11	SEG24	Segment output	
21	P12	SEG23	Segment output	
22	P13	SEG22	Segment output	
23	P14	SEG21	Segment output	
24	P15	SEG20	Segment output	
25	P16	SEG19	Segment output	
26	P17	SEG18	Segment output	
27	P18I	SEG17	Segment output	
28	P19	SEG16	Segment output	
29	P20	SEG15	Segment output	
30	P21	SEG14	Segment output	
31	P22	SEG13	Segment output	
32	P23	SEG12	Segment output	
33	P24	SEG11	Segment output	
34	P25	SEG10	Segment output	
35	P26	SEG09	Segment output	
36	P27	SEG08	Segment output	
37	P28	SEG07	Segment output	
38	P29	SEG06	Segment output	
39	P30	SEG05	Segment output	
40	P31	SEG04	Segment output	
41	P32	SEG03	Segment output	
42	P33	SEG02	Segment output	
43	P34	SEG01	Segment output	
44	P35	SEG00	Segment output	
45	P36	SEG35	Segment output	
46	P37	DIG17/SEG36	Segment output	Connect to digit (grid) pins of VFD
47	G17I	DIG16/SEG37	Digit output	
48	G16I	DIG15/SEG38	Digit output	
49	G15I	DIG14/SEG39	Digit output	
50	G14	DIG13/SEG40	Digit output	
51	G13	DIG12/SEG41	Digit output	
52	G12	DIG11/SEG42	Digit output	
53	G11	DIG10	Digit output	
54	G10	DIG09	Digit output	
55	G9	DIG08	Digit output	
56	G8	DIG07	Digit output	
57	G7	DIG06	Digit output	
58	G6	DIG05	Digit output	
59	G5	DIG04	Digit output	
60	G4	DIG03	Digit output	
61	G3	DIG02	Digit output	
62	G2	DIG01	Digit output	
63	G1	DIG00	Digit output	
64	VP	Vp		Negative power supply to pull down

