AV RECEIVER/AV AMPLIFIER

RX-V461/HTR-6040/DSP-AX461

SERVICE MANUAL

For U, C, R, K, A, L and J models

This service manual is the RX-V461/HTR-6040/DSP-AX461 (U, C, R, K, A, L and J models).
For service manual of the RX-V461/RX-V461DAB (T, B, G and E models), please refer to the following publication number:

RX-V461/RX-V461DAB (T, B, G and E models): 101048

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.

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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

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101041

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'07.02

■ 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.）

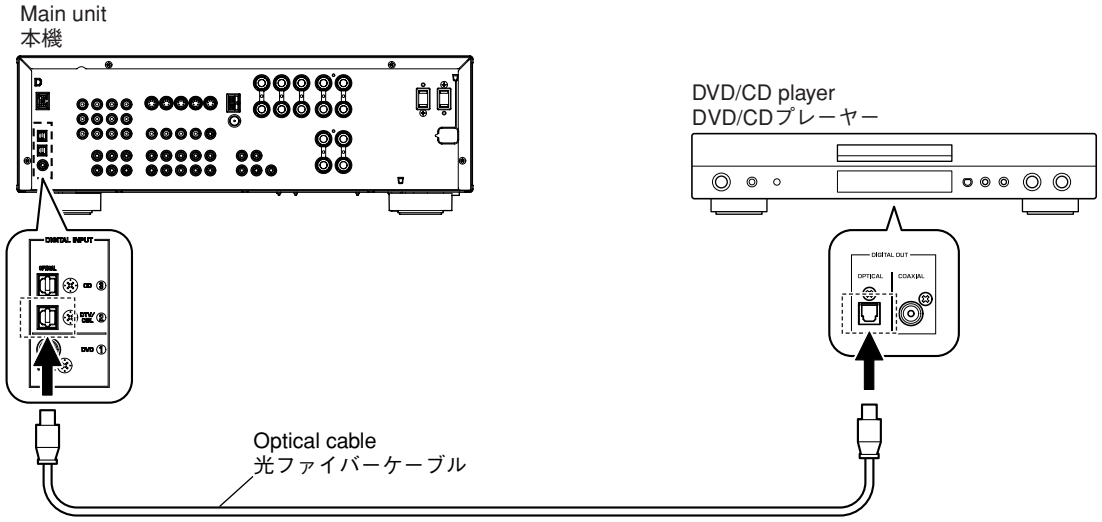
● 必要なツール

- 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

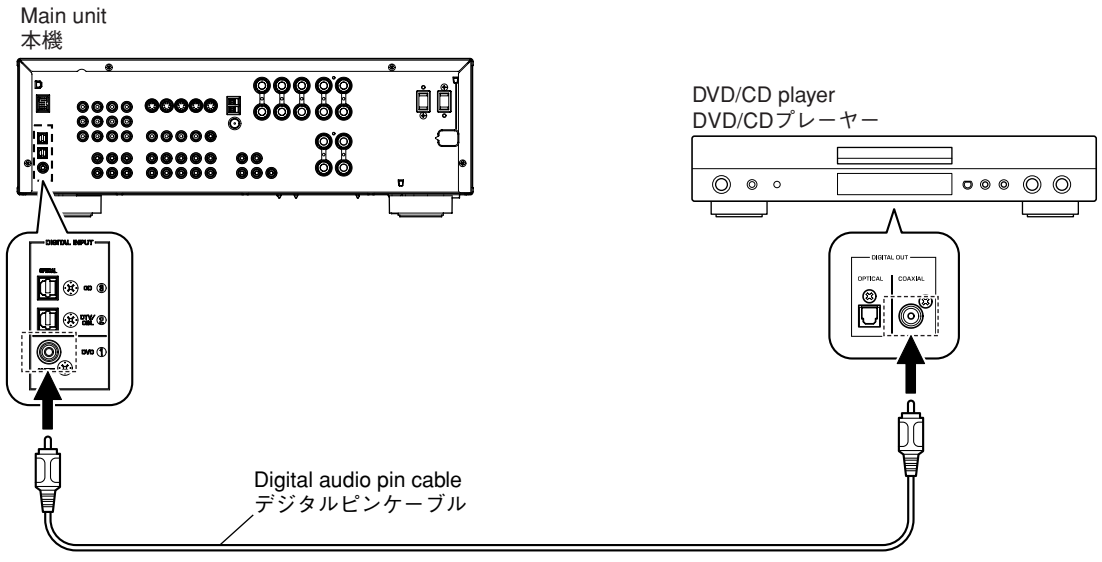


Fig. 1

2. 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)

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)

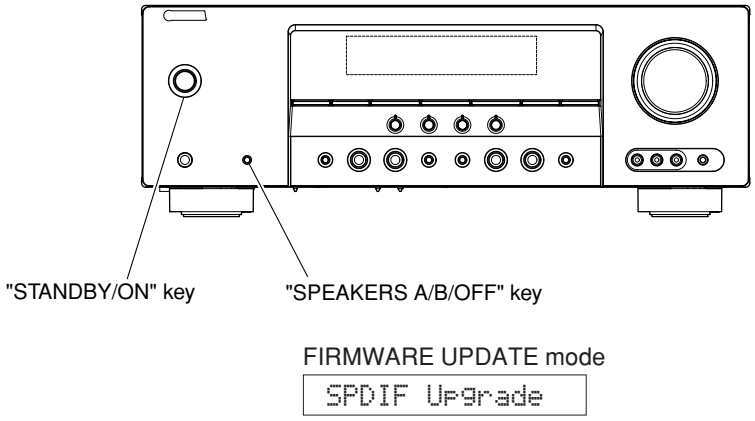


Fig. 2

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 tray.
6. Put the firmware CD on the tray and close the 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)

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。
4. DVD/CDプレーヤーの“STANDBY/ON”キーを押します。
5. DVD/CDプレーヤーの“EJECT”キーを押し、トレーを開きます。
6. ファームウェアCDをトレーに載せ、トレーを閉じます。
7. 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)
8. 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)

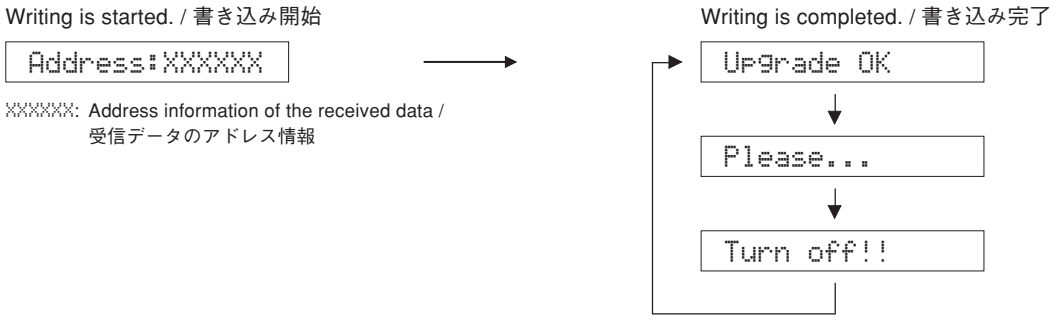


Fig. 3

* 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。）

ファームウェアCDの再生開始後、10秒以上経過してもディスプレイ表示が変わらない場合、ファームウェアCDの再生を最初からやり直してください。

“Address:XXXXXX”の後に、“FILE CORRUPTED”が表示された場合、書き込みデータが破損していないかを確認し、“操作方法”の1から8までをもう一度やり直してください。

“Upgrade Failed”が表示された場合、“操作方法”の1から8までをもう一度やり直してください。

9. DVD/CDプレーヤーの“STOP”キーを押します。
10. DVD/CDプレーヤーの“EJECT”キーを押し、トレーを開きます。
11. ファームウェアCDをトレーから外し、トレーを閉じます。
12. DVD/CDプレーヤーの電源を切り、電源コードをACコンセントから抜きます。
13. 本機の“STANDBY/ON”キーを押して電源を切ります。

● **ファームウェアバージョンおよびチェックサムの確認**

ダイアグメニューでファームウェアのバージョンおよびチェックサムが正しく更新されたことを確認します。
ダイアグメニューの詳細は「自己診断（ダイアグ）」を参照してください。

※ 表示されたファームウェアのバージョンおよびチェックサムが、書き込んだファームウェアのバージョンおよびチェックサムと異なる場合、“操作方法”の1から13までをもう一度やり直してください。

RX-V461/HTR-6040/DSP-AX461

■ SELF DIAGNOSIS FUNCTION (DIAG)／自己診断機能（ダイアグ）

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（ダイアグ）があります。
ダイアグメニューは18個あり、そのそれぞれにサブメニューがあります。
下表はダイアグメニュー一覧です。
下表の全ダイアグメニュー項目が、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

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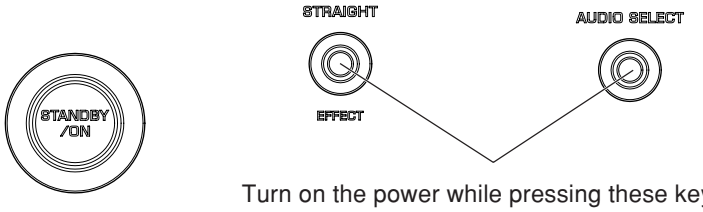
• Starting DIAG

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

● ダイアグの起動

本体の下図に示すキーを同時に押しながら“STANDBY/ON”キーを押すと、ダイアグが起動します。

Keys of main unit / 本機キー



Turn on the power while pressing these keys. /
これらのキーを同時に押しながら、電源オンする。

• 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.

● プロテクション解除モードでの起動

プロテクションが動作することにより、故障箇所の診断に支障をきたすような場合は、次の方法によりプロテクションを解除した状態でダイアグモードに入ることができます。（過電流検出以外のプロテクション動作を解除する）

上図のキーを同時に押しながら“STANDBY/ON”キーを押します。このとき、上図のキーを3秒以上押し続けてください。
このモードでは本体FLの「SLEEP」セグメントが点滅し、プロテクションを解除した状態でのダイアグモードであることを知らせます。

注意！
プロテクション解除モードでの起動は、危険な状態でもプロテクションが作動しないため、動作させると本機を破壊することがあります。
このモードを使用する場合は十分注意してください。

• Canceling DIAG

1. 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).
2. Turn off the power by pressing the “STANDBY/ON” key of the main unit.

● ダイアグの解除

1. ダイアグを解除する前に、ダイアグメニューNo. 8 FACTORY PRESET（メモリーの初期化禁止／またはメモリーの初期化）の設定をします。
   ※ ユーザーメモリーを保持したい場合は、必ずPRESET INHIBITED（メモリー初期化禁止）を選択してください。
2. 本機の“STANDBY/ON”キーを押し、電源オフします。

• Display provided when DIAG started

On the FL display of the main unit, an opening message (including the protection history) appears for a few seconds followed by the DIAG menu display (1. ANALOG BYPASS).

● ダイアグ起動時の表示

本機のFLディスプレイには、オープニング（プロテクション履歴）が表示され、数秒後にダイアグメニュー表示（1. ANALOG BYPASS）となります。

When there is no history of protection function:

Opening message / オープニング表示

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

NO PROTECTION

After a few seconds / 数秒後

1.ANLOG BYPASS

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 a history of protection function:

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

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.

