

# AV RECEIVER/AV AMPLIFIER

# RX-V361/HTR-6030/DSP-AX361

## 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.

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# YAMAHA

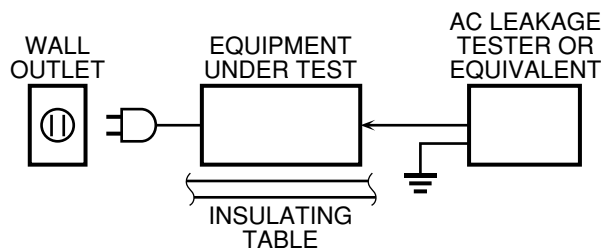
YAMAHA CORPORATION  
P.O.Box 1, Hamamatsu, Japan

07.02

RX-V361/HTR-6030/  
DSP-AX361

## ■ 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 0.15μF.



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



### For U model

#### “CAUTION”

“F2251: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 6A, 125V FUSE.”

### For C model

#### CAUTION

F2251: REPLACE WITH SAME TYPE 6A, 125V FUSE.

#### ATTENTION

F2251: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE 6A, 125V.

## 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.

## About lead free solder / 無鉛ハンダについて

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.

本機に搭載されているすべての基板およびハンダ付けによる接合部は無鉛ハンダでハンダ付けされています。

無鉛ハンダにはいくつかの種類がありますが、修理時には下記のような無鉛ハンダの使用を推奨します。

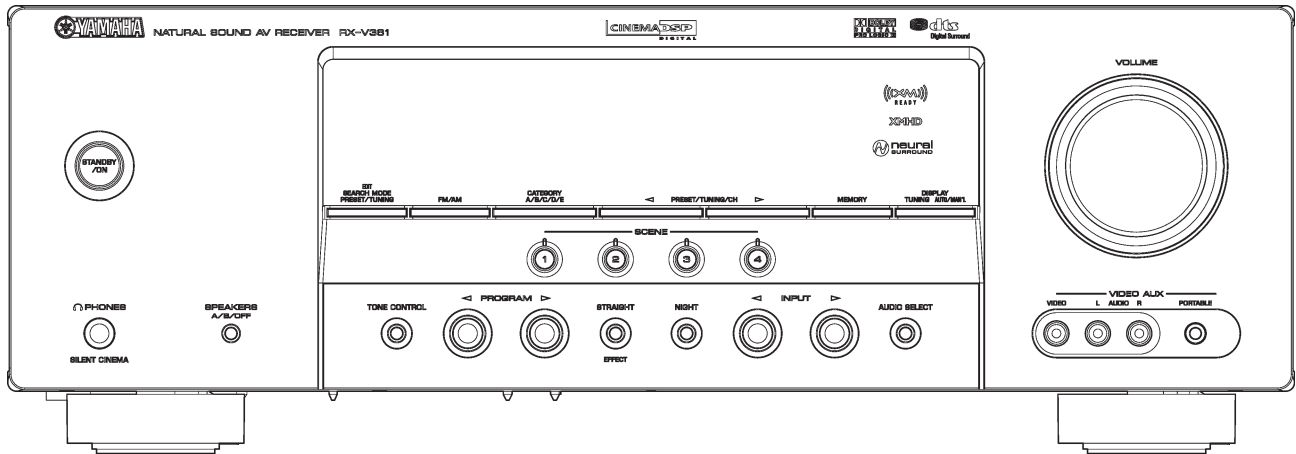
- ・ Sn+Ag+Cu (錫+銀+銅)
- ・ Sn+Cu (錫+銅)
- ・ Sn+Zn+Bi (錫+亜鉛+ビスマス)

### 注意：

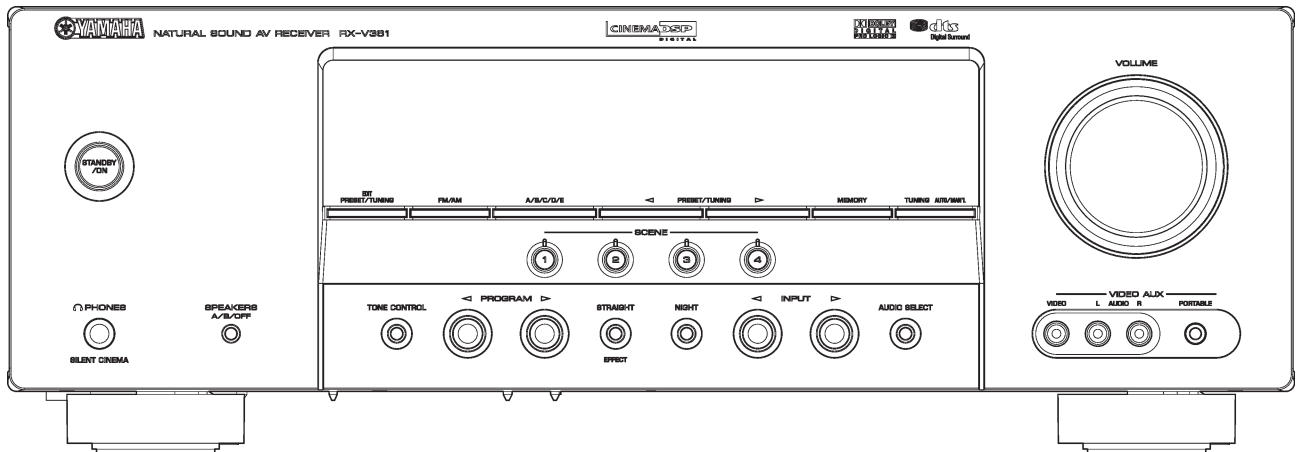
無鉛ハンダの融点温度は通常の鉛入りハンダに比べ30～40℃程度高くなっていますので、それぞれのハンダに合ったハンダごてをご使用ください。

## FRONT PANELS

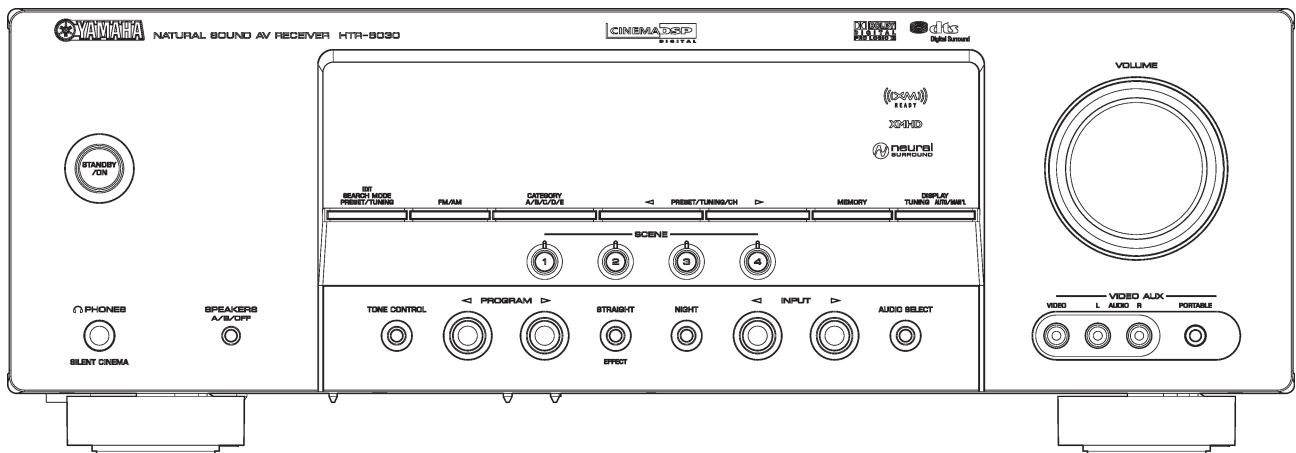
### RX-V361 (U, C models)



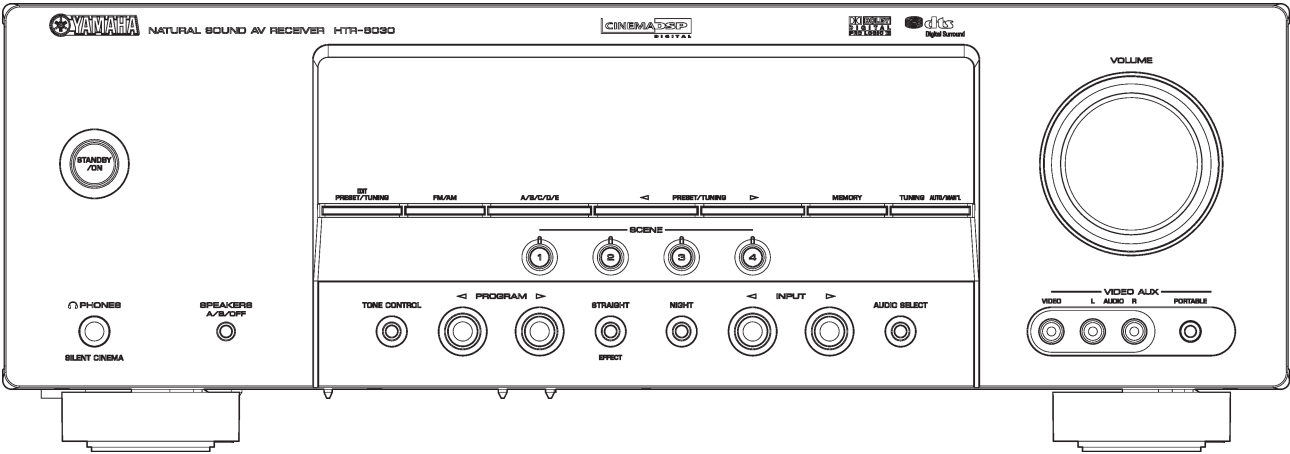
### RX-V361 (R, T, K, A, B, G, E, L models)



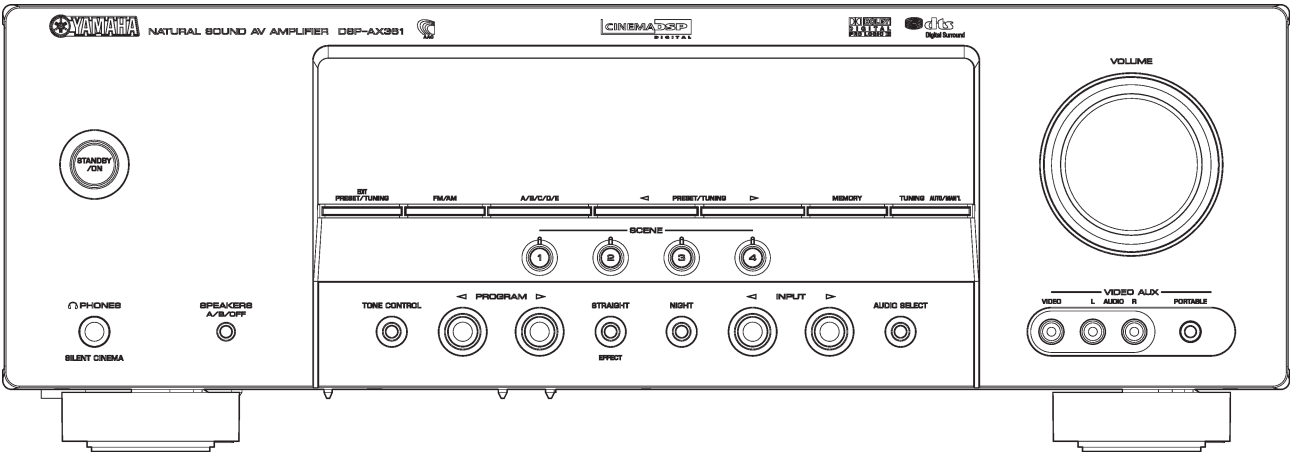
### HTR-6030 (U, C models)