MEMO

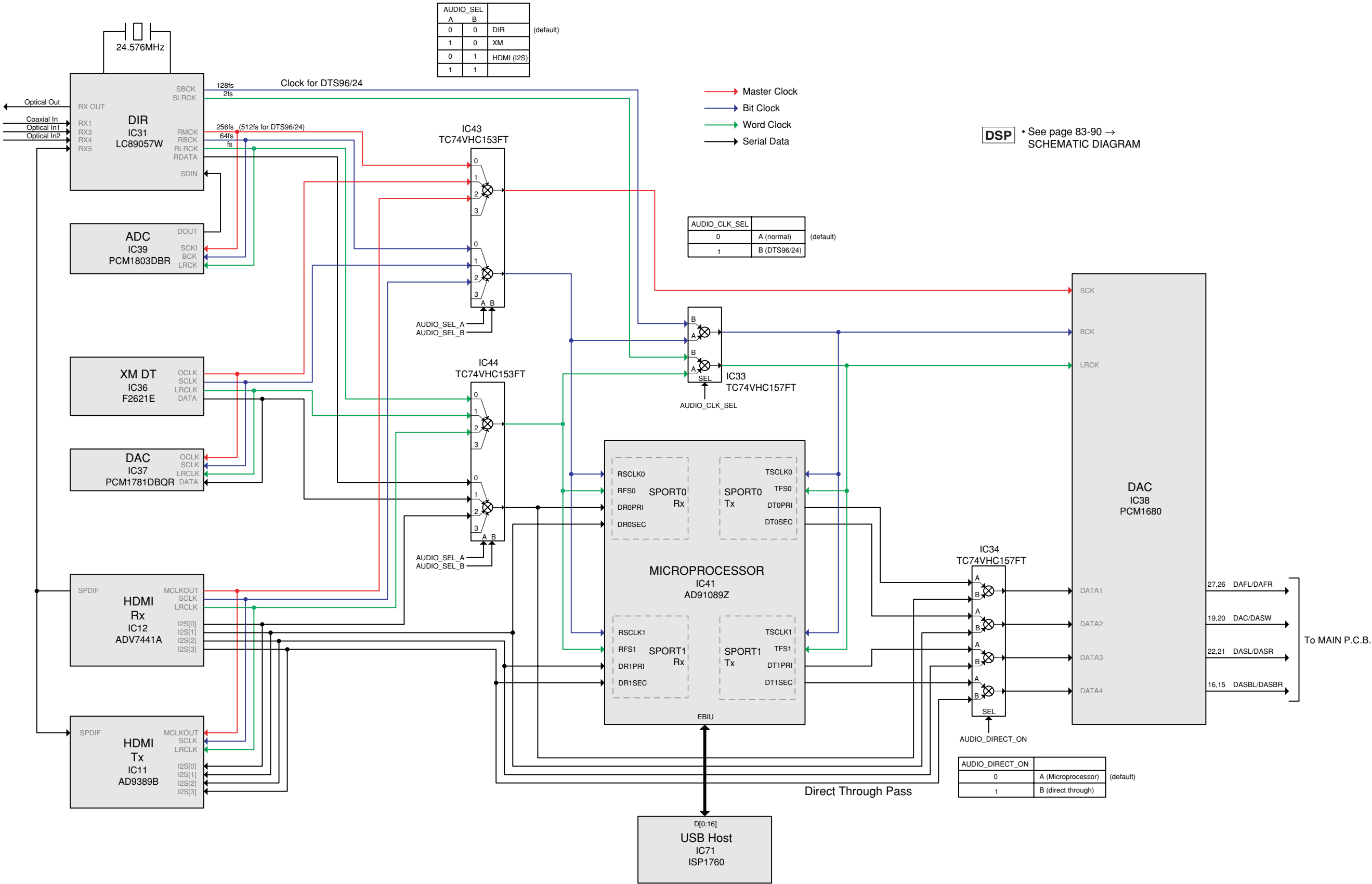
RX-V563/HTR-6150/
DSP-AX563

BLOCK DIAGRAMS

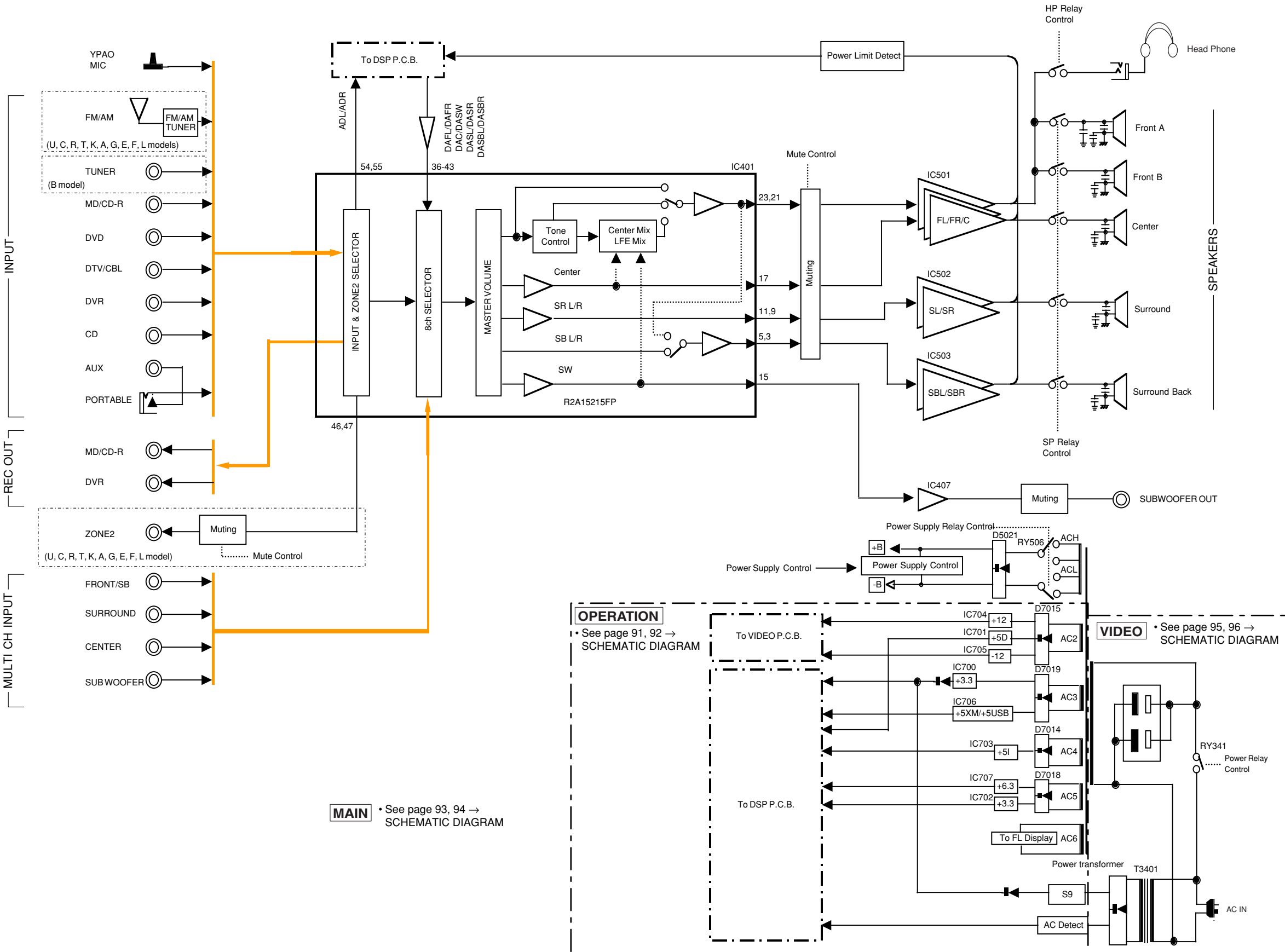