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

原因： パワーアンプに過電流が流れた。

補足： パワーアンプの電流を検出していますので、電流検出トランジスタをチェックすれば異常チャンネルが特定できます。
異常状態のまま電源オンすると、瞬時にプロテクションがかかり、すぐに電源が切れます。

Note)

- **Applying the power to the main 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 the main unit from the AC outlet once and then reconnect it again.**
- **The output transistors in each amplifier channel should be checked for damage before applying power of the main unit.**
- **Amplifier current should be monitored by measuring across the emitter resistors for each channel.**

注意！

- **異常状態のまま本機の電源を入れると、危険な状態になり、さらに回路が損傷を受ける原因になります。そのため連続して"PRI"および"PRD"プロテクションが働いた場合、3回目から"STANDBY/ON"キーを押しても電源が入らなくなります。再度電源を入れる場合、一度本機の電源コードをAC電源コンセントから抜いて接続し直してください。**
- **本機の電源をいれる前に、各アンプのチャンネル内の出力トランジスタに損傷がないかチェックしてください。**
- **アンプの電流は、各チャンネルのエミッターの抵抗器間で測定することによりモニターしてください。**

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

DC出力異常によるプロテクション履歴がある場合

PRD 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: 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 about 3 seconds to turn off the power.

原因： パワーアンプのDC出力が異常。

補足： アンプの故障でスピーカー端子に直流電圧が掛かるなどが原因で、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3秒後にプロテクションが掛かり、電源が切れます。

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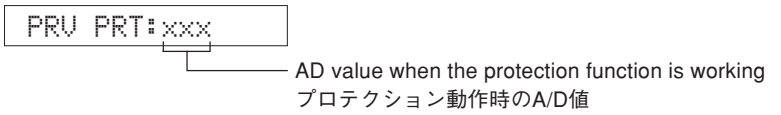
When there is a history of protection function due to abnormal voltage in the power supply section

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



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.

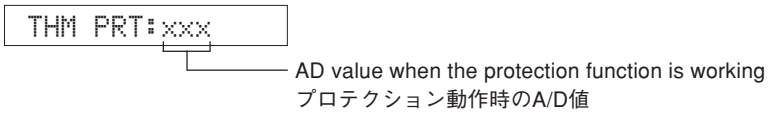
原因： 電源部の電圧が異常。

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



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.

原因： ヒートシンクの温度が異常。

補足： 温度制限を越えた原因で、プロテクションが働いたことを示します。

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

For detection of each protection function, refer to DIAG menu described later.

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。

各プロクテクションの検出に関しては、後述のダイアグメニューを参照してください。

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 DIAG is cancelled by selecting PRESET RESERVED (Memory initialized) of DIAG menu No. 8 or when the backup data is erased.

プロテクションの履歴

プロテクションが働いた場合、履歴をバックアップして記憶しています。

サービスのときに異常が認められなくても、バックアップが残っていれば、お客様のところで起きた異常を区別できます。

ダイアグメニューNo. 8 PRESET RESERVED(メモリーの初期化)を選んでダイアグを解除した場合または、バックアップが消えた場合にプロテクションの履歴はクリアされます。

• 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。

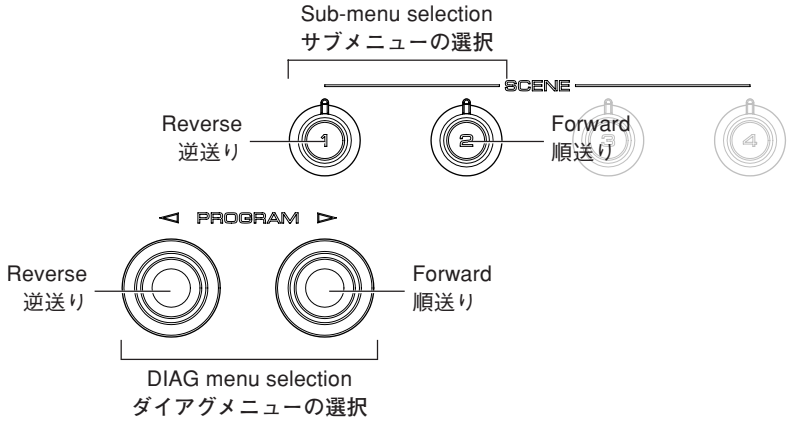
ダイアグメニューの選択：

"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。

Keys of main unit / 本機キー



• Functions in DIAG mode

In addition to the DIAG 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.

● ダイアグ中の機能

ダイアグメニューの他に、以下の機能が動作します。

- ・ パワーオン／オフ
- ・ マスターボリューム
- ・ ミューティング
- ・ スピーカーA／B／OFF
- ・ インプット切り換え
- ・ オーディオセレクト
- ・ トーンコントロール

※ チューナー関連、セットメニュー関連は機能しません。

• Initial settings used to start DIAG

The following initial settings are used when starting DIAG.

When DIAG is canceled, these settings are restored to those before starting DIAG.

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

● ダイアグ開始時の初期設定

ダイアグ開始時に以下のような設定になります。
ダイアグ解除時にはダイアグ開始前の状態に戻ります。

- ・ マスターボリューム：-20 dB
- ・ インプット：DVD(マルチチャンネルインプットオフ)
- ・ エフェクトレベル：0 dB
- ・ ダイアグメニュー：1. ANALOG BYPASS

• 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.ANLOG 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

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

2. 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

2.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

● ダイアグメニュー詳細

1. BYPASS

サブメニューによりANALOG BYPASS/DSP BYPASSが選択可能です。

ANALOG BYPASS

アナログ入力の音声信号をEFFECT OFFでFRONT L/Rへ出力します。

1.ANLOG 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

デジタル入力の音声信号をEFFECT OFFでFRONT L/Rへ出力します。

1.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	-∞	-∞	-∞

2. AUDIO CHECK

入力された音声信号を出力します。

※ 入力された音声信号が2 ch L/Rの場合は、下記のように振り分け出力します。

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

2.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

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。

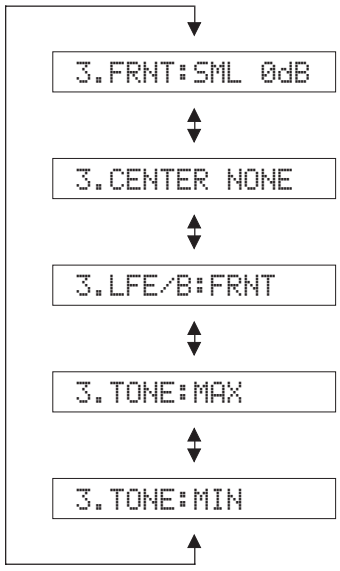
LARGE： 低音再生能力の高い（ユニットの大きい）スピーカーを使用するモードです。
全帯域が出力されます。

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-3dBされて、FRONT L/Rに振り分けられます。

SWFR： 5.1 ch信号のLFEまたは90 Hz以下のLFE/BASSがSUBWOOFER OUTに出力されます。

FRONT： 5.1 ch信号のLFEまたは90 Hz以下のLFE/BASSをFRONT L/Rに振り分けます。



FRONT: SML 0dB
The FRONT L/R signal, when 90 Hz or lower, is mixed to the channel specified by LFE/BASS.
FRONT L/Rの信号の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。

CENTER: NONE
The CENTER signal is distributed to FRONT L/R.
CENTERの信号をFRONT L/Rに振り分けます。

LFE / BASS: FRONT
The LFE (SUBWOOFER) signal is distributed to FRONT L/R.
LFE（SUBWOOFER）の信号をFRONT L/Rに振り分けます。

TONE: MAX
The signal is output with the tone control [BASS +10 dB, TREBLE + 10 dB].
トーンコントロール［BASS +10 dB、TREBLE +10 dB］で出力します。

TONE: MIN
The signal is output with the tone control [BASS -10 dB, TREBLE - 10 dB].
トーンコントロール［BASS -10 dB、TREBLE -10 dB］で出力します。

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	-∞	-∞	-∞

RX-V461/HTR-6040/DSP-AX461

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

入力ソース[MULTI CHANNEL INPUT]が選択されます。
サブメニューにより、6オーム／8オームが選択可能です。

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

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 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)

* As this is a development menu, do not change the setting value.

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)

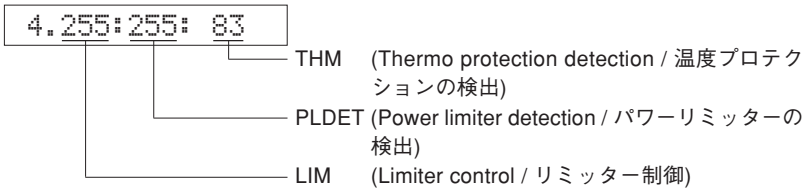
LIM/PLDET/THM

LIM： LIM（リミッター制御）の設定値

※ 開発用メニューのため、設定値の変更は行わないでください。

PLDET： パワーリミッターの検出
動作時のA/D変換値が表示されます。

THM： 温度プロテクションの検出
動作時のA/D変換値が表示されます。
（基準電圧：3.3 V＝255）



5. MIC CHECK

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

5. MIC CHECK

マイク入力された信号をA/D－D/A経由でFRONT L/Rに出力します。

```
5.MIC CHECK
```

6. FL/OSD CHECK

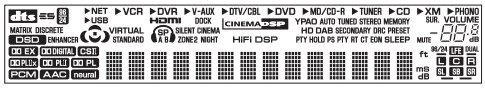
Use this program to check the FL display section and video control section. When checking the video control section, prepare a monitor, S video cable and video pin cable and connect them.
Using the sub-menu operation, selection items of the FL display section and video display section vary as shown below.
For audio signal processing, use STRAIGHT.

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

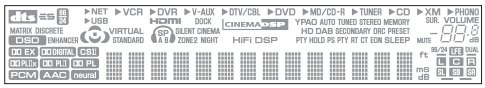
Initial display / 初期表示

All segments OFF / 全セグメント消灯

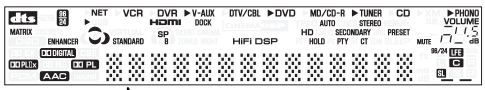
All segments ON (dimmer 100 %) /
全セグメント点灯(ディマー100 %)



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



Lighting of segments in lattice /
セグメント格子状点灯



Lighting in lattice / 格子状点灯

Short / ショート　　Normal / 正常

Check of the Video control section. (Monitor out) / 映像表示部のチェック(モニター出力)

Initial display (OSD OFF) /
初期表示(OSD表示オフ)

OSD OFF /
OSD表示オフ

OSD OFF /
OSD表示オフ

OSD characters ON /
OSDキャラクター表示オン

OSD characters ON /
OSDキャラクター表示オン

OSD characters / OSDキャラクター表示

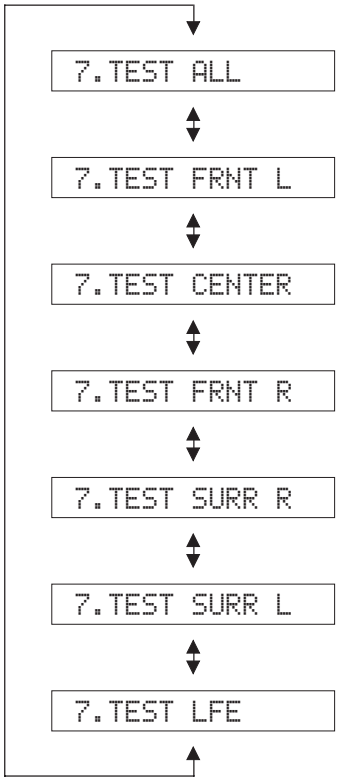
RX-V461/HTR-6040/DSP-AX461

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）用のノイズ周波数は35～80 Hz、それ以外はノイズ周波数500～2 kHzとなります。



TEST ALL
Noise is output from all channels.
全チャンネルからノイズを出力。

TEST FRONT L
Noise is output from the FRONT L channel.
FRONT Lチャンネルからノイズを出力。

TEST CENTER
Noise is output from the CENTER channel.
CENTERチャンネルからノイズを出力。

TEST FRONT R
Noise is output from the FRONT R channel.
FRONT Rチャンネルからノイズを出力。

TEST SURROUND R
Noise is output from the SURROUND R channel.
SURROUND Rチャンネルからノイズを出力。

TEST SURROUND L
Noise is output from the SURROUND L channel.
SURROUND Lチャンネルからノイズを出力。

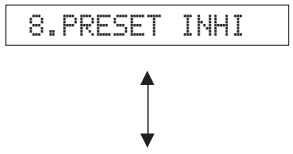
TEST LFE (SUBWOOFER)
Noise is output from the LFE (SUBWOOFER) channel.
LFE（SUBWOOFER）チャンネルからノイズを出力。

8. FACTORY PRESET

This menu is used to reserve and inhibit initialization of the back-up RAM.
The signals are processed using EFFECT OFF (The L/R signal is output using ANALOG BYPASS).