HTR-6030 (R, T, K, A, G, E models)

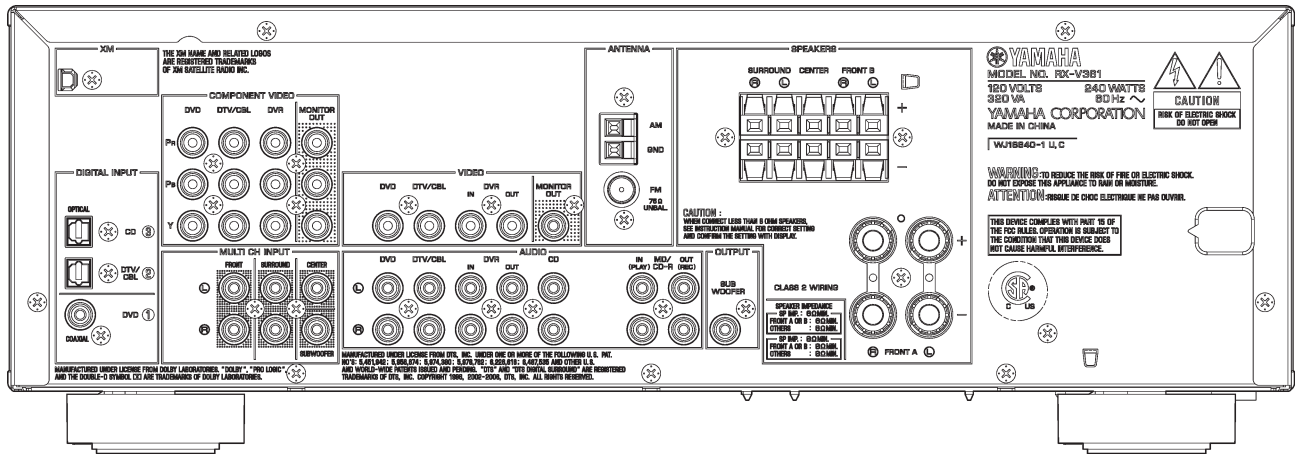


DSP-AX361 (J model)

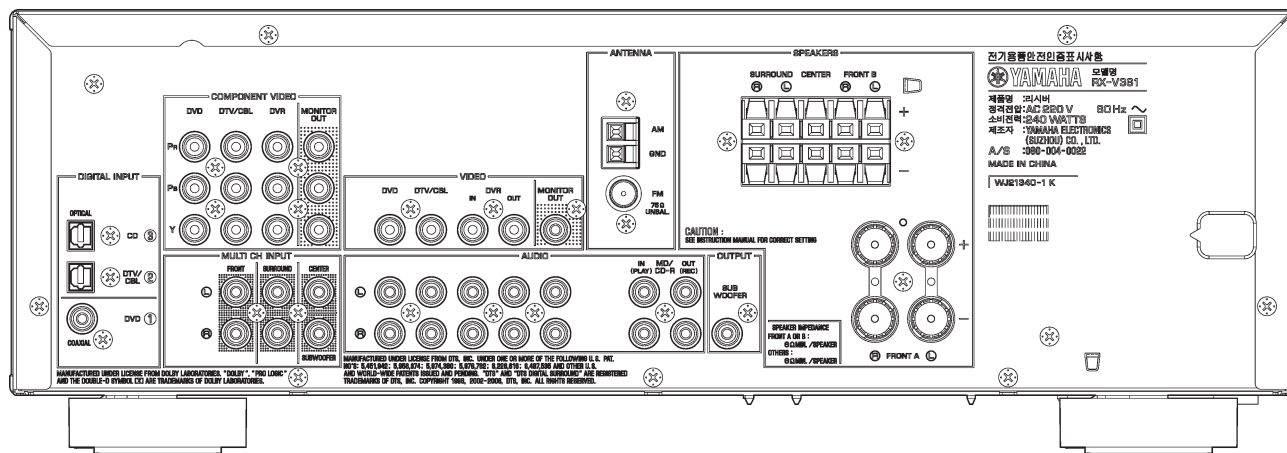


## REAR PANELS

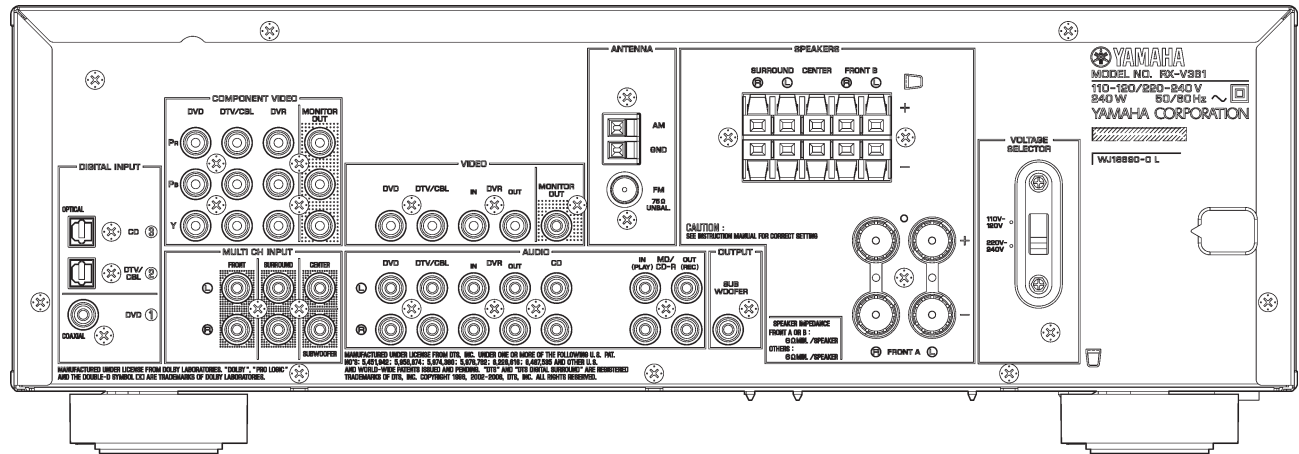
### RX-V361 (U, C models)



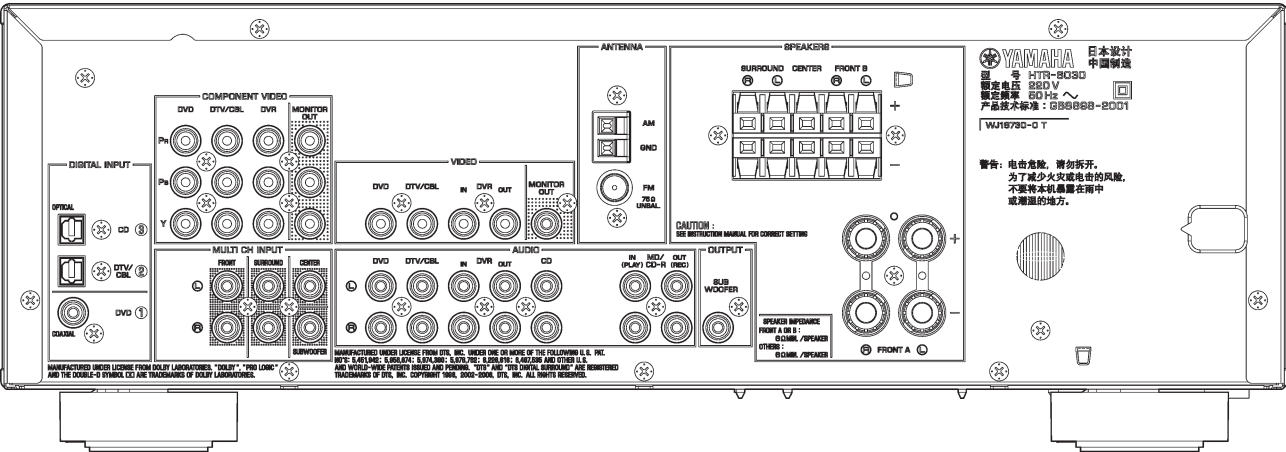
## RX-V361 (K model)



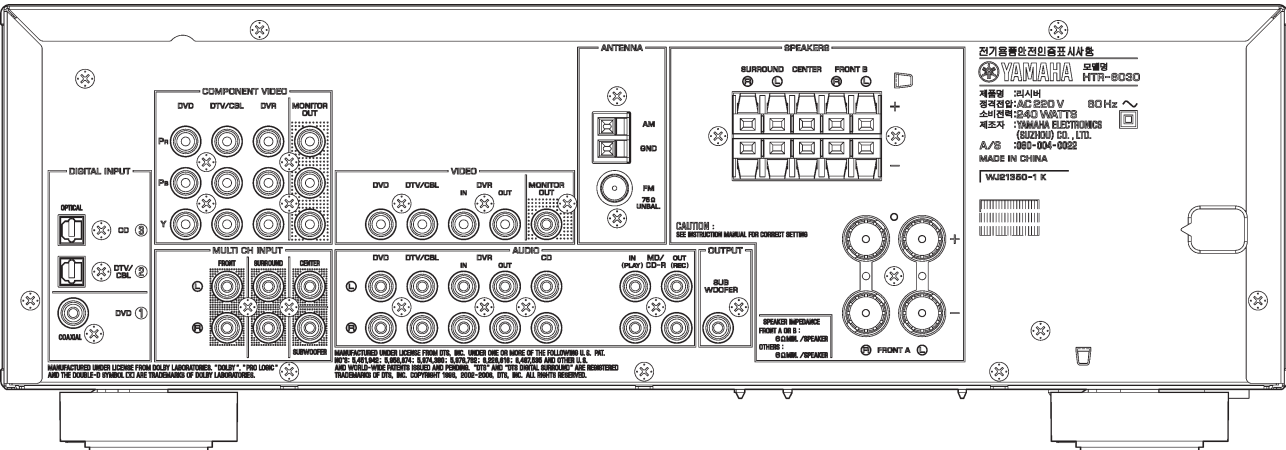
## RX-V361 (L model)



HTR-6030 (T model)

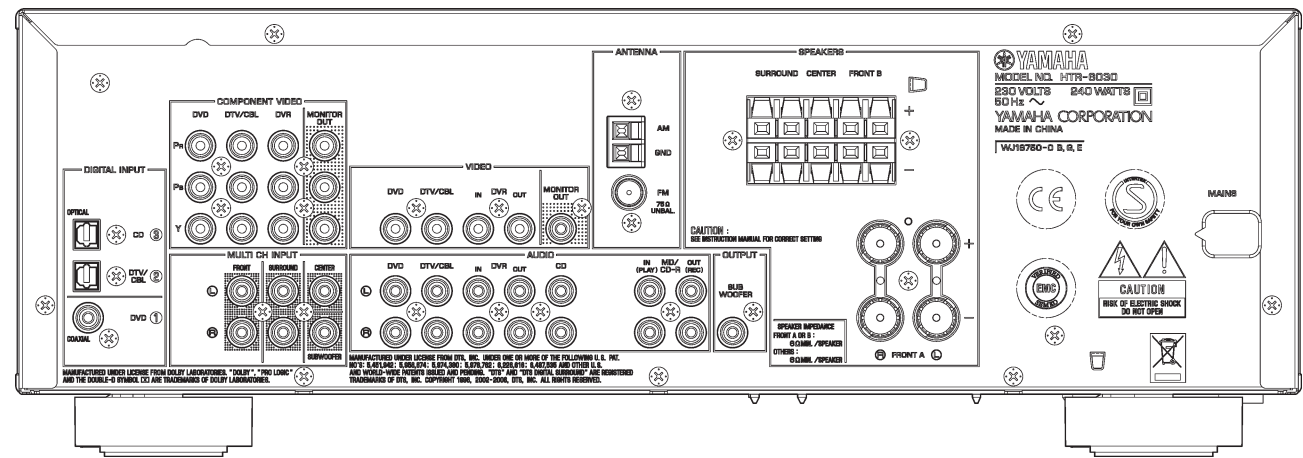


HTR-6030 (K model)