AUDIO (DIGITAL) SECTION BLOCK DIAGRAM



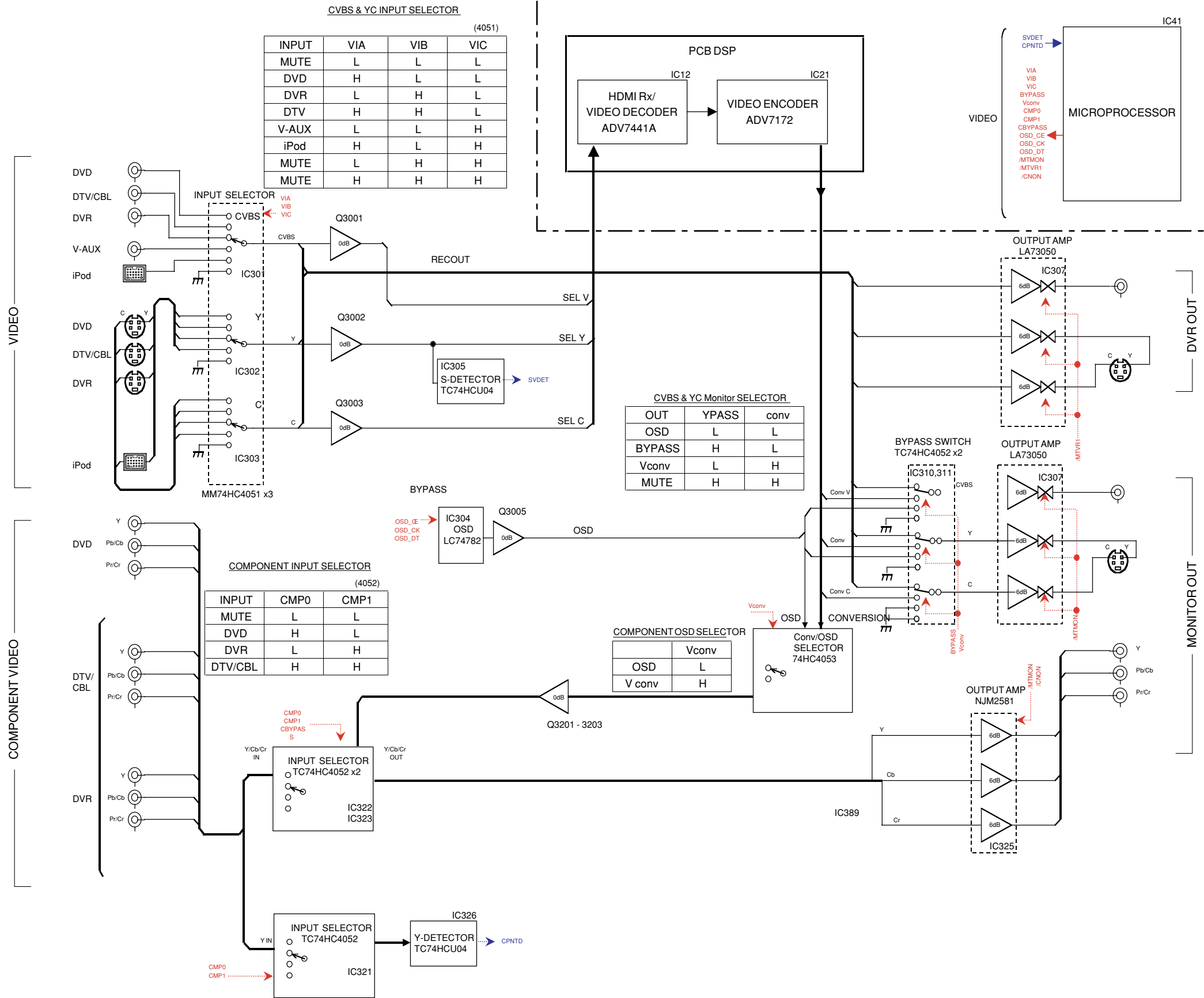
DSP CONTROL SECTION BLOCK DIAGRAM