8. FACTORY PRESET

バックアップ用RAM（音場プログラムのパラメーターやセットメニュー内容等）の初期化を予約／禁止します。
信号処理はEFFECT OFF（ANALOG BYPASSでL/Rを出力）です。



PRESET INHIBIT (Initialization inhibited) / PRESET INHIBIT（初期化禁止）
Back-up RAM initialization is not executed. Select this sub-menu to protect the values set by the user.
バックアップ用RAMの初期化は行われません。ユーザーの設定値を保護するときは、こちらを選択してください。

PRESET RESERVED (Initialization reserved) / PRESET RESERVED（初期化予約）
Initialization of the back-up RAM 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 RAM.
Any protection history will be cleared.
バックアップ用RAMの初期化が予約されます。（実際に初期化されるのは、次回の電源投入時です。）
工場出荷時やバックアップ用RAMをリセットしたいときは、こちらを選択してください。
このとき、プロテクション履歴も初期化されます。

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.)

注意： PRESET RESERVEDを選んで初期化をする前に、チューナーのユーザーメモリー内容を下表に書き写してください。
（初期化をすると、チューナーのユーザーメモリーの内容は消えてしまいます。）

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

9. 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/PV

PD: PRD (Power amplifier DC protection detection)
The output of power amplifier DC (DC voltage) is detected.
Normal value: 35 to 81 (Reference voltage: 3.3 V=255)

PV: PRV (Voltage protection detection)
Voltage detects: ACL, AC2, 10V, S9, +12, -12, +5V and VP
Normal value: 84 to 153 (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.

9. A/D DATA CHECK

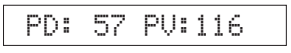
本機パネルキー、プロテクションなどを検出しているマイコンのA/D変換値を、サブメニューで表示します。
K0/K1のメニューにすると、全キーの値を検出するためキー操作はできなくなりますが、本機のVOLUMEを回すことにより、次のサブメニューに進めることができます。このとき1クリック以上回すと、ボリューム値が変化するので注意してください。
信号処理は実行前の状態を維持します。
※ 図中の数値は参考例です。

PD/PV

PD： PRD（パワーアンプDCプロテクションの検出）
パワーアンプDC（直流電圧）出力の検出。
正常値： 35～81（基準電圧：3.3 V＝255）

PV： PRV（電圧プロテクションの検出）
検出電圧： ACL、AC2、10V、S9、+12、-12、+5V、VP
正常値： 84～153（基準電圧：3.3 V＝255）

※ PRDおよびPRVは正常値を外れるとプロテクションが働き、電源オフされます。



TH/PL

TH: THM (Thermo protection detection)
The temperature of the heat sink is detected.
Normal value: 0 to 124 (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.

TH/PL

TH： THM（温度プロテクションの検出）
ヒートシンク温度の検出。
正常値 : 0～124（基準電圧：3.3 V＝255）

※ THMは正常値を外れるとプロテクションが働き、電源オフされます。

PL： PLDET（パワーリミッターの検出）
パワーアンプ出力電圧の検出。

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, K, A, L models (Reference voltage: 3.3V=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: PDET (Sub-trans power detection)
Normal value: 209 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.

PI/DE

PI： PRI（電流プロテクションの検出）
パワーアンプ電流の検出。
正常値： 0～100（基準電圧：3.3 V＝255）

DE： PDET（サブトランス電源電圧の検出）
正常値： 209～255（基準電圧：3.3 V＝255）

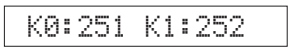
※ PRIおよびPDETは正常値を外れるとプロテクションが働き、電源オフされます。

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)

K0/K1

K0/K1：KEY0/KEY1（本機パネルキー）
キーのA/D値は基準値から±4を外れると、正常な動きをしません。
下表をご覧になり、各キーの分圧抵抗の定数、ハンダ不良等の確認をしてください。
（基準電圧：3.3 V＝255）

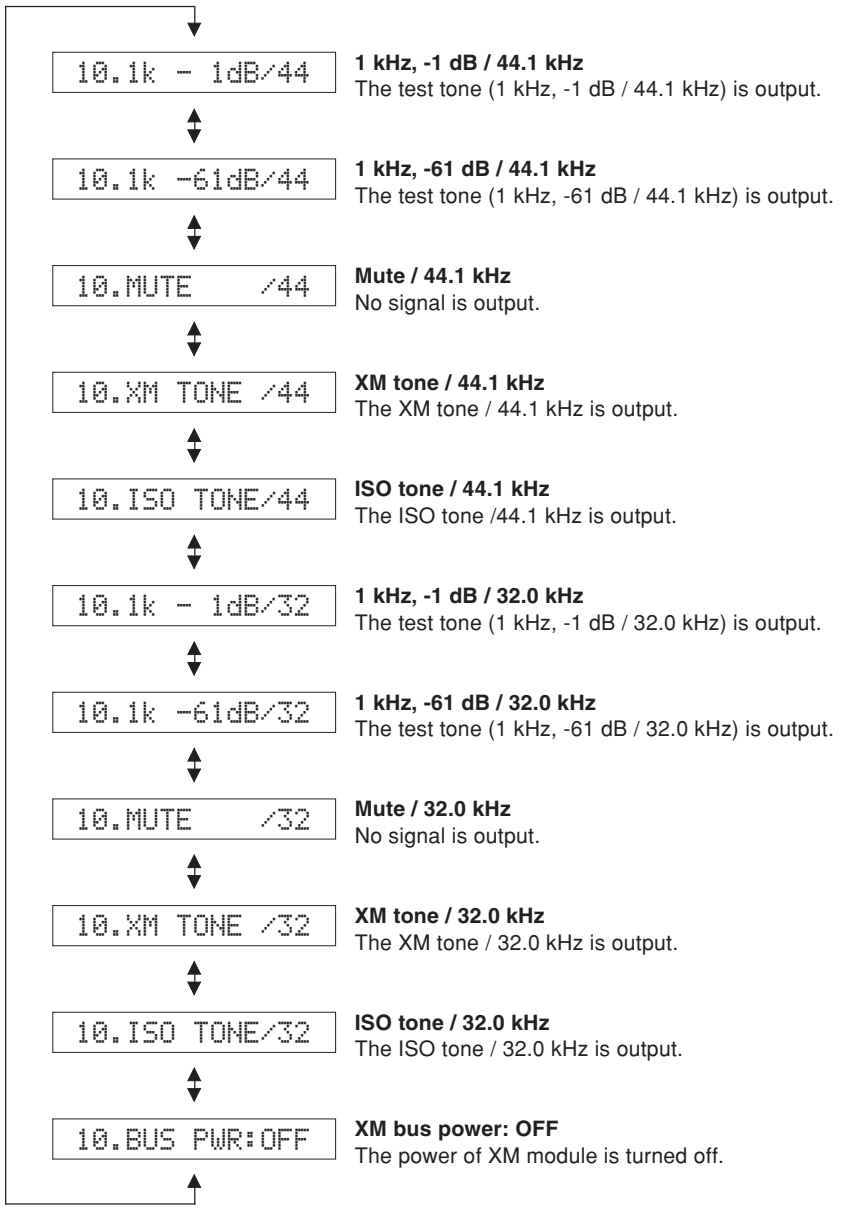


Display / 表示	KEY0	KEY1
23 ± 4	SCENE 1	SCENE 3
42 ± 4	SCENE 2	SCENE 4
66 ± 4	PROGRAM <	DIRECT
92 ± 4	PROGRAM >	AUDIO SELECT
120 ± 4	STRAIGHT	INPUT <
147 ± 4	TONE CONTROL	INPUT >
165 ± 4	SEARCH MODE	PRESET/TUNING <
182 ± 4	FM/AM	PRESET/TUNING >
198 ± 4	A/B/C/D/E	MEMORY
217 ± 4	SPEAKERS	TUNING
255	(KEY OFF)	(KEY OFF)

10. XM STATUS (U, C models)

The output check of XM radio antenna module is executed.

10. XM STATUS（U、C models）



11. DOCK

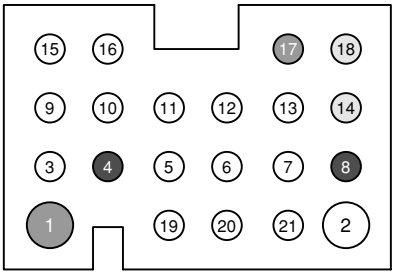
This menu is used to test the DOCK connector without the iPod itself.
After turning off the power, short between pins No. 14 (TX) and No. 18 (RX), between pins No. 1 (PWR) and No. 17 (ACCPOW) and between pins No. 4 (iPDET) and No. 8 (DGND).
Start the DIAG function and select the menu.
The check result is displayed according to the following display specifications.

Note) Be sure to return the shorted locations to their original state.

11. DOCK

iPod本体無しで、DOCKコネクタの検査を行うメニューです。
電源オフの状態にしてから、DOCKコネクタの14ピン（TX）と18ピン（RX）、1ピン（PWR）と17ピン（ACCPOW）、4ピン（iPDET）と8ピン（DGND）をショートさせます。
ダイグを起動してメニューを選択します。
下記表示仕様に従って、チェック結果が表示されます。

注） ショート箇所は、必ず元に戻してください。



DOCK

All Y / すべてY = “OK”
Others / その他 = “NG”

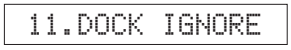
Check item / チェック項目	Result / 結果		Display / 表示
UART loop back test / UARTループバックテスト	OK		Y
	NG		N
iPAP (iPod accessory power) detection / iPAP（iPod accessory power）検出	IC402 pin No. 1	High	Y
		Low	N
iPDET (iPod installation to DOCK) detection / iPDET（iPod installation to DOCK）検出	IC402 pin No. 12	Low	Y
		High	N

DOCK ignore

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

DOCK 無効

DOCKおよびiPodを接続している時、入力ソース[DOCK（iPod）]を無効にして[V-AUX]に切り替えます。

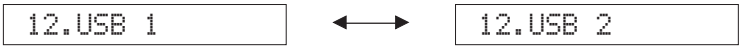


12. USB CHECK

Not applied to these models.