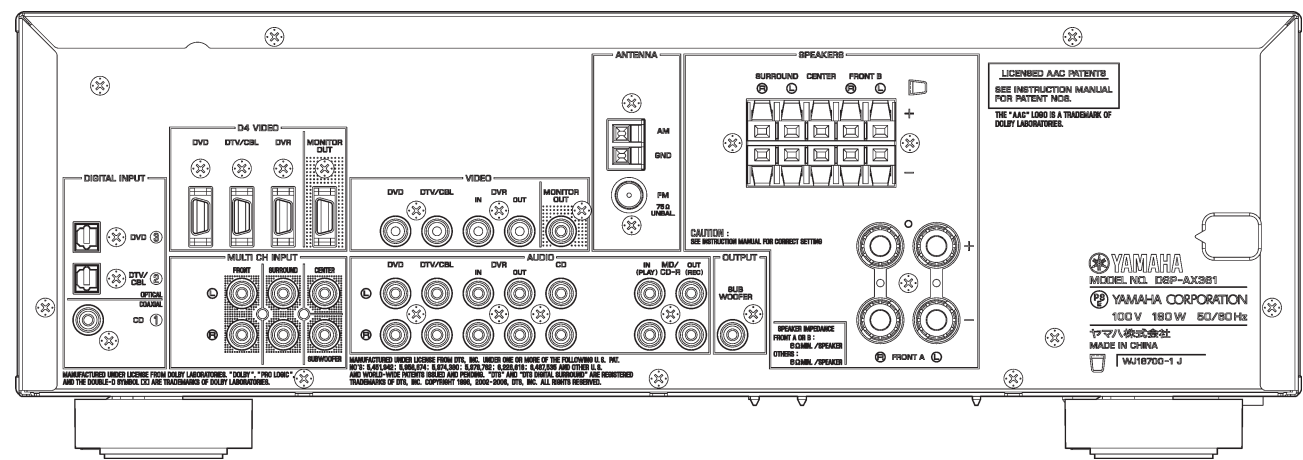


HTR-6030 (A model)

HTR-6030 (G, E models)

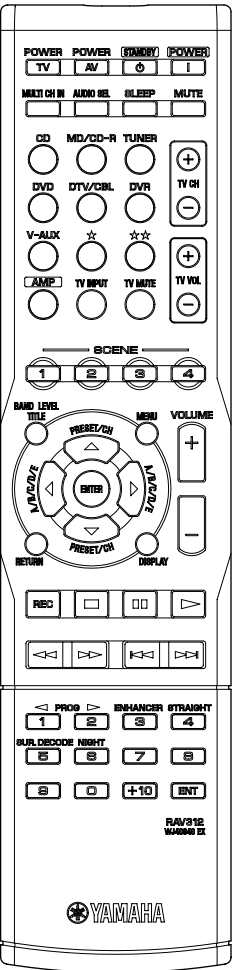
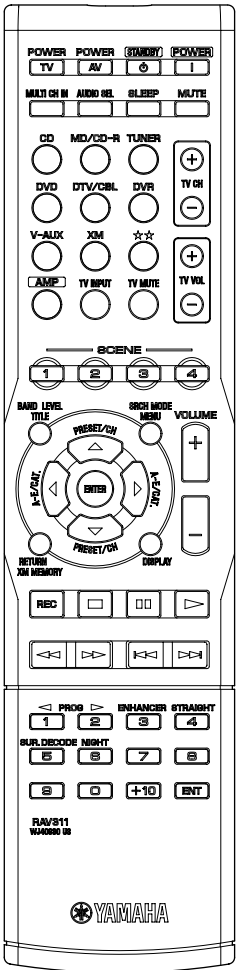


DSP-AX361 (J model)



■ REMOTE CONTROL PANELS

- RAV311  
RX-361 (U, C models)  
HTR-6030 (U, C models)
- RAV312  
RX-V361 (R, T, K, A, L models)  
HTR-6030 (R, T, K, A models)  
DSP-AX361 (J model)



- RAV28  
RX-V361 (B, G, E models)  
HTR-6030 (G, E models)



• SCENE TEMPLATE

SCENE name	Contents		Source	Program		Select (Default)	
				Mode	Sub-mode	U, C models	R, T, K, A, B, G, E, L, J models
DVD Viewing	DVD	Movie	DVD	STRAIGHT	–	O (SCENE 1)	O
DVD Movie Viewing			DVD	MOVIE THEATER	Movie Dramatic	O	O (SCENE 1)
DVD Live Viewing			DVD	MUSIC	Pop/Rock	O	O
DVR Viewing	DVR		DVR	MOVIE THEATER	Movie Dramatic	O	O
Music Disc Listening	DVD-Audio/SA-CD/CD	Music Disc	DVD	STEREO	2ch Stereo	O	O (SCENE 2)
Disc Listening			DVD	STEREO	5ch Stereo	O (SCENE 2)	O
CD Listening	CD	Music Disc	CD	STEREO	2ch Stereo	O	O
CD Music Listening			CD	STEREO	5ch Stereo	O	O
Radio Listening	TUNER/RADIO	FM/AM	FM/AM (TUNER)	MUSIC ENHANCER	5ch Stereo	O (SCENE 4)	O (SCENE 4)
XM Listening (U, C models)		XM	XM	MUSIC ENHANCER	5ch Stereo	O	–
TV Viewing	TV		DTV/CBL	STRAIGHT	–	O (SCENE 3)	O (SCENE 3)
TV Sports Viewing			DTV/CBL	ENTERTAINMENT	TV Sports	O	O
Game Playing	GAME		V-AUX	ENTERTAINMENT	Game	O	O

• SOUND/SURROUND SELECT MENU

Sound Field Parameters / 音場パラメーター

		DSP LEVEL MIN, [MID], MAX	MUSIC ENHANCER LOW, [HIGH]
STEREO	2ch Stereo		
	5ch 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. 5ch		O

Surround Decoders / サラウンド再生

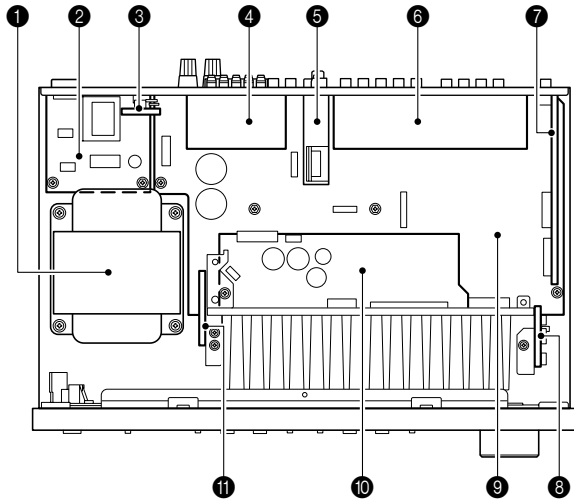
		PANORAMA ON, [OFF]	DIMENSION -3, [STD], +3	CENTER WIDTH 0, 1, 2, [3], 4, 5, 6, 7
DECODING FORMAT	Dolby Digital			
	DTS			
	AAC (J model)			
POST DECODING FORMAT	Dolby Pro-Logic			
	Dolby Pro Logic II Music	O	O	O
	Dolby Pro Logic II Movie			
	Dolby Pro Logic II Game			
	Neural Surround (U, C models)			

• SET MENU TABLE / セットメニュー

CATEGORY	MAIN MENU	SUB MENU	SELECT MENU	VALUE [INITIAL]
BASIC SETUP			ROOM : M	S / [M] / L
			SUBWOOFER : YES	[YES] / NONE
			SPEAKERS : 5 spk	2 spk / 3 spk / 4 spk / [5 spk]
			SET / [CANCEL]	
			CHECK : Test Tone	
			CHECK OK? : YES	[YES] / NO
		SPEAKER LEVEL	FL .....  .....	-10 dB to +10 dB [CENTER (0)], 1 dB step
			FR .....  .....	
			C .....  .....	
			SL .....  .....	
			SR .....  .....	
			SWFR .....  .....	
	MANUAL SETUP	1 SOUND MENU	FRONT B : FRONT	[FRONT] / ZONE B
			FRONT SP : LARGE	SMALL / [LARGE]

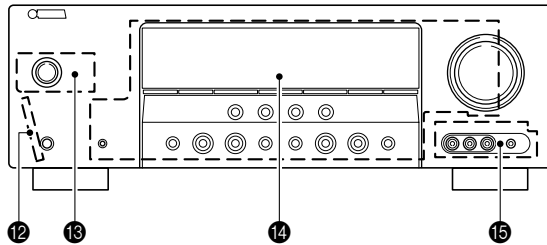
## INTERNAL VIEW

### • Top view



- ❶ Power Transformer
- ❷ OPERATION (3) P.C.B.
- ❸ OPERATION (5) P.C.B. (R, L models)
- ❹ MAIN (3) P.C.B.
- ❺ Tuner
- ❻ MAIN (2) P.C.B. (U, C, R, T, K, A, B, G, E, L models)  
D-VIDEO P.C.B. (J model)
- ❼ DSP P.C.B.
- ❽ MAIN (4) P.C.B.
- ❾ MAIN (1) P.C.B.
- ❿ OPERATION (2) P.C.B.
- ⓫ OPERATION (11) P.C.B.
- ⓬ OPERATION (6) P.C.B.
- ⓭ OPERATION (10) P.C.B.
- ⓮ OPERATION (1) P.C.B.
- ⓯ OPERATION (7) P.C.B.

### • Front view



## ■ DISASSEMBLY PROCEDURES / 分解手順

(Remove parts in the order as numbered.)

Disconnect the power cable from the AC outlet.