AUDIO (ANALOG) / POWER SUPPLY SECTION BLOCK DIAGRAM



VIDEO SECTION BLOCK DIAGRAM



DSP • See page 83-90 → SCHEMATIC DIAGRAM

VIDEO • See page 95, 96 → SCHEMATIC DIAGRAM

1

2

3

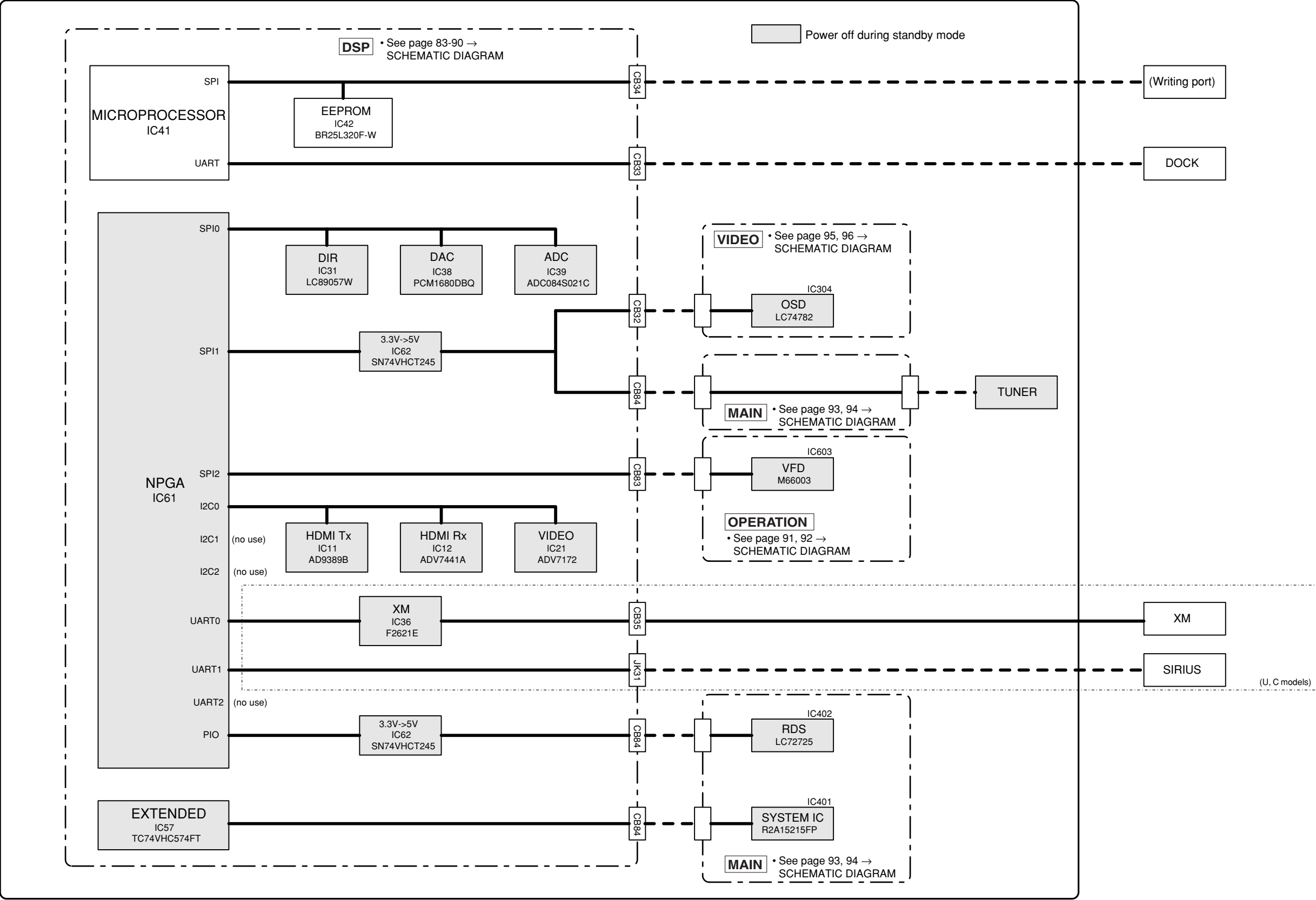
4

5

6

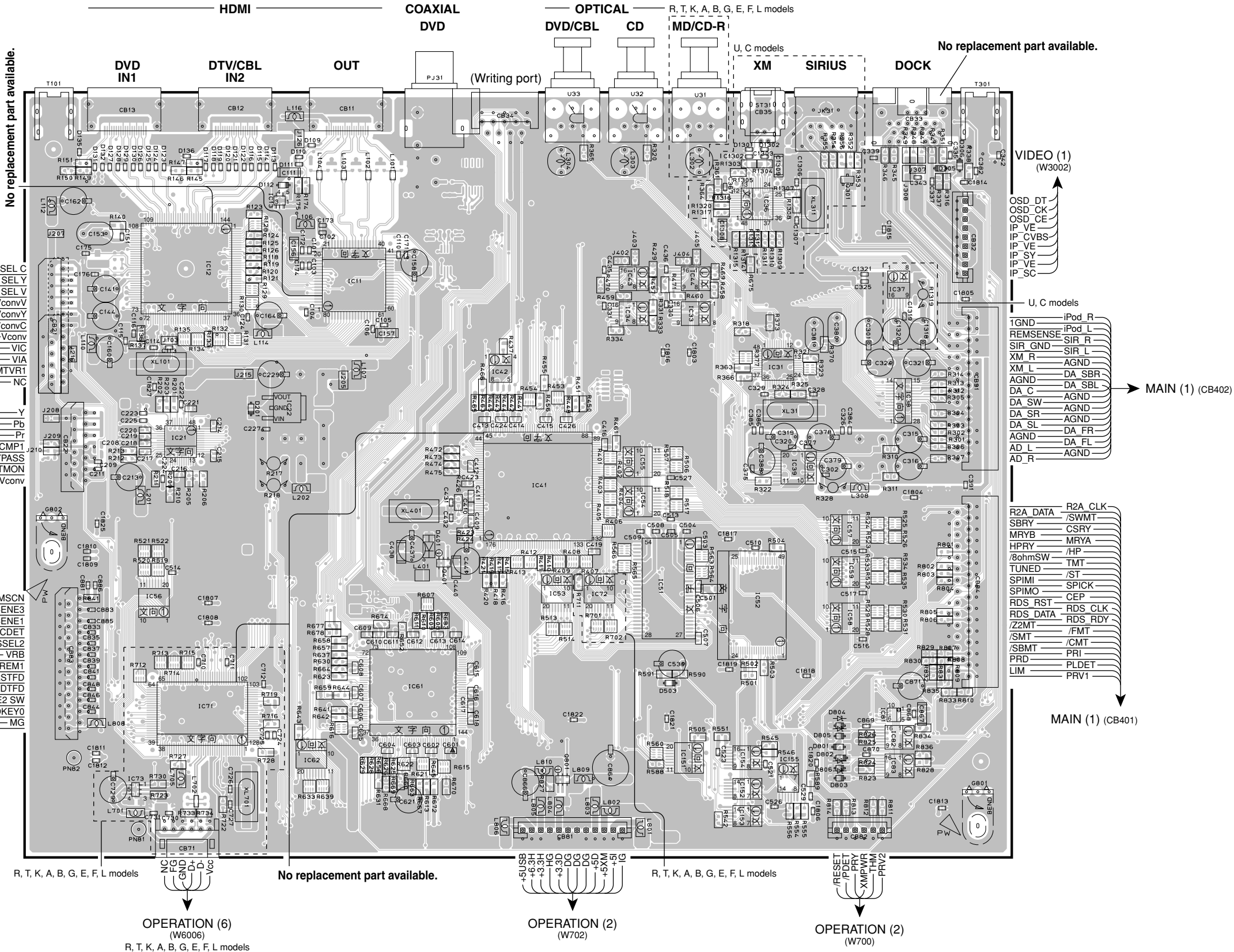