12. USB CHECK

このモデルには適用されません。



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

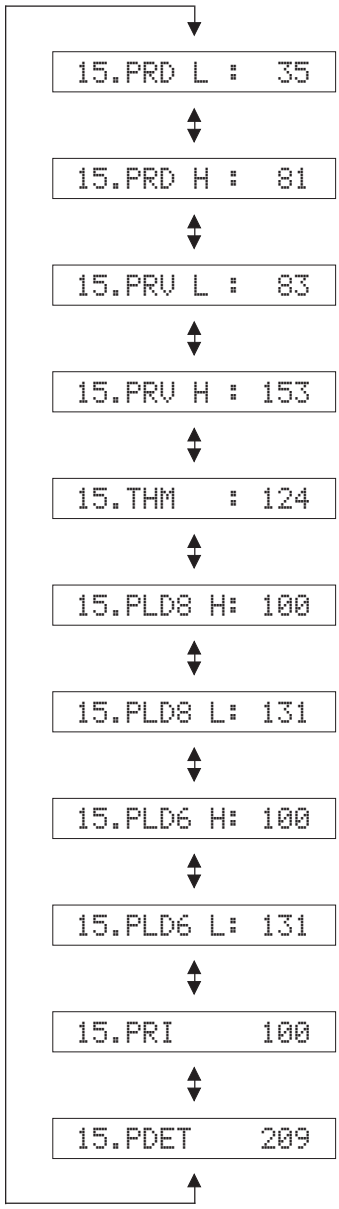
このモデルには適用されません。

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）



PRD (Amplifier DC protection) Low
The minimum preset value of PRD is displayed.
PRDの下限設定値が表示されます。

PRD (Amplifier DC protection) High
The maximum preset value of PRD is displayed.
PRDの上限設定値が表示されます。

PRV (Voltage protection) Low
The minimum preset value of PRV is displayed.
PRVの下限設定値が表示されます。

PRV (Voltage protection) High
The maximum preset value of PRV is displayed.
PRVの上限設定値が表示されます。

THM (Thermo protection) High
The maximum preset value of THM is displayed.
THMの上限設定値が表示されます。

PLD (PLDET (Power limiter detection)) 8-ohm Low
The value for starting limiter operation of PLD8 is displayed.
PLD8のリミッター動作開始値が表示されます。

PLD (PLDET (Power limiter detection)) 8-ohm High
The value for canceling limiter operation of PLD8 is displayed.
PLD8のリミッター動作解除値が表示されます。

PLD (PLDET (Power limiter detection)) 6-ohm Low
The value for starting limiter operation of PLD6 is displayed.
PLD6のリミッター動作開始値が表示されます。

PLD (PLDET (Power limiter detection)) 6-ohm High
The value for canceling limiter operation of PLD6 is displayed.
PLD6のリミッター動作解除値が表示されます。

PRI (Amplifier current protection) High
The maximum preset value of PRI is displayed.
PRIの上限設定値が表示されます。

PDET Low
The minimum preset value of PDET is displayed.
PDETの下限設定値が表示されます。

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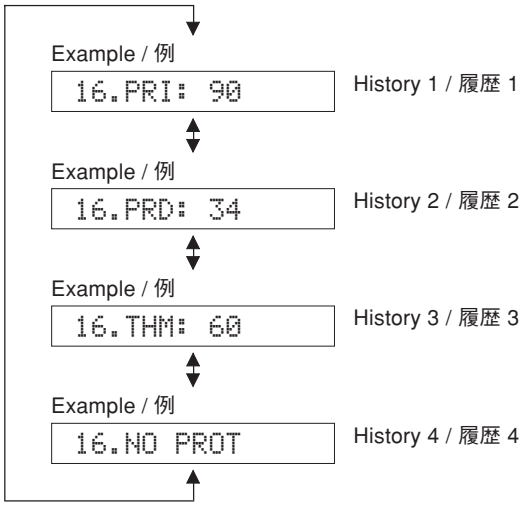
16. PROTECTION HISTORY

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.

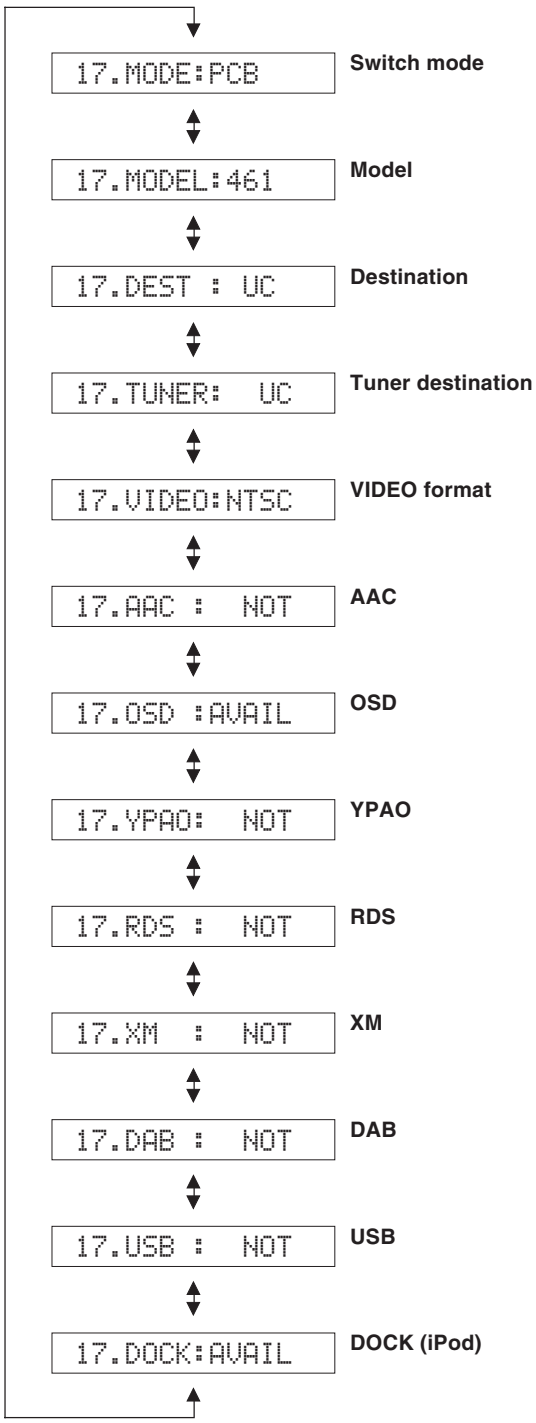
* As this is a development menu, it is not possible to describe the details.

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。



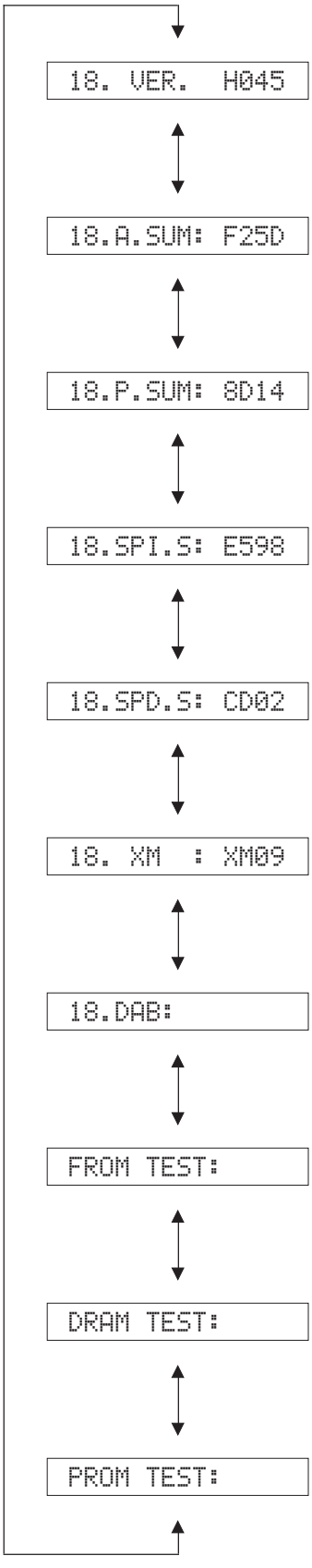
RX-V461/HTR-6040/DSP-AX461

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-bit 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。



Version
Firmware version of microprocessor (IC101 DSP P.C.B.) is displayed.
マイコン(IC101 DSP P.C.B.)のファームウェアのバージョンを表示します。

All checksum
Checksum value of microprocessor (IC101 DSP P.C.B.) is displayed.
マイコン(IC101 DSP P.C.B.)のチェックサム値を表示します。

Program checksum
Checksum value of application and standby code program is displayed.
アプリケーションおよびスタンバイコードプログラムのチェックサム値を表示します。

SPI (Serial Peripheral Interface) checksum
Checksum value of SPI firmware update code is displayed.
SPIファームウェアアップデートコードのチェックサム値を表示します。

SPD (S/PDIF) checksum
Checksum value of SPD firmware update code is displayed.
SPDファームウェアアップデートコードのチェックサム値を表示します。

XM version
Firmware version of XM is displayed.
XMのファームウェアのバージョンを表示します。

DAB version
Firmware version of DAB is displayed. (Not applied to these models.)
DABのファームウェアのバージョンを表示します。（このモデルには適用されません。）

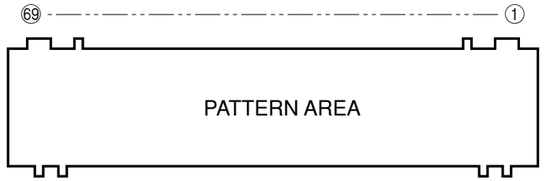
FlashROM test
The read/write test of microprocessor (IC101 DSP P.C.B.) and flash ROM (IC201 DSP P.C.B.).
マイコン(IC101 DSP P.C.B.)とフラッシュROM(IC201 DSP P.C.B.)の読み出し／書き込みテストを行います。
NoEr: No error detected / 不良検出なし **NG:** An error is detected / 不良検出あり

SDRAM test
The read/write test of microprocessor (IC101 DSP P.C.B.) and SDRAM (IC202 DSP P.C.B.).
マイコン(IC101 DSP P.C.B.)とSDRAM(IC202 DSP P.C.B.)の読み出し／書き込みテストを行います。
NoEr: No error detected / 不良検出なし **NG:** An error is detected / 不良検出あり

EEPROM test
The read/write test of microprocessor (IC101 DSP P.C.B.) and EEPROM (IC102 DSP P.C.B.).
マイコン(IC101 DSP P.C.B.)とEEPROM(IC102 DSP P.C.B.)の読み出し／書き込みテストを行います。
NoEr: No error detected / 不良検出なし **NG:** An error is detected / 不良検出あり

■ DISPLAY DATA

● V2001 : 17-BT-29GNK (OPERATION P.C.B.)