(番号順に部品を取り外してください。)

AC電源コンセントから、電源コードを抜いてください。

### 1. Removal of Top Cover

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

### 1. トップカバーの外し方

- ①のネジ4本、②のネジ4本、③のネジ1本を外します。(Fig. 1)
- トップカバーを後方へスライドさせ、取り外します。(Fig. 1)

### 2. Removal of Front Panel Unit

- Remove 6 screws (④). (Fig. 1)
- Remove CB192, CB235, CB261 and CB408. (Fig. 1)
- Remove hook and then remove the front panel unit. (Fig. 1)

### 2. フロントパネルユニットの外し方

- ④のネジ6本を外します。(Fig. 1)
- CB192、CB235、CB261、CB408を外します。(Fig. 1)
- フ

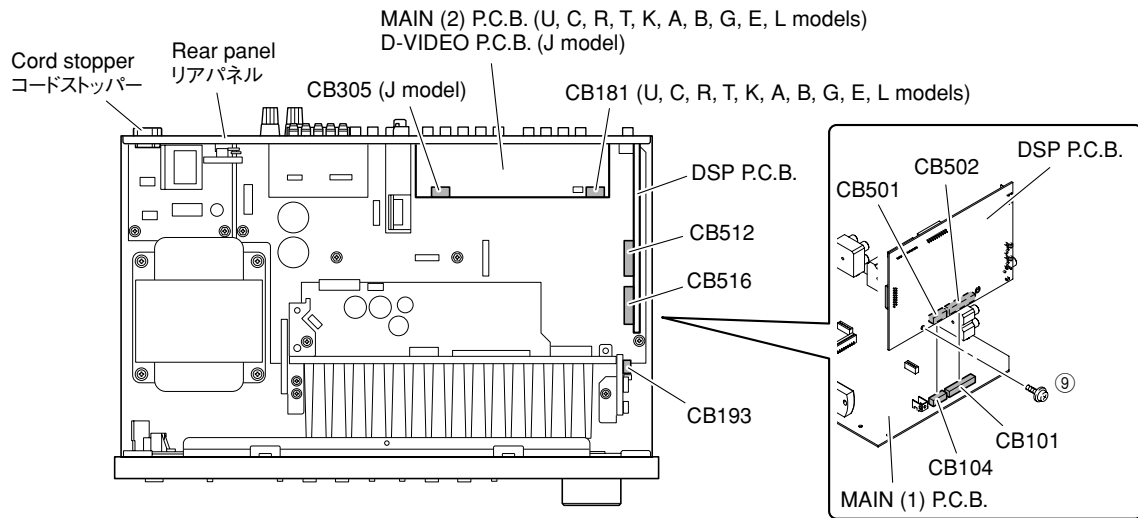
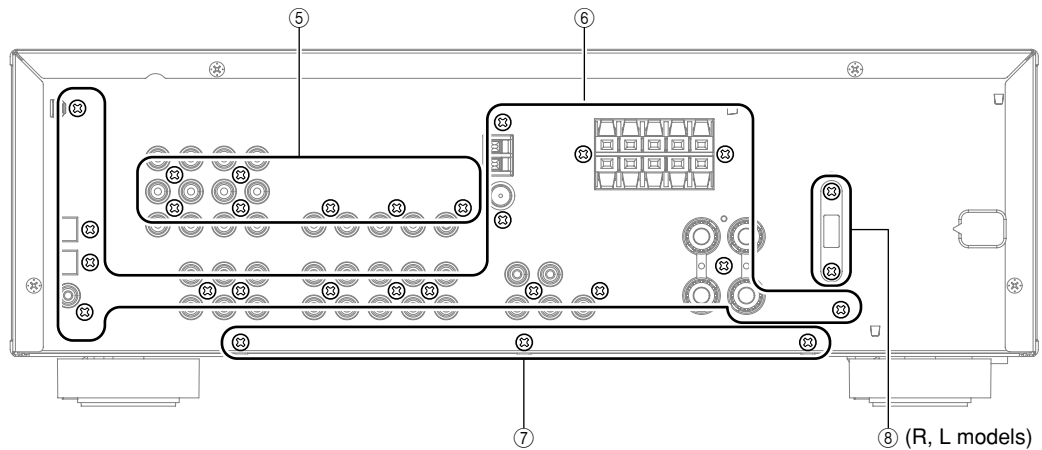


Fig. 2

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



J model

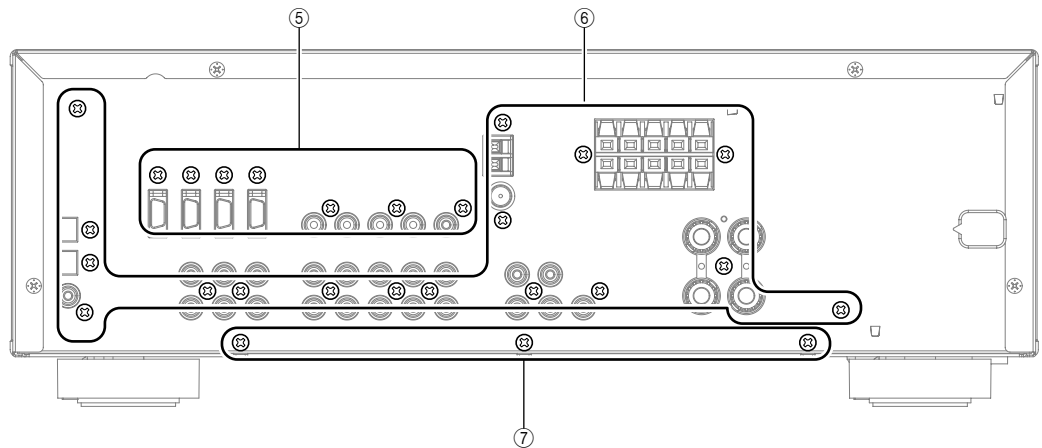


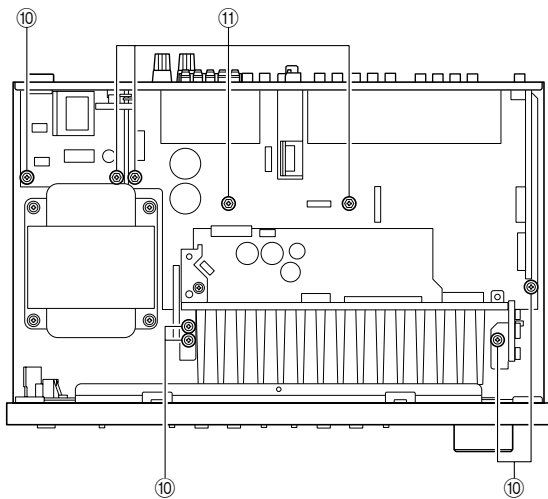
Fig. 3

**When checking the P.C.B.**

- Remove the Top cover. (Fig. 1)
  - Remove 3 screws (⑦). (Fig. 3)
  - Remove 5 screws (⑩) and 4 screws (⑪). (Fig. 4)
  - Place the P.C.B. upright. (Fig. 5)
  - The rear panel and P.C.B. removed from the chassis does not work because its grounding is loose.  
Be sure to connect the ground of heat sink, rear panel and MAIN (1) P.C.B. (G103, G104, G105 and ST101) to the chassis with a ground lead or the like. (Fig. 5)
- Be sure to use the extension cable for servicing for the following section. (Fig. 6)  
DSP P.C.B. CB408 OPERATION (1) P.C.B. CB202: V2854400 (17P, 300mm)

**P.C.B.をチェックする場合**

- トップカバーを外します。(Fig. 1)
  - ⑦のネジ3本を外します。(Fig. 3)
  - ⑩のネジ5本、⑪のネジ4本を外します。(Fig. 4)
  - P.C.B.を立ち上げて置きます。(Fig. 5)
  - シャーシから外したリアパネルおよびP.C.B.はアースが浮いて動作しませんので、ヒートシンク、リアパネルおよびMAIN(1)P.C.B.のG103、G104、G105、ST101のアースをリード線等でシャーシに接続してください。(Fig. 5)
- 次の区間は、サービス用延長ケーブルを使用してください。(Fig. 6)  
DSP P.C.B. CB408 OPERATION(1)P.C.B. CB202 : V2854400 (17P、300mm)

**Fig. 4**

## ■ UPDATING FIRMWARE / ファームウェアの書き込み

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

- DSP P.C.B.
- IC201 (DSP P.C.B.)

### ● Required Tools

- DVD or CD player (with DIGITAL OUTPUT (OPTICAL or COAXIAL) terminal)
- Optical cable (when OPTICAL terminal is used)
- Digital audio pin cable (when COAXIAL terminal is used)
- Firmware CD

\* To make the firmware CD, download the latest firmware from the specified download source to PC.

### ● Operation Procedures

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

下記部品をサービス部品に交換した場合、最新のファームウェアの書き込みを行ってください。

- DSP P.C.B.
- IC201 (DSP P.C.B.)

### ● 必要なツール

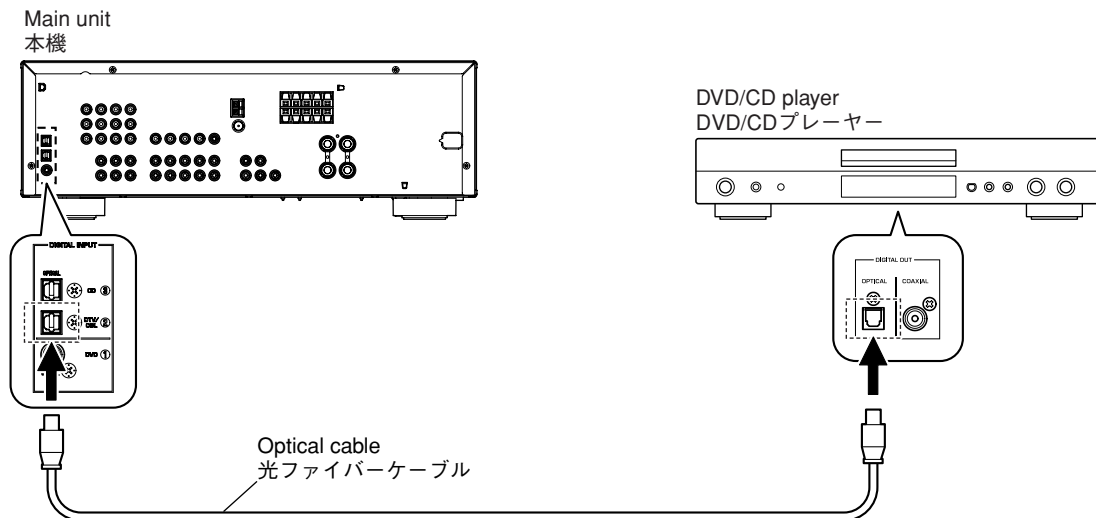
- DVDまたはCDプレーヤー (DIGITAL OUTPUT (OPTICALまたはCOAXIAL)端子付き)
- 光ファイバーケーブル (OPTICAL端子使用時)
- デジタル音声ピンケーブル (COAXIAL端子使用時)
- ファームウェアCD

※ ファームウェアCDは、PCへ最新のファームウェアを指定のダウンロード先からダウンロードして制作してください。

### ● 操作方法

1. 本機とDVD/CDプレーヤーを下記のように接続します。(Fig. 1)

#### Example of OPTICAL terminal / OPTICAL端子使用例



#### Example of COAXIAL terminal / COAXIAL端子使用例

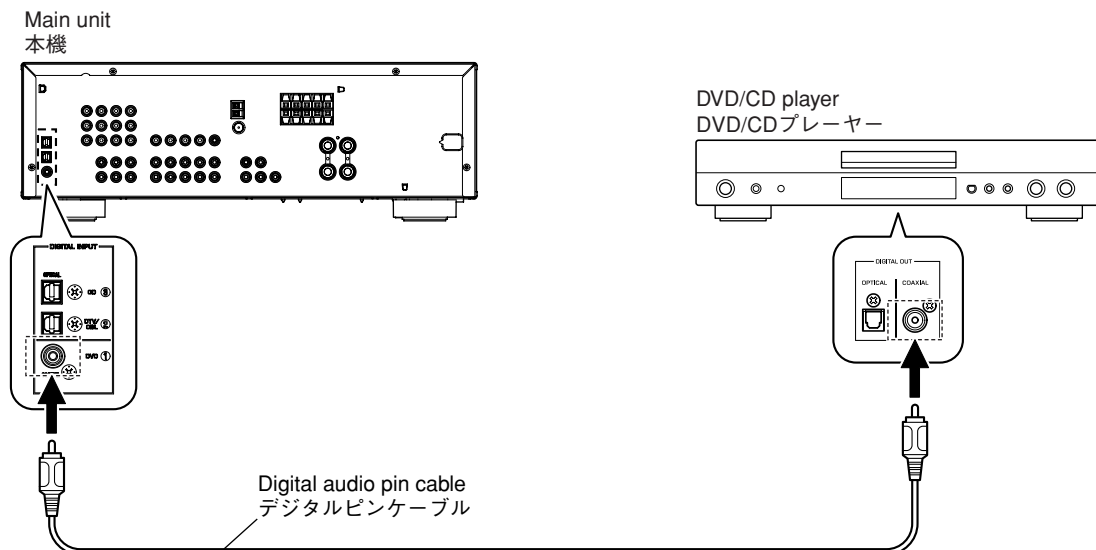


Fig. 1

- While pressing the "STANDBY/ON" key and "SPEAKERS A/B/OFF" key of the main unit simultaneously, connect the power cable of the main unit to the AC outlet. (Fig. 2)