7

CONTROL SECTION BLOCK DIAGRAM



PRINTED CIRCUIT BOARDS

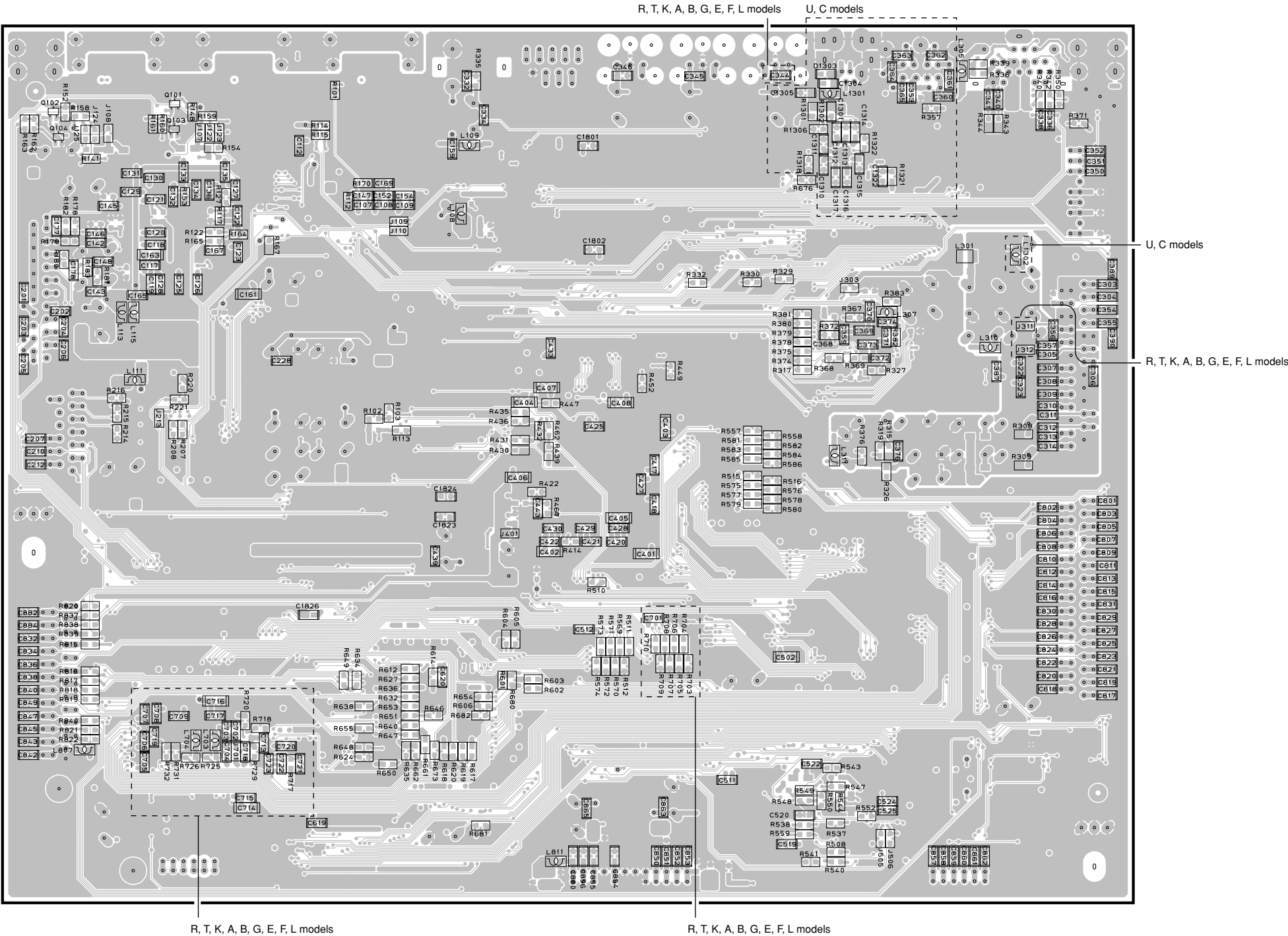
DSP P.C.B. (Side A)