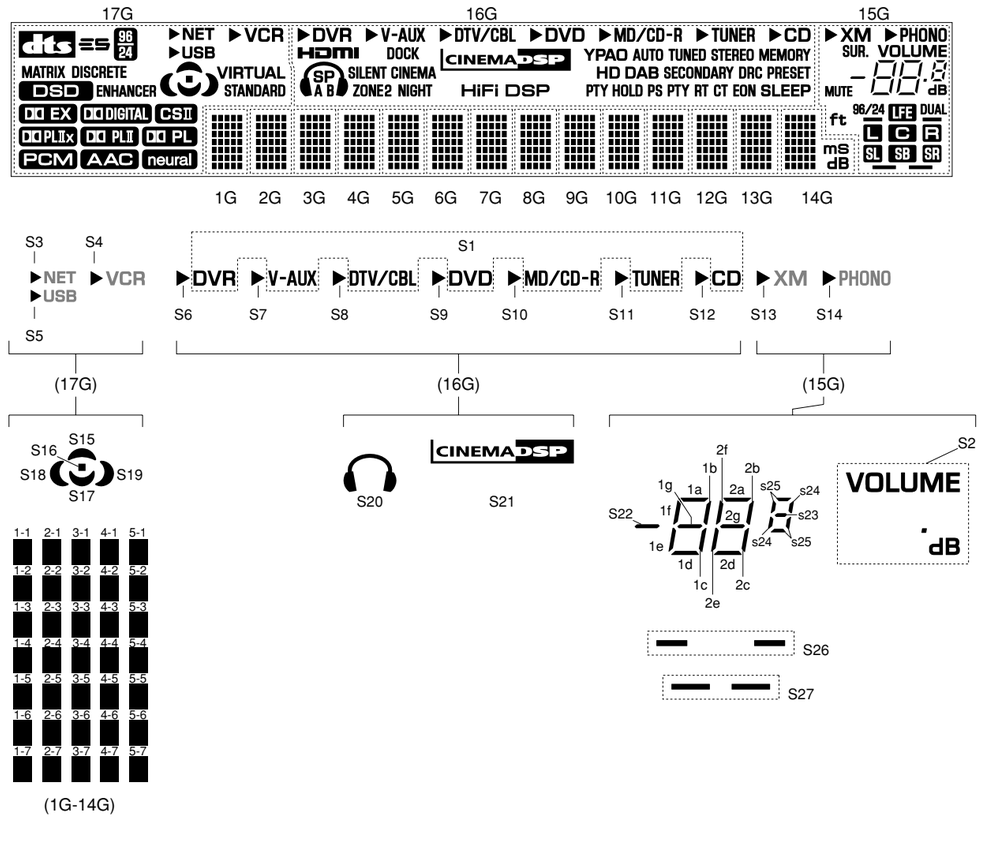
● PIN CONNECTION

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

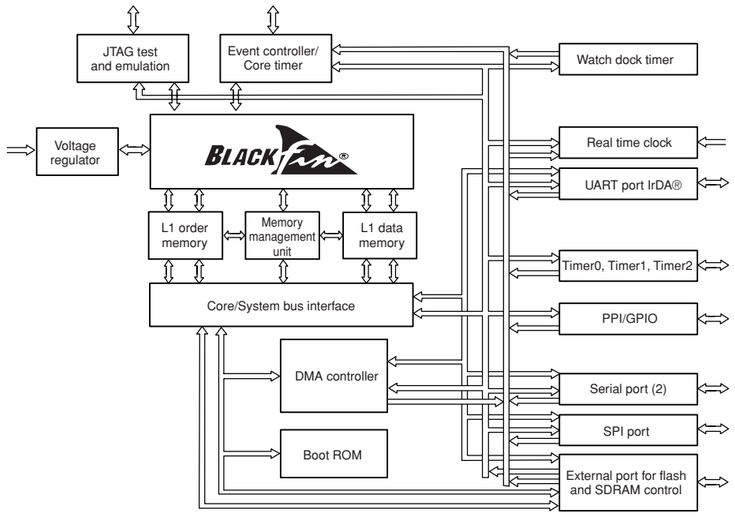


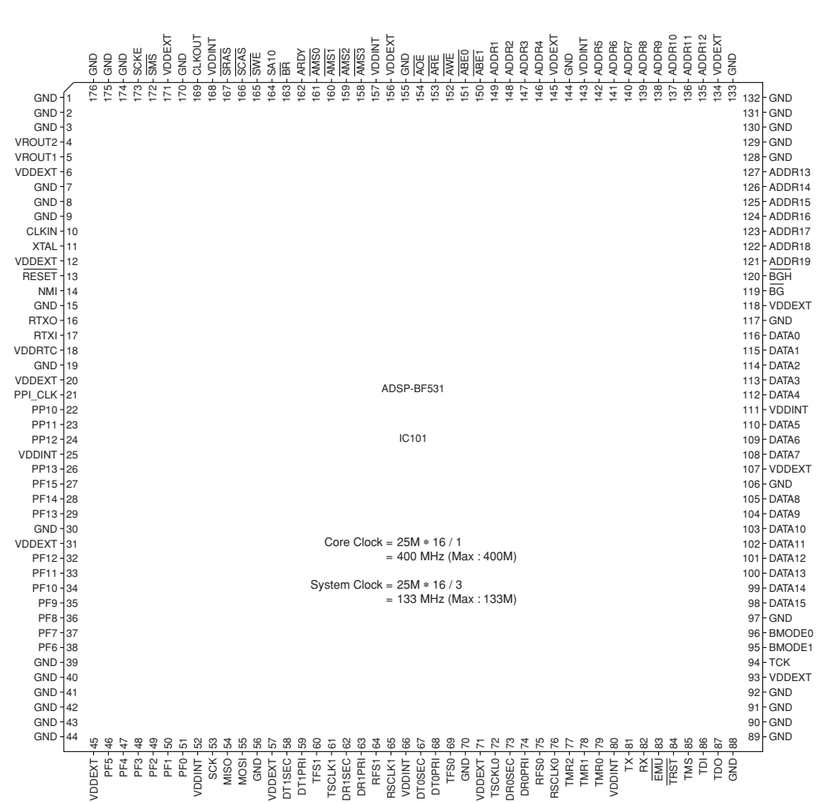
● ANODE CONNECTION

	17G	16G	15G	14G	13G-1G
1P	dts	S1	S2	1-1	1-1
2P	ES	S6	S26	2-1	2-1
3P	MATRIX	S7	S27	3-1	3-1
4P	DISCRETE	S8	S22	4-1	4-1
5P	96/24	S9	1a	5-1	5-1
6P	DSD	S10	1b	1-2	1-2
7P	ENHANCER	S11	1c	2-2	2-2
8P	DD EX	S12	1d	3-2	3-2
9P	DD DIGITAL	HDMI	1e	4-2	4-2
10P	CSII	S20	1f	5-2	5-2
11P	DD PLIIx	SP	1g	1-3	1-3
12P	DD PLII	A	2a	2-3	2-3
13P	DD PL	B	2b	3-3	3-3
14P	PCM	SILENT CINEMA	2c	4-3	4-3
15P	AAC	ZONE2	2d	5-3	5-3
16P	neural	NIGHT	2e	1-4	1-4
17P	NET	DOCK	2f	2-4	2-4
18P	USB	S21	2g	3-4	3-4
19P	VCR	HiFi DSP	S23	4-4	4-4
20P	S3	YPAO	S24	5-4	5-4
21P	S5	AUTO	S25	1-5	1-5
22P	S4	TUNED	XM	2-5	2-5
23P	S15	STEREO	PHONO	3-5	3-5
24P	S16	MEMORY	S13	4-5	4-5
25P	S17	HD	S14	5-5	5-5
26P	S18	DAB	SUR.	1-6	1-6
27P	S19	SECONDARY	MUTE	2-6	2-6
28P	VIRTUAL	DRC	DUAL	3-6	3-6
29P	STANDARD	PRESET	96/24	4-6	4-6
30P	–	PTY (HOLD)	ft	5-6	5-6
31P	–	HOLD	LFE	1-7	1-7
32P	–	PS	L	2-7	2-7
33P	–	PTY	C	3-7	3-7
34P	–	RT	R	4-7	4-7
35P	–	CT	SL	5-7	5-7
36P	–	EON	SB	mS	–
37P	–	SLEEP	SR	dB	–

■ IC DATA

IC101: ADSP-BF531 CPU (DSP P.C.B.)
Microprocessor





Pin No.	Port Name	Function Name	I/O	Detail of Function
1	DGND	GND	–	Ground of external
2	DGND	GND	–	Ground of external
3	DGND	GND	–	Ground of external
4	/VINTSW	VROUT2	O	Voltage regulator drive for Q101
5	/VINTSW	VROUT1	O	Voltage regulator drive for Q101
6	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
7	DGND	GND	–	Ground of external
8	DGND	GND	–	Ground of external
9	DGND	GND	–	Ground of external
10	CLKIN	CLKIN	I	Clock/oscillation input
11	XTAL	XTAL	O	Oscillation output
12	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
13	/DRESET	/RESET	I	Delayed reset
14	NMI/DGND	NMI	I	(Pull-down)
15	DGND	GND	–	Ground of external
16	–	RTXO	O	
17	RTXI/DGND	RTXI	I	(Pull-down)
18	–	VDDRTC	–	
19	DGND	GND	–	Ground of external
20	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
21	–	PPI_CLK	I	
22	–	PP10	I/O	
23	–	PP11	I/O	
24	–	PP12	I/O	
25	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
26	–	PP13	I/O	
27	DTXM	PF15	O	UART transmission for XM (U, C models)
28	DRXM	PF14	I	UART reception for XM (U, C models)
29	–	PF13	I	
30	DGND	GND	–	Ground of external
31	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
32	/ICXM	PF12	O	Reset for XM (U, C models)
33	/XMPWR	PF11	O	XM power switch (U, C models)
34	INTAK	PF10	I	CODEC IC (IC301) interrupt
35	FSYNC/TFS0	PF9	I	Frame sync detect
36	R2A_DATA	PF8	O	DATA for R2A volume/selector IC (IC162)
37	R2A_CLK	PF7	O	CLK for R2A volume/selector IC (IC161)
38	VRB	PF6	I	Volume rotary B
39	DGND	GND	–	Ground of external
40	DGND	GND	–	Ground of external
41	DGND	GND	–	Ground of external
42	DGND	GND	–	Ground of external
43	DGND	GND	–	Ground of external
44	DGND	GND	–	Ground of external
45	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
46	VRA	PF5	I	Volume rotary A
47	REM	PF4	I	IR remote control pulse input
48	PSW	PF3	I	Power switch (STANDBY/ON)
49	/SPISEL2	PF2	O	CS for EEPROM (IC102)
50	/SPISEL1	PF1	O	CS for 4 ch ADC (IC401)
51	/EXPE	PF0	O	Extended port enable
52	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
53	SPISCK	SCK	I/O	SPI clock
54	SPIMI	MISO	I/O	Master input/slave output
55	SPIMO	MOSI	I/O	Master output/slave input
56	DGND	GND	–	Ground of external
57	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
58	DT1SEC	DT1SEC	O	Serial port 1, secondary transmission data
59	DT1PRI	DT1PRI	O	Serial port 1, primary transmission data
60	TFS1	TFS1	I/O	Serial port 1, frame asynchronous transmission