The FIRMWARE UPDATE mode will then be activated and "SPDIF Upgrade" is displayed. (Fig. 2)

- 本機の"STANDBY/ON"キーと、"SPEAKERS A/B/OFF"キーを押しながら、本機の電源コードをACコンセントに接続します。(Fig. 2)

FIRMWARE UPDATEモードが起動し、"SPDIF Upgrade"が表示されます。(Fig. 2)

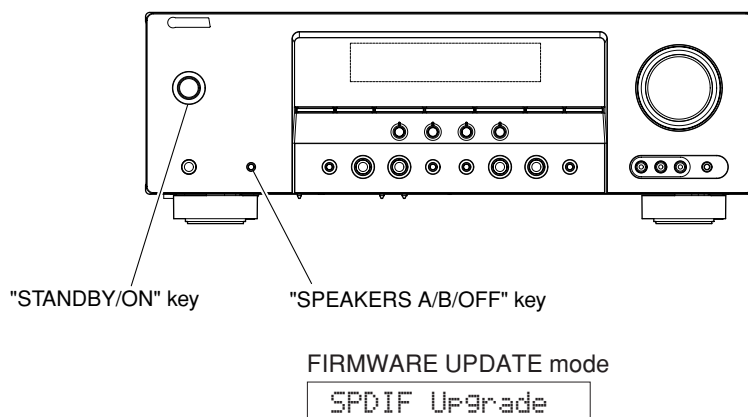


Fig. 2

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

- DVD/CDプレーヤーの電源コードをACコンセントに接続します。
- DVD/CDプレーヤーの"STANDBY/ON"キーを押します。
- DVD/CDプレーヤーの"EJECT"キーを押し、トレイを開きます。
- ファームウェアCDをトレイに載せ、トレイを閉じます。
- DVD/CDプレーヤーの"PLAY"キーを押します。ファームウェアの書き込みが開始されます。(Fig. 3)
- ファームウェアの書き込み完了後、"Upgrade OK"、"Please..."、"Turn off!!"が繰り返し表示されます。(Fig. 3)

Writing is started. / 書き込み開始

Address:XXXXXX

XXXXXX: Address information of the received data /  
受信データのアドレス情報



Writing is completed. / 書き込み完了

Upgrade OK

Please...

Turn off!!



Fig. 3

- \* When the version of the firmware to be written is the same as the one existing in the main 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", check to make sure that the written data 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 tray.
11. Remove the firmware CD from the tray and close the 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 "STANDBY/ON" key of the main unit.

#### ● Confirmation of firmware version and checksum

Confirm that the firmware version and checksum value is updated successfully with the DIAG function.

For more information, refer to "SELF DIAGNOSIS FUNCTION (DIAG)".

- \* 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.

- ※ 本機に既存のファームウェアと、書き込もうとしているファームウェアのバージョンが同じ場合、"Same Version"、"Please..."、"Turn off!!"の表示が繰り返されます。(バージョンアップの必要はありません。)

## ■ SELF DIAGNOSIS FUNCTION (DIAG)／自己診断機能 (ダイヤグ)

This unit has self diagnosis functions that are intended for inspection, measurement and location of faulty point.

There are 18 DIAG 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.

本機には、検査、測定、不良個所の発見を目的にした自己診断機能(ダイヤグ)があります。

ダイヤグメニューは18個あり、そのそれぞれにサブメニューがあります。

下表はダイヤグメニュー一覧です。

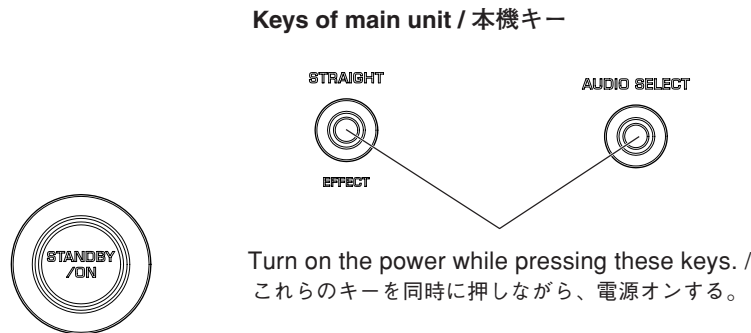
下表の全ダイヤグメニュー項目が、このサービスマニュアル記載のモデルに適用されるとは限りません。

No.	DIAG menu	Sub-menu
1	BYPASS	ANALOG BYPASS DSP BYPASS
2	AUDIO CHECK	AUDIO CHECK
3	SPEAKERS SET	FRNT : SML 0dB CENTER : NONE LFE/B : FRNT TONE : MAX TONE : MIN
4	6CH-INPUT	6ch INPUT 6-ohm 6ch INPUT 8-ohm LIM : , PLDET : , THM :
5	MIC CHECK	MIC CHECK
6	FL/OSD CHECK	VFD CHECK VFD DISP OFF VFD DISP ALL VFD DIMMER CHECK PATTERN
7	TEST TONE	TEST ALL TEST FRNT L TEST CENTER TEST FRNT R TEST SURR R TEST SURR L TEST LFE
8	FACTORY PRESET	PRESET INHI PRESET RSRV
9	AD DATA CHECK	PD : , PV : TH : , PL : PI : , DE : K0 : , K1 :
10	XM STATUS (U, C models)	1k -1dB/44 1k -61dB/44 Mute/44 XM Tone/44 ISO Tone/44 1k -1dB/32 1k -61dB/32 Mute/32 XM Tone/32 ISO Tone/32 Bus Power : OFF
11	DOCK	DOCK : DOCK ignore
12	USB (Not applied to these models.)	USB 1 USB 2
13	DAB (Not applied to these models.)	DAB 1 DAB 2 DAB 3

No.	DIAG menu	Sub-menu
14	IF STATUS (Not applied to these models.)	IF 1
		IF 2
		IF 3
		IF 4
		IF 5
		IF 6
		IF 7
		IF 8
		IF 9
		IF 10
		IF 11
		IF 12
		IF 13
		IF 14
		IF 15
		IF 16
		IF 17
15	PROTECTION	PRD L :
		PRD H :
		PRV L :
		PRV H :
		THM :
		PLD8H :
		PLD8L :
		PLD6H :
		PLD6L :
		PRI :
		PDET :
16	PROTECTION HISTORY	History 1
		History 2
		History 3
		History 4
17	SOFT SWITCH	SW MODE
		MODEL
		DESTINATION
		TUNER DESTINATION
		VIDEO FORMAT
		AAC
		OSD
		YPAO
		RDS
		XM
		DAB
		USB
		DOCK (iPod)
18	ROM VER/SUM	VERSION
		ALL CHECKSUM
		PROGRAM CHECKSUM
		SPI CHECKSUM
		SPD CHECKSUM
		XM VERSION
		DAB VERSION
		FlashROM TEST
		SDRAM TEST
		EEPROM TEST

## • Starting DIAG

Press the “STANDBY/ON” key while simultaneously pressing those two keys of the main unit as indicated in the figure below.



## • Starting DIAG 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 DIAG mode. (The protection functions other than the excess current detect function will be disabled.)

Press the “STANDBY/ON” 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 the main unit flashes to indicate that the mode is DIAG mode with the protection functions disabled.

### CAUTION!

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

## • Canceling DIAG

- Before canceling DIAG, execute setting for FACTORY PRESET of DIAG menu No.8 (Memory initialization inhibited or Memory initialized).
  - \* In order to keep the user memory stored, be sure to select PRESET INHIBITED (Memory initialization inhibited).

**When there is no history of protection function:**

Opening message / オープニング表示

**プロテクション履歴が無い場合：**

DIAG menu display / ダイアグメニュー表示

When there is no protection history  
プロテクション履歴が無い場合

After a few seconds / 数秒後

NO PROTECTION

1. ANALOG BYPASS

**When there is a history of protection function:****When there is a history of protection function due to excess current****プロテクション履歴がある場合：**

過電流によるプロテクション履歴がある場合

PRI PRT:xxx

AD value when the protection function is working  
プロテクション動作時のA/D値**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.

**原因：** パワーアンプに過電流が流れた。

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

電源部の電圧異常によるプロテクション履歴がある場合

PRV PRT:xxxx

AD value when the protection function is working  
プロテクション動作時のA/D値

**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 about 1 second to turn off the power.

**原因:** 電源部の電圧が異常。

**補足:** 電源電圧による原因で、プロテクションが働いたことを示します。  
異常状態のままパワーオンすると、約1秒後にプロテクションが掛かり、電源が切れます。

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

ヒートシンクの異常温度によるプロテクション履歴がある場合

THM PRT:xxxx

AD value when the protection function is working  
プロテクション動作時のA/D値

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

**Supplementary information:**

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

## ● Operation procedure of DIAG menu and Sub-menu

There are 18 menu items, each of having sub-menu items.

### DIAG menu selection:

Select the menu using ">" (forward) and "<" (reverse) keys of PROGRAM.

### Sub-menu selection:

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

## ● ダイアグメニューとサブメニューの操作

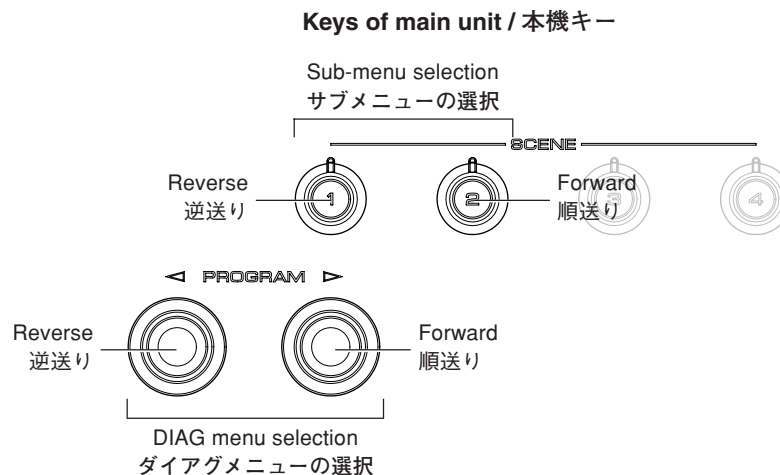
ダイアグにはNo. 1～18のメニューがあり、そのそれぞれにサブメニューがあります。

### ダイアグメニューの選択：

"PROGRAM >"(順送り)、“PROGRAM <”(逆送り)キーで選択します。

### サブメニューの選択：

"SCENE 2"(順送り)、“SCENE 1”(逆送り)キーで選択します。



## • Details of DIAG menu

### 1. 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.

#### 1. ANALOG 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	-∞	-∞	-∞

### DSP BYPASS

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

#### 1. DSP BYPASS

INPUT: DVD ANALOG

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

### 3. 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.

### 3. SPEAKER SET

各サブメニューにおけるアナログスイッチの設定は以下の通りです。

- LARGE :** 低音再生能力の高い(ユニットの大きい)スピーカーを使用するモードです。全帯域が出力されます。
- SMALL :** 低音再生能力の低い(ユニットの小さい)スピーカーを使用するモードです。90 Hz以下がLFE/BASSで指定したチャンネルにミックスされます。
- NONE :** センタースピーカーを使用しないモードです。センター成分は-3 dBされて、FRONT L/Rに振り分けられます。
- SWFR**

4. 6CH 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

4.6ch INPUT 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

6 ch INPUT 8-ohm

4.6ch INPUT 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. FL CHECK

Use this program to check the FL display section.  
For audio signal processing, use STRAIGHT.