Semiconductor Location

Ref no.	Location	Ref no.	Location
D109	E2	IC12	D3
D110	D2	IC13	D3
D111	D2	IC21	D4
D112	D2	IC22	D4
D113	D2	IC31	G3
D114	D2	IC33	G3
D115	D2	IC34	F3
D116	D2	IC36	G3
D117	D2	IC37	H3
D118	D2	IC38	H4
D119	D2	IC39	G4
D120	D2	IC41	F4
D121	D2	IC42	F3
D122	D2	IC43	F3
D123	D2	IC44	G3
D124	D2	IC51	G5
D125	D2	IC52	G5
D126	D2	IC53	F5
D127	C2	IC54	F4
D128	C2	IC55	F4
D129	C2	IC56	D5
D130	D2	IC57	H4
D131	C2	IC58	H5
D132	C2	IC59	H5
D135	C2	IC61	E5
D136	D2	IC62	E6
D201	D4	IC71	D5
D305	H2	IC72	F5
D306	H2	IC73	D6
D401	E4	IC81	H5
D503	G5	IC82	H6
D801	H6	IC83	H6
D802	H6	IC151	G6
D803	H6	IC152	G6
D804	H6	IC153	G6
D805	H6	IC154	G6
D806	H6	IC155	G6
D1301	G2	Q301	H2
D1302	G2	Q401	E5
IC11	E3	Q801	F6

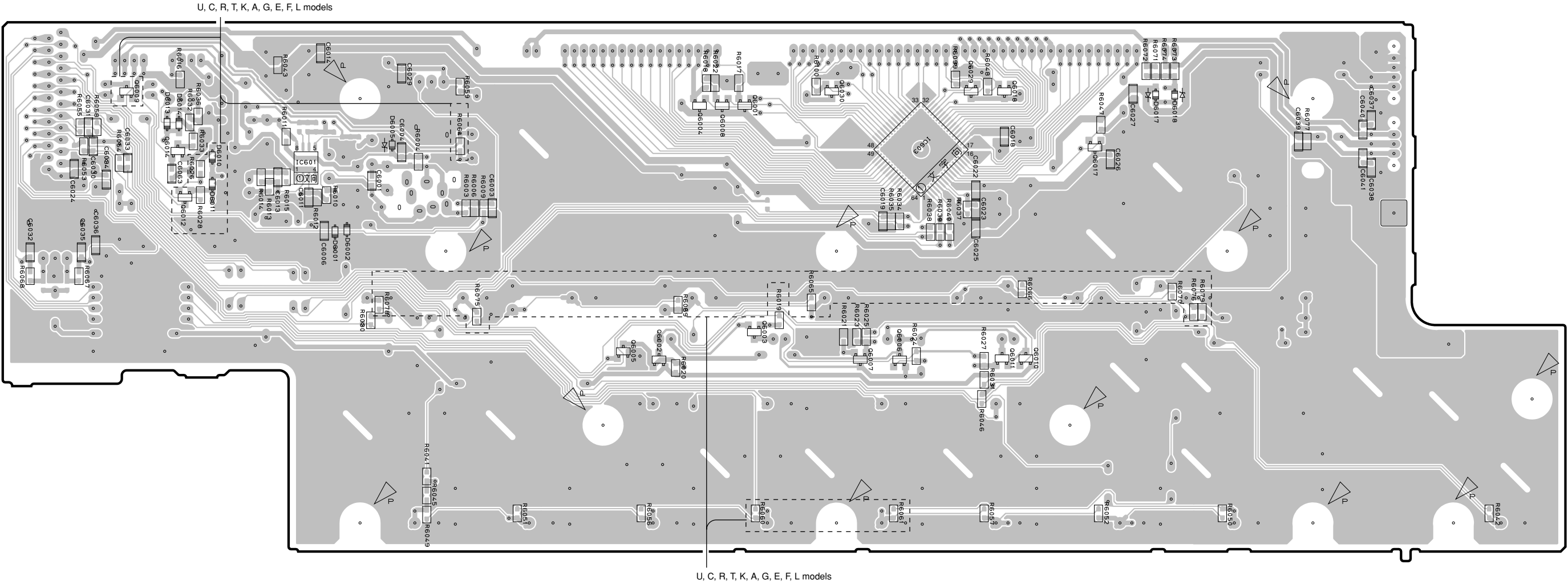
DSP P.C.B. (Side B)