Pin No.	Port Name	Function Name	I/O	Detail of Function
61	TSCLK1	TSCLK1	I/O	Serial port 1, serial transmission clock
62	DR1SEC	DR1SEC	I	Serial port 1, secondary reception data
63	DR1PRI	DR1PRI	I	Serial port 1, primary reception data
64	RFS1	RFS1	I/O	Serial port 1, frame synchronization reception
65	RSCLK1	RSCLK1	I/O	Serial port 1, serial reception clock
66	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
67	DT0SEC	DT0SEC	O	Serial port 0, secondary transmission data
68	DT0PRI	DT0PRI	O	Serial port 0, primary transmission data
69	TFS0	TFS0	I/O	Serial port 0, frame asynchronous transmission
70	DGND	GND	–	Ground of external
71	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
72	TSCLK0	TSCLK0	I/O	Serial port 0, serial transmission clock
73	DR0SEC	DR0SEC	I	Serial port 0, secondary reception data
74	DR0PRI	DR0PRI	I	Serial port 0, primary reception data
75	RFS0	RFS0	I/O	Serial port 0, frame synchronization reception
76	RSCLK0	RSCLK0	I/O	Serial port 0, serial reception clock
77	–	TMR2	I/O	
78	–	TMR1	I/O	
79	LIMITER	TMR0	O	Limiter control output
80	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
81	TxDi	TX	O	UART transmission for DOCK (iPod)
82	RxDi	RX	I	UART reception for DOCK (iPod)
83	–	/EMU	O	
84	–	/TRST	I	
85	–	TMS	I	
86	–	TDI	I	
87	–	TDO	O	
88	DGND	GND	–	Ground of external
89	DGND	GND	–	Ground of external
90	DGND	GND	–	Ground of external
91	DGND	GND	–	Ground of external
92	DGND	GND	–	Ground of external
93	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
94	–	TCK	I	
95	BMODE1	BMODE1	I	(Pull-down)
96	BMODE0	BMODE0	I	(Pull-up)
97	DGND	GND	–	Ground of external
98	D16	DATA15	I/O	SDRAM data bus 16
99	D15	DATA14	I/O	SDRAM data bus 15
100	D14	DATA13	I/O	SDRAM data bus 14
101	D13	DATA12	I/O	SDRAM data bus 13
102	D12	DATA11	I/O	SDRAM data bus 12
103	D11	DATA10	I/O	SDRAM data bus 11
104	D09	DATA9	I/O	SDRAM data bus 09
105	D08	DATA8	I/O	SDRAM data bus 08
106	DGND	GND	–	Ground of external
107	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
108	D07	DATA7	I/O	SDRAM data bus 07
109	D06	DATA6	I/O	SDRAM data bus 06
110	D05	DATA5	I/O	SDRAM data bus 05
111	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
112	D04	DATA4	I/O	SDRAM data bus 04
113	D03	DATA3	I/O	SDRAM data bus 03
114	D02	DATA2	I/O	SDRAM data bus 02
115	D01	DATA1	I/O	SDRAM data bus 01
116	D00	DATA0	I/O	SDRAM data bus 00
117	DGND	GND	–	Ground of external
118	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
119	–	/BG	O	
120	–	/BGH	O	

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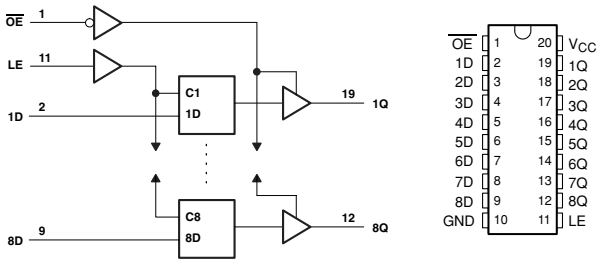
Pin No.	Port Name	Function Name	I/O	Detail of Function
121	A19	ADDR19	O	SDRAM address bus 19
122	A18	ADDR18	O	SDRAM address bus 18
123	A17	ADDR17	O	SDRAM address bus 17
124	A16	ADDR16	O	SDRAM address bus 16
125	A15	ADDR15	O	SDRAM address bus 15
126	A14	ADDR14	O	SDRAM address bus 14
127	A13	ADDR13	O	SDRAM address bus 13
128	DGND	GND	–	Ground of external
129	DGND	GND	–	Ground of external
130	DGND	GND	–	Ground of external
131	DGND	GND	–	Ground of external
132	DGND	GND	–	Ground of external
133	DGND	GND	–	Ground of external
134	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
135	A12	ADDR12	O	SDRAM address bus 12
136	A11	ADDR11	O	SDRAM address bus 11
137	A10	ADDR10	O	SDRAM address bus 10
138	A09	ADDR9	O	SDRAM address bus 09
139	A08	ADDR8	O	SDRAM address bus 08
140	A07	ADDR7	O	SDRAM address bus 07
141	A06	ADDR6	O	SDRAM address bus 06
142	A05	ADDR5	O	SDRAM address bus 05
143	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
144	DGND	GND	–	Ground of external
145	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
146	A04	ADDR4	O	SDRAM address bus 04
147	A03	ADDR3	O	SDRAM address bus 03
148	A02	ADDR2	O	SDRAM address bus 02
149	A01	ADDR1	O	SDRAM address bus 01
150	SDQM1	/ABE1	O	SDRAM byte enable/data mask 1
151	SDQM0	/ABE0	O	SDRAM byte enable/data mask 0
152	/AWE	/AWE	O	Write enable (Asynchronous)
153	/ARE	/ARE	O	Read enable
154	/AOE	/AOE	O	Output enable
155	DGND	GND	–	Ground of external
156	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
157	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
158	/AMS3	/AMS3	O	Bank select 3
159	/AMS2	/AMS2	O	Bank select 2
160	/AMS1	/AMS1	O	Bank select 1
161	/AMS0	/AMS0	O	Bank select 0
162	ARDY	ARDY	I	Hardware ready control
163	/BR	/BR	I	(Pull-up)
164	SA10	SA10	O	A10 pin
165	/SWE	/SWE	O	Write enable (Synchronization)
166	/SCAS	/SCAS	O	Sequence address strobe
167	/SRAS	/SRAS	O	Line address strobe
168	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
169	CLKOUT	CLKOUT	O	Clock output
170	DGND	GND	–	Ground of external
171	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
172	/SMS	/SMS	O	Bank select
173	SCKE	SCKE	O	Clock enable
174	DGND	GND	–	Ground of external
175	DGND	GND	–	Ground of external
176	DGND	GND	–	Ground of external

- **Microprocessor extended port**

IC204-IC207: 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	7D	D06	Data bus 06
9	8D	D07	Data bus 07
10	GND	DGND	Ground of external
11	LE	LEEX1	Bank select 1
12	8Q	/SPISEL3	CS for CODEC IC (IC301, DSP P.C.B.)
13	7Q	ADSEL2	4ch ADC input select 2
14	6Q	ADSEL1	4ch ADC input select 1
15	5Q	ADSEL0	4ch ADC input select 0
16	4Q	/CCBE	SPI bus switch
17	3Q	/CMT	Center mute
18	2Q	/SMT	Surround mute
19	1Q	/FMT	Front mute
20	VCC	EX3.3	Power supply

IC205

Pin No.	Port Name	Function Name	Detail of Function
1	/OE	/EXPE	Extended port enable
2	1D	D08	Data bus 08
3	2D	D09	Data bus 09
4	3D	D10	Data bus 10
5	4D	D11	Data bus 11
6	5D	D12	Data bus 12
7	6D	D13	Data bus 13
8	7D	D14	Data bus 14
9	8D	D15	Data bus 15
10	GND	DGND	Ground of external
11	LE	LEEX1	Bank select 1
12	8Q	Ex1-15/CLKSEL	XM clock select (U, C models)
13	7Q	SSEL3	SCENE select LED switch 3
14	6Q	SSEL2	SCENE select LED switch 2
15	5Q	SSEL1	SCENE select LED switch 1
16	4Q	/IC_AK	IC for CODEC IC (IC301, DSP P.C.B.) and VFD (IC201, OPERATION P.C.B.)
17	3Q	/SPISEL4	CS for VFD (IC201, OPERATION P.C.B.)
18	2Q	/3.3SW	+3.3S switch
19	1Q	PRY	Power relay
20	VCC	EX3.3	Power supply

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IC206

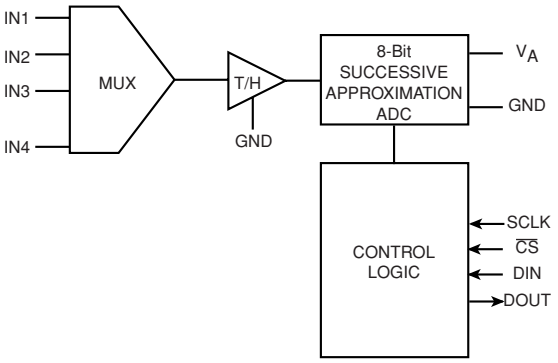
Pin No.	Port Name	Function Name	Detail of Function
1	/OE	/EXPE	Extended port enable
2	1D	D00	Data bus 00
3	2D	D01	Data bus 01
4	3D	D02	Data bus 02
5	4D	D03	Data bus 03
6	5D	D04	Data bus 04
7	6D	D05	Data bus 05
8	7D	D06	Data bus 06
9	8D	D07	Data bus 07
10	GND	DGND	Ground of external
11	LE	LEEX2	Bank select 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/RY105, MAIN P.C.B.)
19	1Q	/SWMT	Subwoofer mute
20	VCC	EX3.3	Power supply

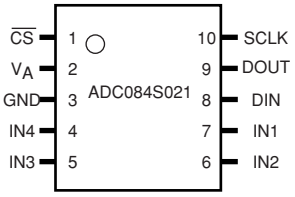
IC207

Pin No.	Port Name	Function Name	Detail of Function
1	/OE	/EXPE	Extended port enable
2	1D	D08	Data bus 08
3	2D	D09	Data bus 09
4	3D	D10	Data bus 10
5	4D	D11	Data bus 11
6	5D	D12	Data bus 12
7	6D	D13	Data bus 13
8	7D	D14	Data bus 14
9	8D	D15	Data bus 15
10	GND	DGND	Ground of external
11	LE	LEEX2	Bank select 2
12	8Q	DST	Direct stereo
13	7Q	/OSDSEL	OSD/Video select
14	6Q	MON	Monitor mute
15	5Q	/SPISEL6	CS for OSD (IC342, VIDEO P.C.B.)
16	4Q	VIC	Video select C
17	3Q	–	
18	2Q	Ex2-09/VIB	Video select B
19	1Q	Ex2-08/VIA	Video select A
20	VCC	EX3.3	Power supply