## 6. FL CHECK

FL表示部のチェックプログラムです。  
オーディオ信号処理はSTRAIGHTです。

### Checking FL display section / FL表示部のチェック

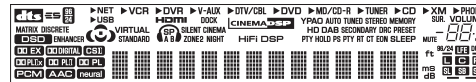
Initial display / 初期表示



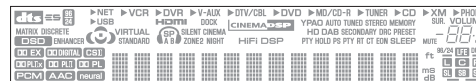
All segments OFF / 全セグメント消灯



All segments ON (dimmer 100%) /  
全セグメント点灯(ディマー100%)



All segments ON (dimmer 50%) /  
全セグメント点灯(ディマー50%)

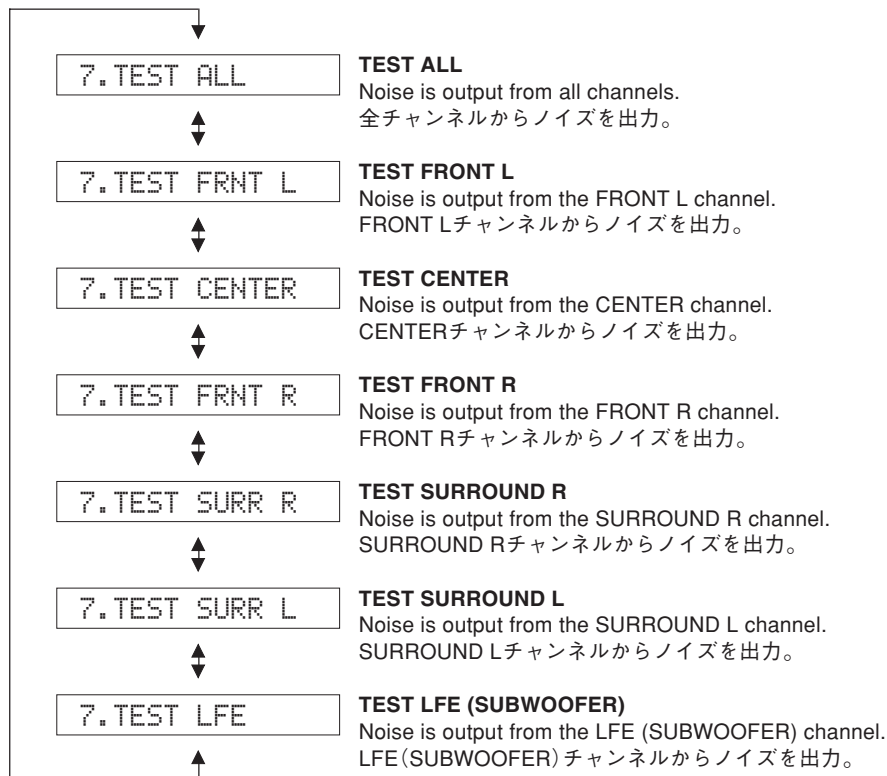


## 7. TEST TONE

The noise generator with a built-in microprocessor 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.



## 7. TEST TONE

マイコンに内蔵されているノイズ発生回路によって、サブメニューで指定したチャンネルへノイズを出力します。

LFE (SUBWOOFER) 用のノイズ



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	100
LIM H: 255 / L: 102	H	L	H

(LIM: Limiter control)

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

	During normal operation	Value for starting limiter operation	Value for canceling limiter operation
PLDET	255	100	131
LIM H: 255 / L: 90	H	L	H

(LIM: Limiter control)

J model (基準電圧：3.3 V=255)

	通常値	リミッター動作開始値	リミッター動作解除値
PLDET	255	100	131
LIM H: 255 / L: 90	H	L	H

(LIM：リミッター制御)

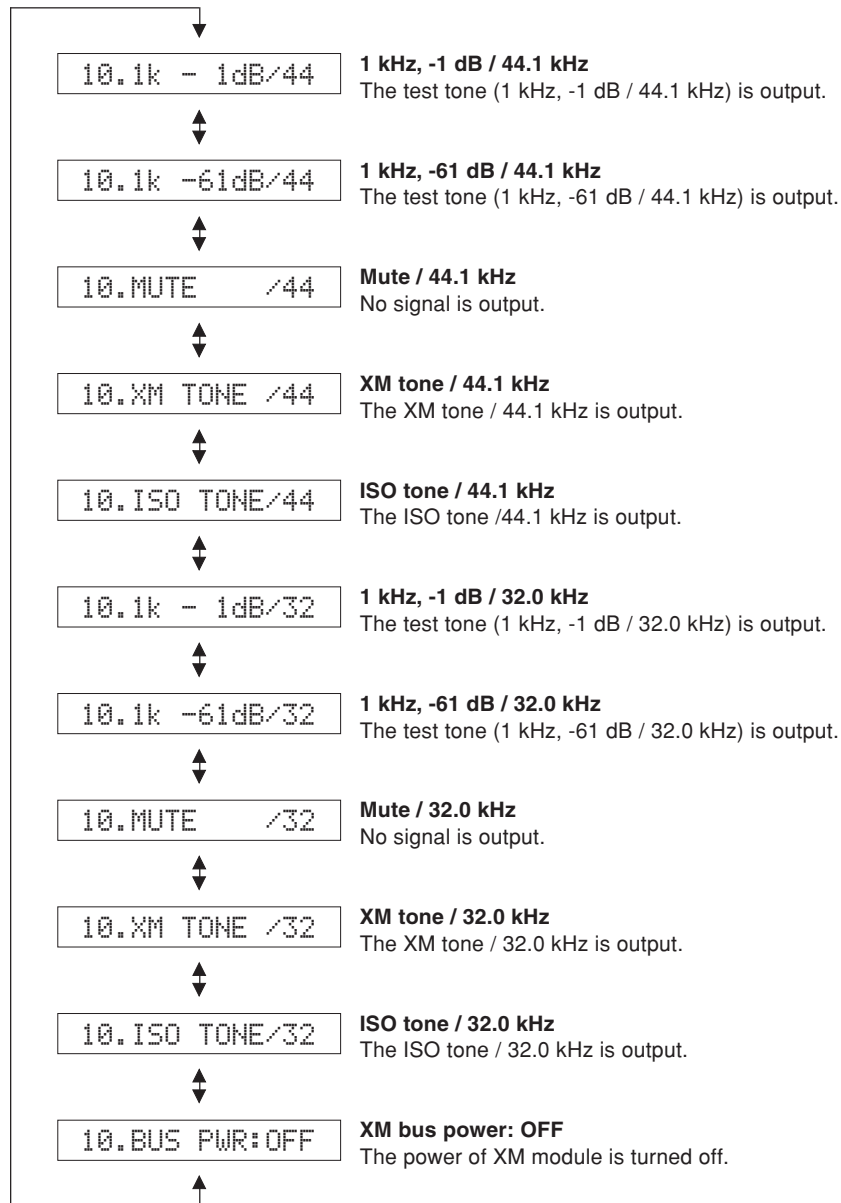
**PI/DE**

**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:**

**10. XM STATUS (U, C models)**

The output check of XM radio antenna module is executed.



13. DAB CHECK

Not applied to these models.



13. DAB CHECK

このモデルには適用されません。

14. IF STATUS (Input function status)

Not applied to these models.



14. IF STATUS

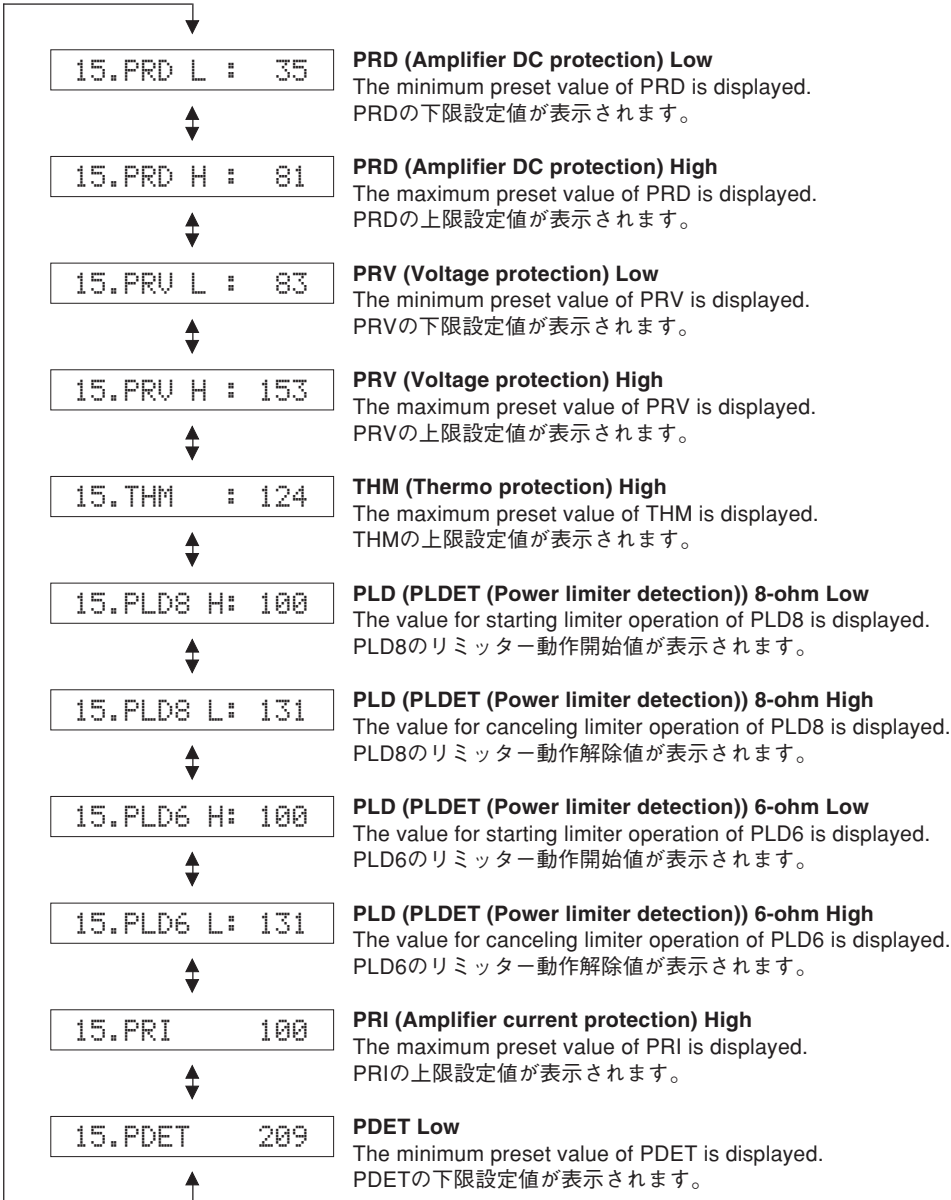
このモデルには適用されません。

15. PROTECTION SETTING

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

15. PROTECTION SETTING

各プロテクションのA/D設定値が表示されます。(基準電圧：3.3 V=255)

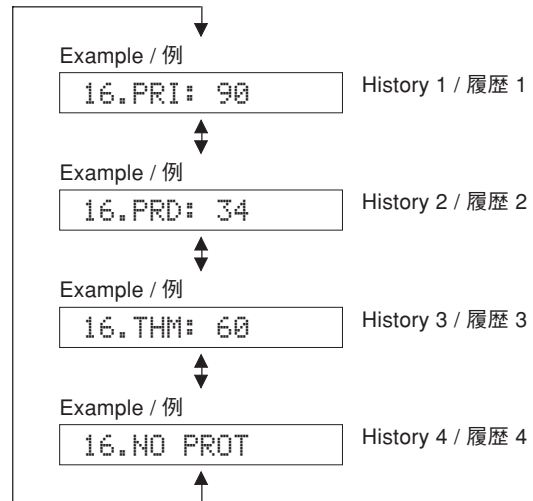


## 16. PROTECTION HISTORY

Four protection histories are displayed.