• Semiconductor Location

Ref no.	Location
D1303	G2
Q101	D2
Q102	C2
Q103	D2
Q104	C2

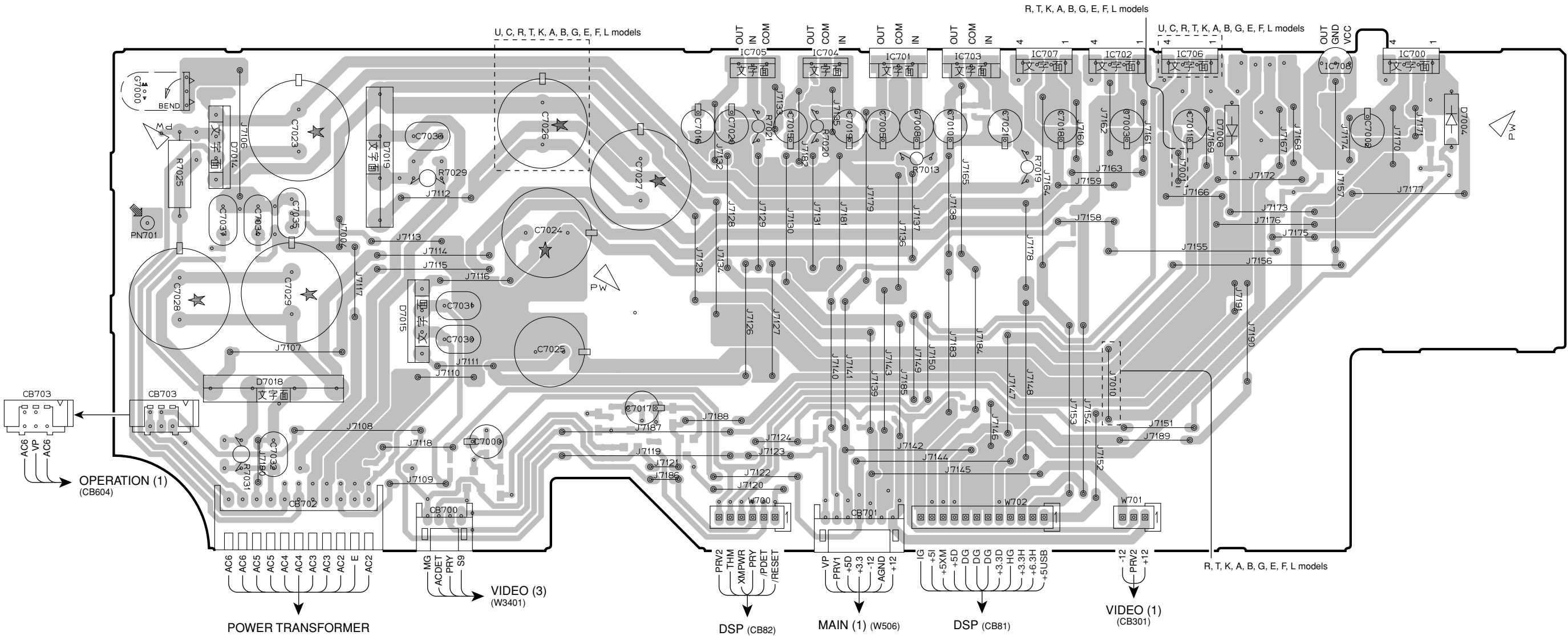
OPERATION (1) P.C.B. (Side B)



• Semiconductor Location

Ref no.	Location	Ref no.	Location	Ref no.	Location	Ref no.	Location
D6001	C4	IC601	C3	Q6008	E3	Q6030	F3
D6002	C4	IC603	G3	Q6009	B3		
D6005	D3	Q6001	F3	Q6010	G4		
D6010	C3	Q6002	E4	Q6011	G4		
D6011	C3	Q6003	F4	Q6012	B4		
D6013	B3	Q6004	E3	Q6014	B3		
D6014	B3	Q6005	E4	Q6017	H3		
D6017	H3	Q6006	G4	Q6018	G3		
D6018	H3	Q6007	F4	Q6029	G3		

OPERATION (2) P.C.B. (Side A)



• Semiconductor Location

Ref no.	Location	Ref no.	Location
D7004	I3	IC702	H2
D7008	H3	IC703	G2
D7014	B3	IC704	F2
D7015	C4	IC705	E2
D7018	C4	IC706	H2
D7019	C3	IC707	G2
IC700	I2	IC708	I2
IC701	F2		