- **Microprocessor ADC select port**

IC401: ADC084S021CIMM (DSP P.C.B.)
4-channel, 200 kSPS, 8-bit A/D converter



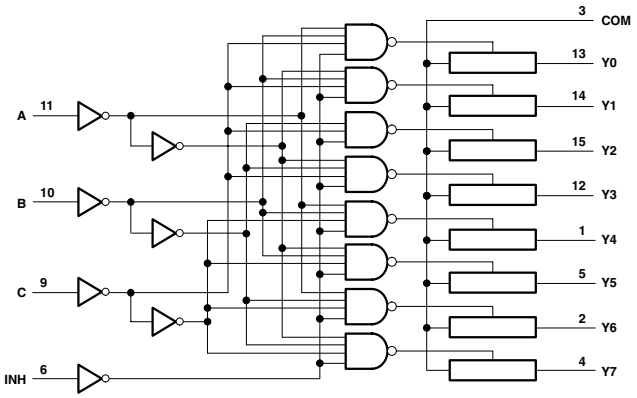


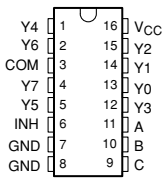
Pin No.	Port Name	Function Name	Detail of Function
1	/CS	/SPISEL1	CS for microprocessor
2	VA	VA	+3.3S
3	GND	DGND	Ground of external
4	IN4	IN4	SPI bus COM (IC402)
5	IN3	IN3	SPI bus COM (IC403)
6	IN2	KEY1	Key input 1
7	IN1	KEY0	Key input 0
8	DIN	SPIMO	Master output/slave input
9	DOUT	SPIMI	Master input/slave output
10	SCLK	SPISCK	SPI clock

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

Ohm [ohm]	+1.0 k	+1.0 k	+1.5 k	+2.2 k	+3.3 k	+4.7 k	+4.7 k	+6.8 k	+10.0 k	+22.0 k
V [V]	0.3	0.55	0.86	1.2	1.56	1.91	2.14	2.36	2.57	2.81
KEY0 (7 pin)	SCENE 1	SCENE 2	PROGRAM <	PROGRAM >	STRAIGHT	TONE CONTROL	SEARCH MODE	FM/AM	A/B/C/D/E	SPEAKERS
KEY1 (6 pin)	SCENE 3	SCENE 4	DIRECT	AUDIO SELECT	INPUT <	INPUT >	PRESET/ TUNING <	PRESET/ TUNING >	MEMORY	TUNING

IC402, IC403: SN74LV4051APWR (DSP P.C.B.)
8-channel analog multiplexers/demultiplexers





INPUTS				ON CHANNEL
INH	C	B	A	
L	L	L	L	Y0
L	L	L	H	Y1
L	L	H	L	Y2
L	L	H	H	Y3
L	H	L	L	Y4
L	H	L	H	Y5
L	H	H	L	Y6
L	H	H	H	Y7
H	X	X	X	None

RX-V461/HTR-6040/DSP-AX461

IC402

Pin No.	Port Name	Function Name	Detail of Function
1	Y4	iPAP	DOCK (iPod) detect (ACCPOW)
2	Y6	DEST2	Destination 2 *
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	iPDET	DOCK (iPod) detect (iPDET)
13	Y0	/MIC	MIC detect
14	Y1	/ST	Stereo for tuner
15	Y2	/TUNED	Tuned for tuner
16	Vcc	+3.3S	Power supply

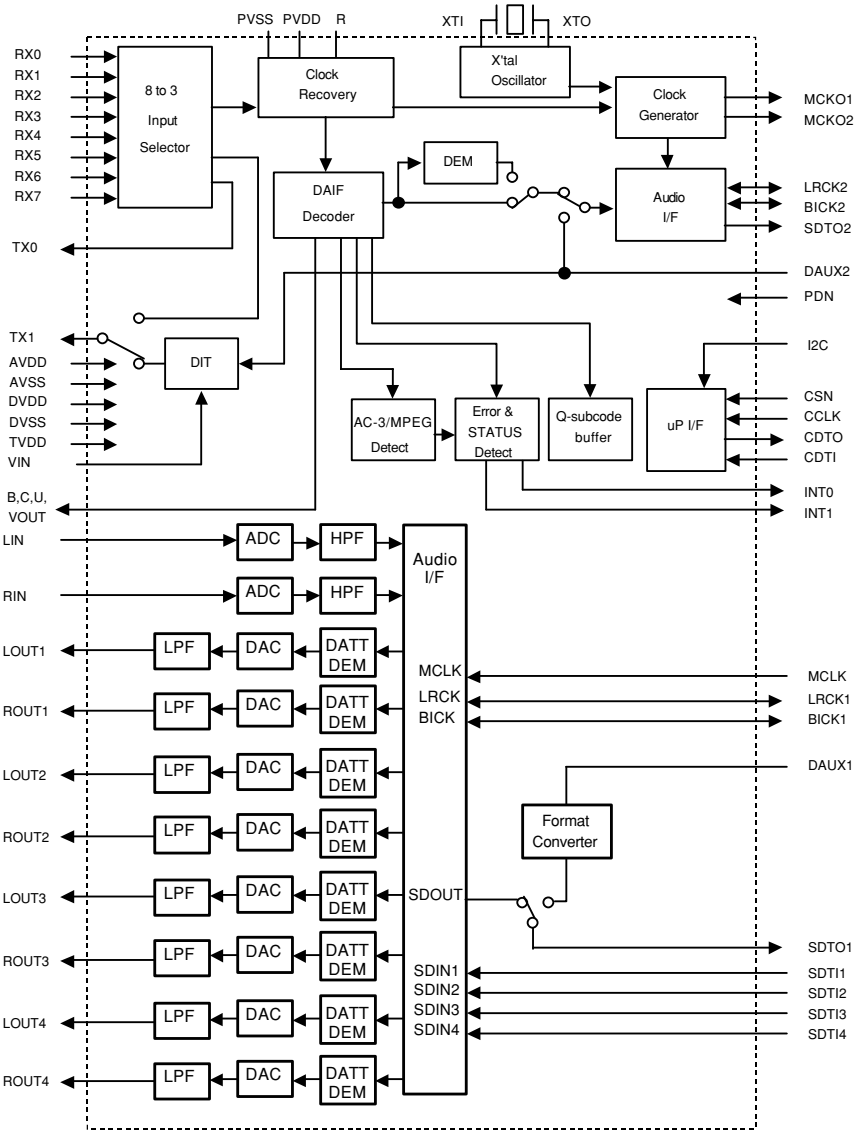
* Destination for A/D port

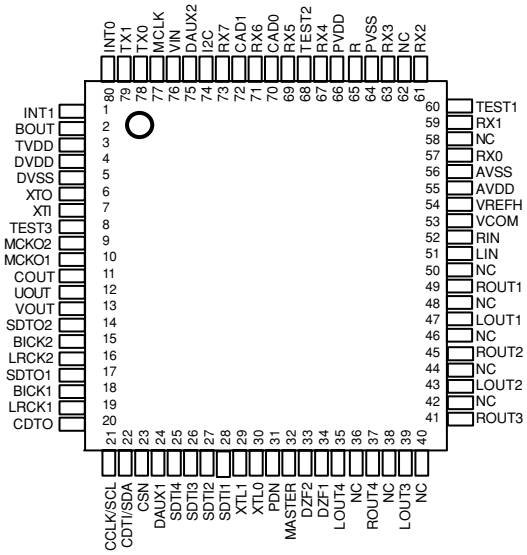
R416 [ohm]	1.5 k	5.6 k	1.0 k	6.8 k	100 k	3.3 k
R410 [ohm]	3.3 k	22 k	8.2 k	3.3 k	(open)	4.7 k
DEST2 (2 pin) [V]	2.1-2.4	2.5-2.8	2.8-3.1	1.0-1.3	3.1-3.3	1.8-2.1
A/D value (3.3 V=255)	164-189	190-215	216-239	70-99	240-255	133-163
Destination	J	U, C	R	K	A	L

IC403

Pin No.	Port Name	Function Name	Detail of Function
1	Y4	DEST	Destination 1 (fixed)
2	Y6	/PDET	Sub-trans detect
3	COM	COM	SPI bus IN3 (IC401)
4	Y7	/HP	Headphone detect
5	Y5	PRIIN	Current protection
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	PLDET	Limiter detect
13	Y0	PRDIN	Amplifier DC detect
14	Y1	PRVIN	Voltage protection
15	Y2	THMIN	Thermo protection
16	Vcc	+3.3S	Power supply