## 16. PROTECTION HISTORY

過去のプロテクション履歴が4つまで表示されます。



## 17. SOFT SWITCH

**Note)** As this is a development menu, do not change the function setting.  
Changing the function setting may hinder the proper operation.

This menu is used to switch the function settings on P.C.B. through the software to activate the main unit. The protection function follows the P.C.B. settings.

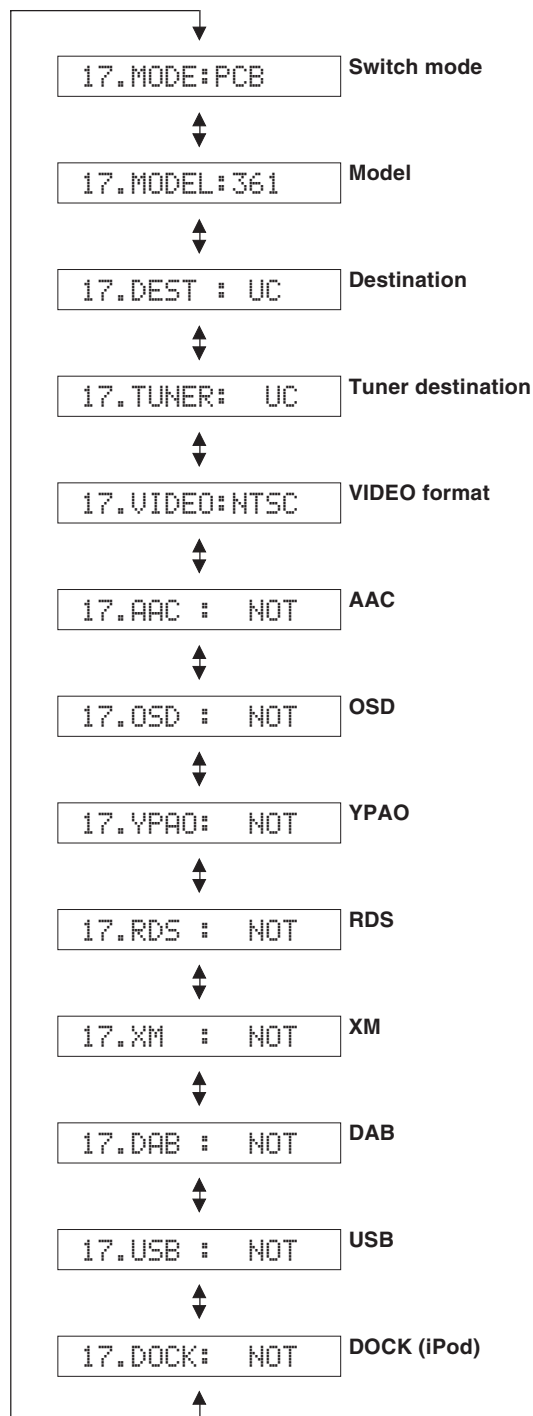
\* As this is a development menu, it is not possible to describe the details.

## 17. SOFT SWITCH

注) 開発用メニューのため、機能設定の変更は行わないでください。  
機能設定を変更した場合、正常に動作しないことがあります。

P.C.B.上の機能設定をソフト的に切り替えて、本機を動作させる機能です。  
プロテクション機能は、P.C.B.の設定に従います。

※ 開発用メニューのため、詳細に関しては記載できません。



## 18. ROM VER/SUM

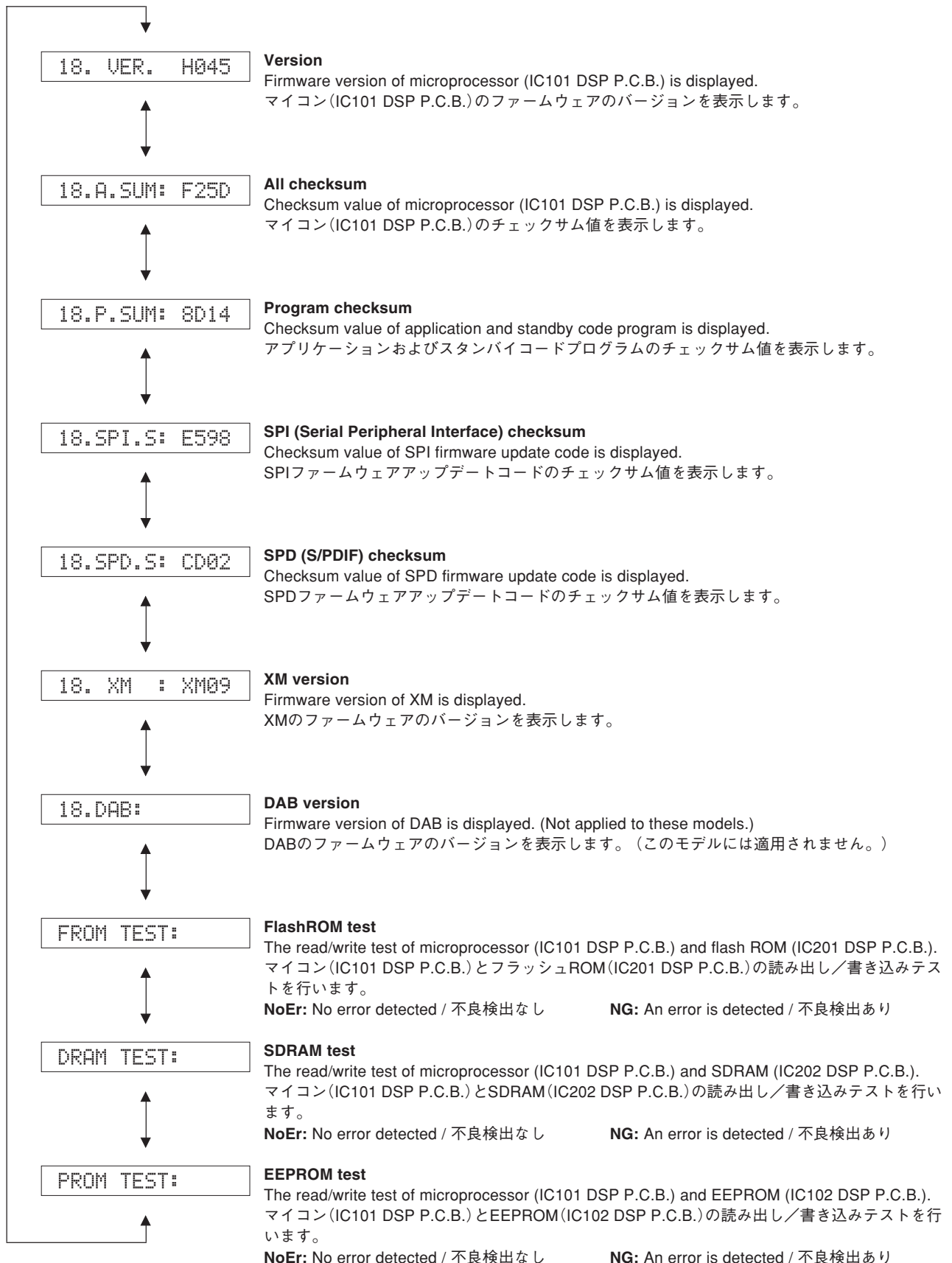
The version and checksum are displayed. The signal is processed using EFFECT OFF.

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

## 18. ROM VER/SUM

プログラムのバージョン、チェックサムを表示します。信号はエフェクトオフです。

チェックサムは、プログラムエリア別にデータを8ビットごとに加算していき、4桁の16進データで現したものです。



MEMO







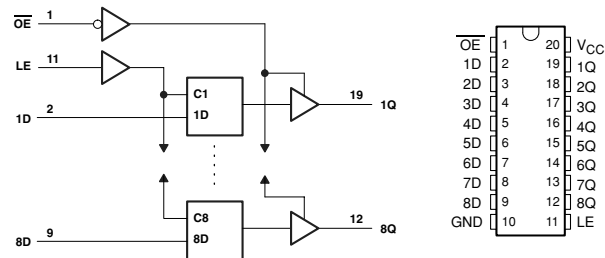




- **Microprocessor extended port**

**IC204-IC206:** SN74LV573APWR (DSP P.C.B.)

Octal 3-state D-latches with 3-state outputs



**IC204**

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			

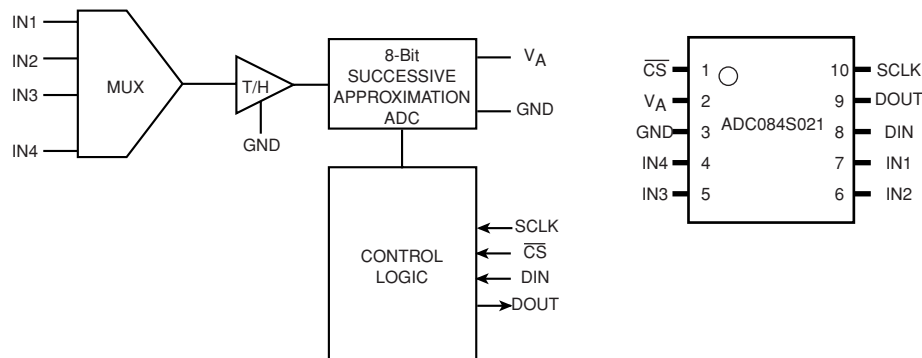
**IC206**

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	LE	LEEX2	Bank select 2
12	8Q	/VR1	Video select R
13	7Q	SPISEL5	CE for tuner
14	6Q	/8ohmSW	AC H/L relay (RY106, MAIN P.C.B.)
15	5Q	HPRY	Headphone relay (RY102, MAIN P.C.B.)
16	4Q	MRYA	Main speakers A relay (RY101, MAIN P.C.B.)
17	3Q	MRYB	Main speakers B relay (RY102, MAIN P.C.B.)
18	2Q	CSRY	Center/surround speakers relay (RY103/R105, MAIN P.C.B.)
19	1Q	/SWMT	Subwoofer mute
20	VCC	EX3.3	Power supply

• **Microprocessor ADC select port**

**IC401:** 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	/SPISEL1	CS for microprocessor
2	VA	VA	+3.3S
3	GND	DGND	Ground of external
4	IN4	IN4	SPI bus COM (IC402)
5	IN3	IN3	SPI bus COM (IC403)
6	IN2	KEY1	Key input 1
7	IN1	KEY0	Key input 0
8	DIN	SPIMO	Master output/slave input
9	DOUT	SPIMI	Master input/slave output
10	SCLK	SPISCK	SPI

**IC402**

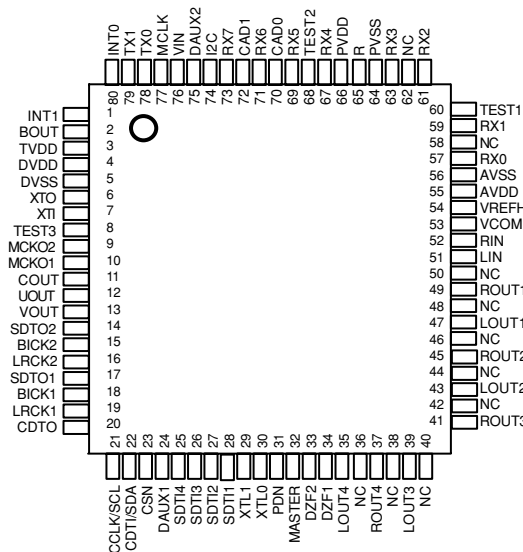
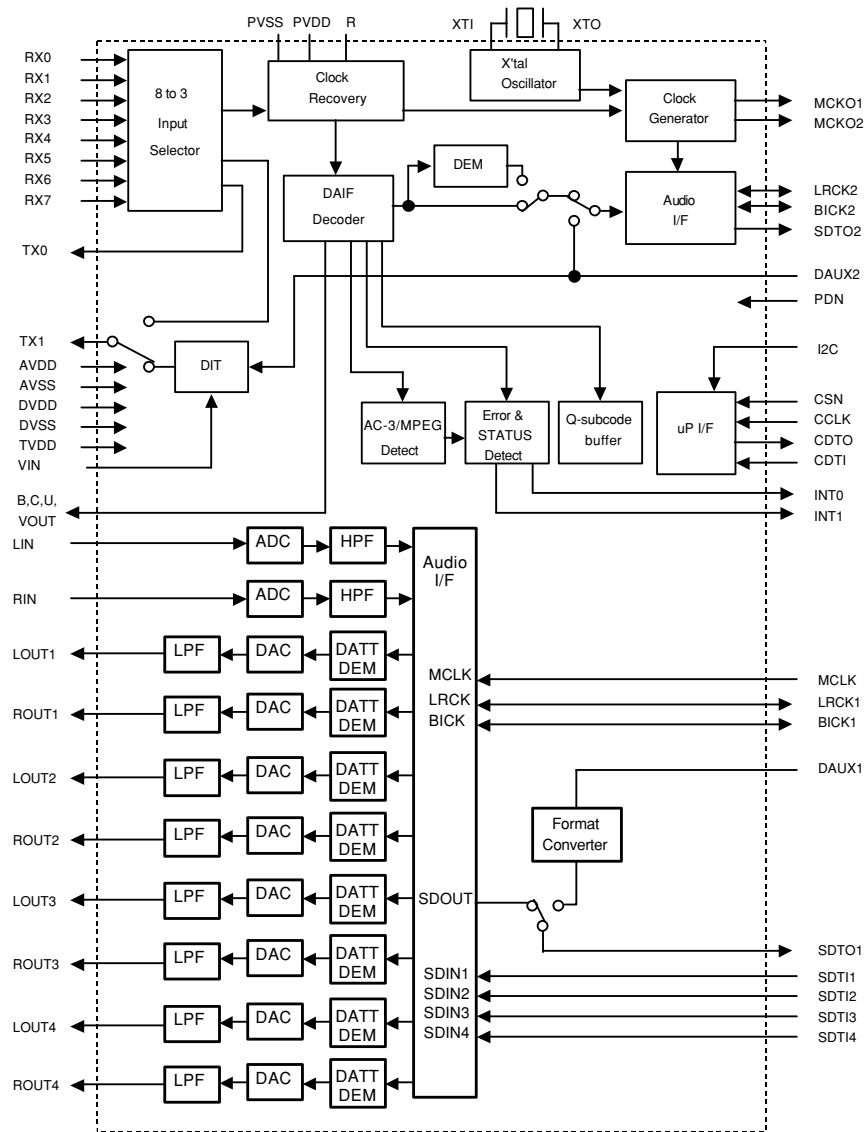
Pin No.	Port Name	Function Name	Detail of Function
1	Y4	—	
2	Y6	—	
3	COM	COM	SPI bus IN4 (IC401)
4	Y7	LINKACTIVE	Link detect (U, C models)
5	Y5	XM_MUTE	XM mute (U, C models)
6	INH	DGND	(Pull-down)
7	GND	DGND	Ground of external
8	GND	DGND	Ground of external
9	COM	ADSEL2	Input select 2
10	B	ADSEL1	Input select 1
11	A	ADSEL0	Input select 0
12	Y3	—	
13	Y0	—	
14	Y1	/ST	Stereo for tuner
15	Y2	/TUNED	Tuned for tuner
16	Vcc	+3.3S	Power supply

**IC403**

Pin No.	Port Name	Function Name	Detail of Function
1	Y4	DEST	Destination 1 *
2	Y6	/PDET	Sub-trans detect
3	COM	COM	SPI bus IN3 (IC401)
4	Y7	/HP	Headphone detect
5			

**IC301: AK4588VQ (DSP P.C.B.)**

2/8-channel audio CODEC with DIR





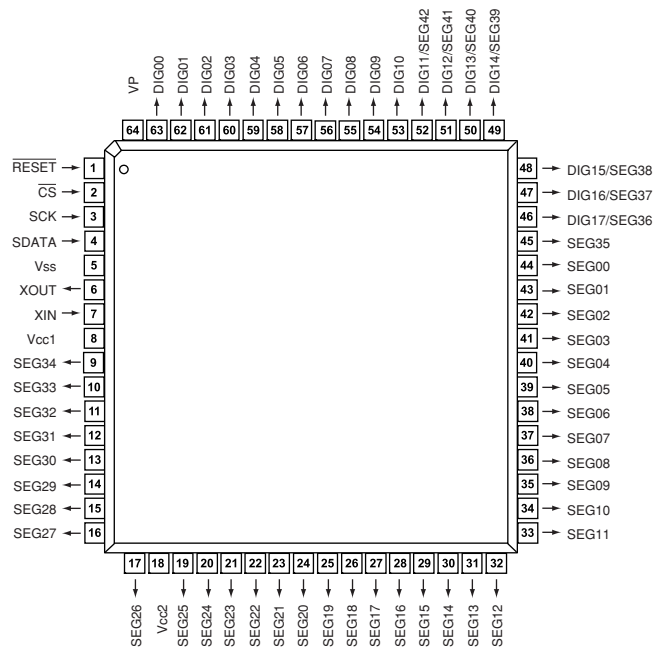
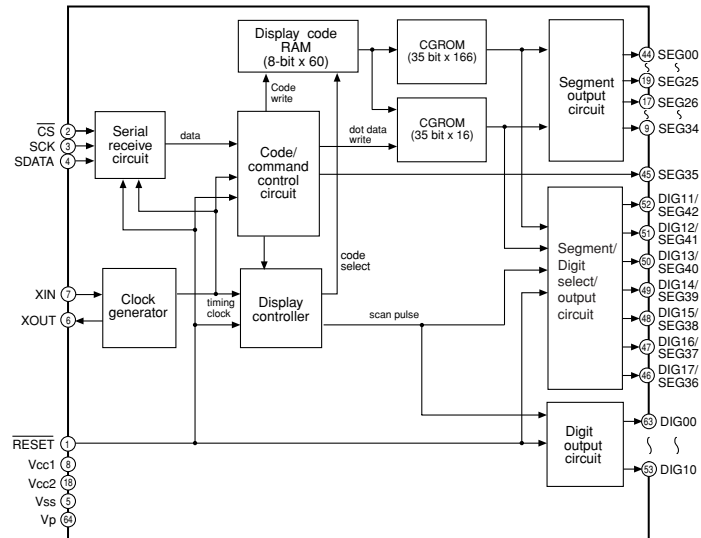








**IC201: M66003-0131FP-R (OPERATION P.C.B.)**  
18 digit 5x7 segment VFD controller/driver







Control Section

OPERATION • See page 76, 77 → SCHEMATIC DIAGRAM

DSP

• See page 71-75 → SCHEMATIC DIAGRAM

CONTROL LIST	
Input select	VIA, VIB, /VR1 SSEL1-3
Control bus	SPISEL3-5 /CCBE /IC_AK
A/D select	ADSEL0-2
Speaker relay control	MRYA MRVB CSRY HPRY
Mute control	/FMT /CMT /SMT /SWMT
Power control	PRY /BohmSW /3.3SW
XM control (U, C models)	CLKSEL
RDS control (B, G, E models)	RDS_RST

INPUT LIST

Protection	PDET PRD PRV PLDET THM
Keypad	KEY0 KEY1
Hi or Lo	PRI /HP /ST TUNED ANT_REV XM_MUTE LINKACTIVE
else	DEST

(U, C models)

OPERATION

• See page 76, 77 → SCHEMATIC DIAGRAM

MAIN





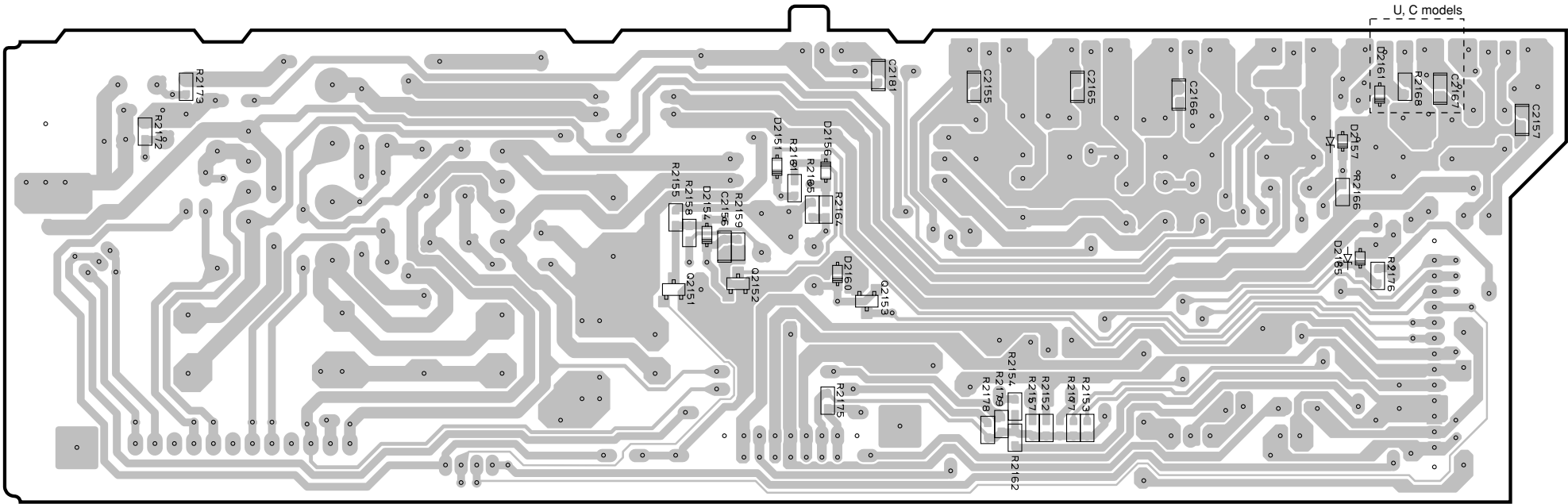








OPERATION (2) P.C.B. (Side B)



• Semiconductor Location

Ref no.	Location
D2151	E3
D2154	E4
D2156	E3
D2157	G3
D2160	E4
D2161	H3
D2165	G4
Q2151	E4
Q2152	E4
Q2153	E4











1

2

3

4

5

6

7

MAIN (3) P.C.B. (Side A)