IC301: AK4588VQ (DSP P.C.B.)
2/8-channel audio CODEC with DIR





RX-V461/HTR-6040/DSP-AX461

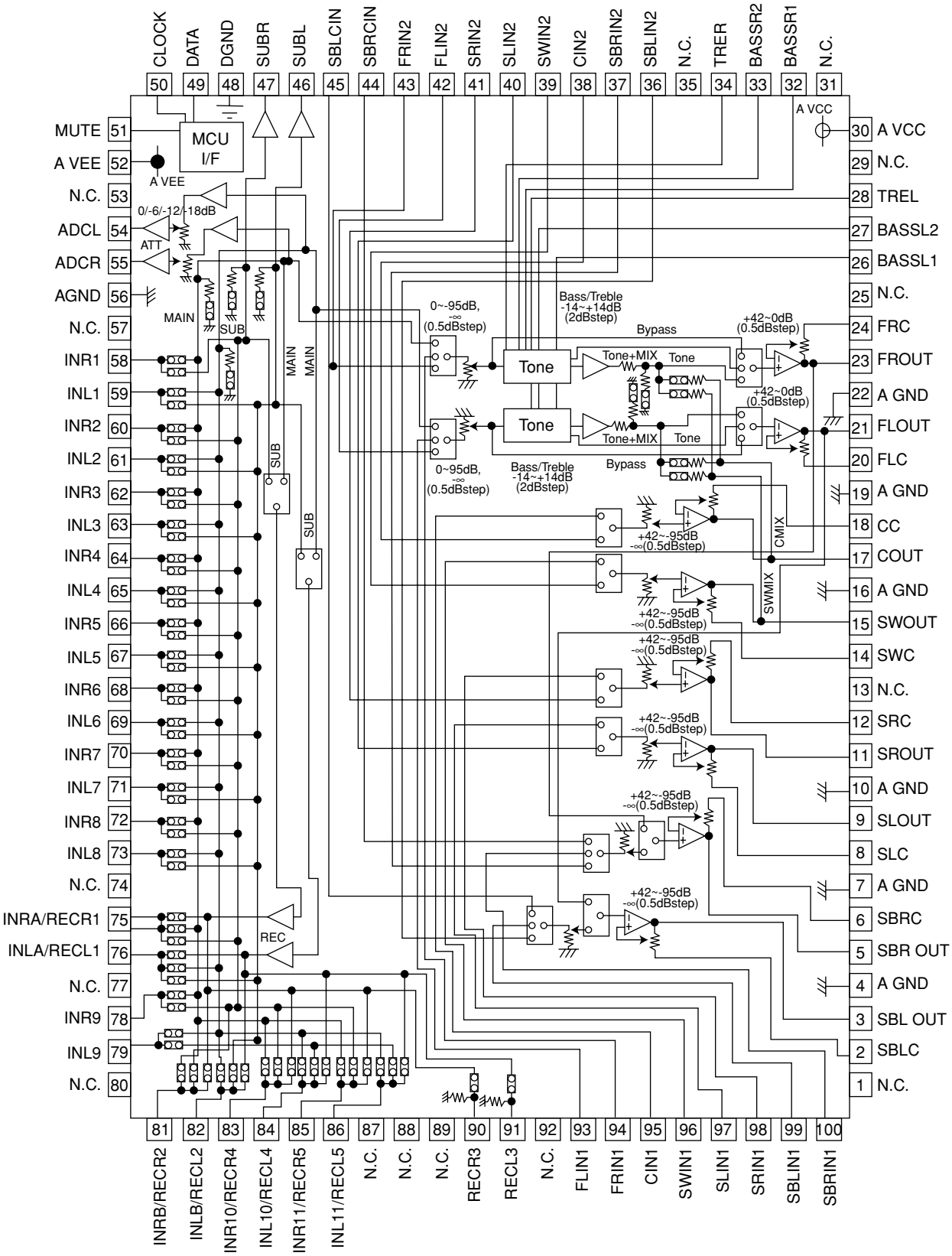
Pin No.	Function Name	I/O	Detail of Function
1	INT1	O	Interrupt 1 pin
2	BOUT	O	Block-start output pin for receiver input “H” during first 40 flames
3	TVDD	–	Output buffer power supply pin, 2.7 V to 5.5 V
4	DVDD	–	Digital power supply pin, 4.5 V to 5.5 V
5	DVSS	–	Digital ground pin
6	XTO	O	X’tal clock output pin
7	XTI	I	X’tal / External clock input pin
8	TEST3	I	Test 3 pin This pin should be connected to DVSS
9	MCKO2	O	Master clock output 2 pin
10	MCKO1	O	Master clock output 1 pin
11	COUT	O	C-bit output pin for receiver input
12	UOUT	O	U-bit output pin for receiver input
13	VOUT	O	V-bit output pin for receiver input
14	SDTO2	O	Audio serial data output pin (DIR/DIT part)
15	BICK2	I/O	Audio serial data clock pin (DIR/DIT part)
16	LRCK2	I/O	Channel clock pin (DIR/DIT part)
17	SDTO1	O	Audio serial data output pin (ADC/DAC part)
18	BICK1	I/O	Audio serial data clock pin (ADC/DAC part)
19	LRCK1	I/O	Input channel clock pin
20	CDTO	O	Control data output pin in serial mode, I2C pin= “L”
21	CCLK	I	Control data clock pin in serial mode, I2C pin= “L”
	SCL	I	Control data clock pin in serial mode, I2C pin= “H”
22	CDTI	I	Control data input pin in serial mode, I2C pin= “L”
	SDA	I/O	Control data pin in serial mode, I2C pin= “H”
23	CSN	I	Chip select pin in serial mode, I2C pin=”L”
		I	This pin should be connected to DVSS, I2C pin=”H”
24	DAUX1	I	AUX audio serial data input pin (ADC/DAC part)
25	SDTI4	I	DAC4 audio serial data input pin
26	SDTI3	I	DAC3 audio serial data input pin
27	SDTI2	I	DAC2 audio serial data input pin
28	SDTI1	I	DAC1 audio serial data input pin
29	XTL1	I	X’tal frequency select 0 pin
30	XTL0	I	X’tal frequency select 1 pin
31	PDN	I	Power-down mode pin When “L”, the AK4588 is powered-down, all output pin goes “L”, all registers are reset When CAD1-0 pins are changed, the AK4588 should be reset by PDN pin
32	MASTER	I	Master mode select pin “H”: Master mode, “L”: Slave mode
33	DZF2	O	Zero input detect 2 pin (table 13) When the input data of the group 1 follow total 8192 LRCK cycles with “0” input data, this pin goes to “H” / When RSTN1 bit is “0” or PWDAN bit is “0”, this pin goes to “H”
	OVF	O	Analog input overflow detect pin This pin goes to “H” if the analog input of L ch or R ch overflows This pin becomes OVF pin if OVFE bit is set to 1
34	DZF1	O	Zero input detect 1 pin (table 13) When the input data of the group 1 follow total 8192 LRCK cycles with “0” input data, this pin goes to “H” / When RSTN1 bit is “0” or PWDAN bit is “0”, this pin goes to “H”
35	LOUT4	O	DAC4 L ch analog output pin
36	NC	–	No connect pin No internal bonding / This pin should be opened
37	ROUT4	O	DAC4 R ch analog output pin
38	NC	–	No connect pin No internal bonding / This pin should be opened
39	LOUT3	O	DAC3 L ch analog output pin
40	NC	–	No connect pin No internal bonding / This pin should be opened

Pin No.	Function Name	I/O	Detail of Function
41	ROUT3	O	DAC3 R ch analog output pin
42	NC	–	No connect pin No internal bonding / This pin should be opened
43	LOUT2	O	DAC2 L ch analog output pin
44	NC	–	No connect pin No internal bonding / This pin should be opened
45	ROUT2	O	DAC2 R ch analog output pin
46	NC	–	No connect pin No internal bonding / This pin should be opened
47	LOUT1	O	DAC1 L ch analog output pin
48	NC	–	No connect pin No internal bonding / This pin should be opened
49	ROUT1	O	DAC1 R ch analog output pin
50	NC	–	No connect pin No internal bonding / This pin should be opened
51	LIN	I	L ch analog input pin
52	RIN	I	R ch analog input pin
53	VCOM	–	Common voltage output pin 2.2 F capacitor should be connected to AVSS externally
54	VREFH	–	Positive voltage reference input pin, AVDD
55	AVDD	–	Analog power supply pin, 4.5 V to 4.5 V
56	AVSS	–	Analog ground pin, 0 V
57	RX0	I	Receiver channel 0 pin (Internal biased pin / Internally biased at PVDD/2)
58	NC	–	No connect pin No internal bonding / This pin should be connected to PVSS
59	RX1	I	Receiver channel 1 pin (Internal biased pin / Internally biased at PVDD/2)
60	TEST1	I	Test 1 pin This pin should be connected to PVSS
61	RX2	I	Receiver channel 2 pin (Internal biased pin / Internally biased at PVDD/2)
62	NC	–	No connect pin No internal bonding / This pin should be connected to PVSS
63	RX3	I	Receiver channel 3 pin (Internal biased pin / Internally biased at PVDD/2)
64	PVSS	–	PLL ground pin
65	R	–	External resistor pin 12 k-ohms +/-1 % resistor should be connected to PVSS externally
66	PVDD	–	PLL power supply pin, 4.5 V to 4.5 V
67	RX4	I	Receiver channel 4 pin (Internal biased pin / Internally biased at PVDD/2)
68	TEST2	I	Test 2 pin This pin should be connected to PVSS
69	RX5	I	Receiver channel 5 pin (Internal biased pin / Internally biased at PVDD/2)
70	CAD0	I	Chip address 0 pin (ADC/DAC part)
71	RX6	I	Receiver channel 6 pin (Internal biased pin / Internally biased at PVDD/2)
72	CAD1	I	Chip address 1 pin (ADC/DAC part)
73	RX7	I	Receiver channel 7 pin (Internal biased pin / Internally biased at PVDD/2)
74	I2C	I	Control mode select pin “L”: 4-wire serial, “H”: I2C bus
75	DAUX2	I	Auxiliary audio data input pin (DIR/DIT part)
76	VIN	I	V-bit input pin for transmitter output
77	MCLK	I	Master clock input pin
78	TX0	O	Transmit channel (through data) output 0 pin
79	TX1	O	Transmit channel output 1 pin When TX bit = “0”, transmit channel (through data) output 1 pin. When TX bit = “1”, transmit channel (DAUX2 data) output pin (default)
80	INT0	O	Interrupt 0 pin

Note: All input pins except internal biased pins and internal pull-down pin should not be left floating.

RX-V461/HTR-6040/DSP-AX461

IC161: R2A15215FP (MAIN P.C.B.)
8-channel electronic volume with 11 input selector and tone control

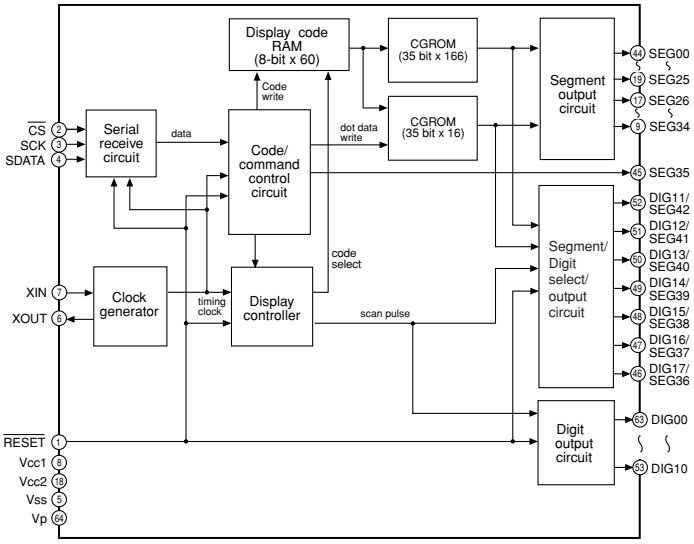


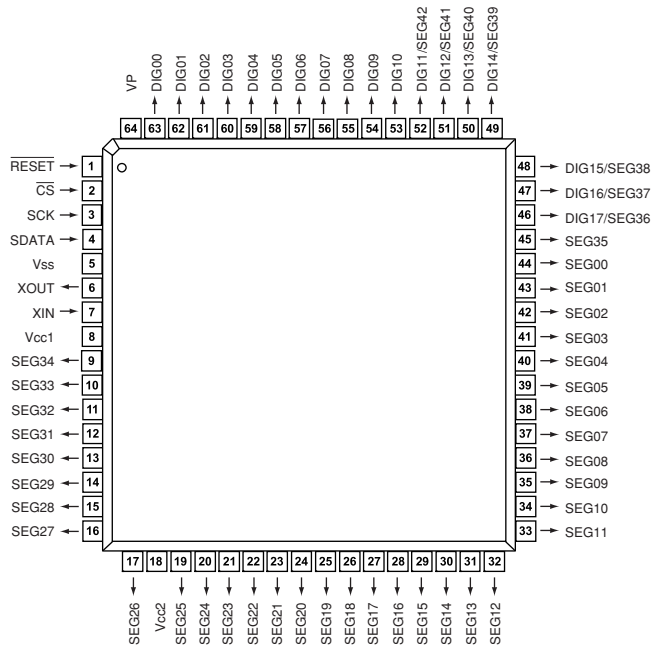
Pin No.	Function Name	Detail of Function
1	N.C.	No connected
2	SBLC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
3	SBLOUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
4	AGND	Analog GND terminal
5	SBROUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
6	SBRC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
7	AGND	Analog GND terminal
8	SLC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
9	SLOUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
10	AGND	Analog GND terminal
11	SROUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
12	SRC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
13	N.C.	No connected
14	SWC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
15	SWOUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
16	AGND	Analog GND terminal
17	COUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
18	CC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
19	AGND	Analog GND terminal
20	FLC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
21	FLOUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
22	AGND	Analog GND terminal
23	FROUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
24	FRC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
25	N.C.	No connected
26	BASSL1	L/R ch tone control (Bass) terminal for setting frequency characteristics
27	BASSL2	L/R ch tone control (Bass) terminal for setting frequency characteristics
28	TREL	L/R ch tone control (Treble) terminal for setting frequency characteristics
29	N.C.	No connected
30	AVCC	Positive side power terminal
31	N.C.	No connected
32	BASSR1	L/R ch tone control (Bass) terminal for setting frequency characteristics
33	BASSR2	L/R ch tone control (Bass) terminal for setting frequency characteristics
34	TRER	L/R ch tone control (Treble) terminal for setting frequency characteristics
35	N.C.	No connected
36	SBLIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
37	SBRIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
38	CIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
39	SWIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
40	SLIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
41	SRIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
42	FLIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
43	FRIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
44	SBRCIN	SBL/SBR ch volume input terminal
45	SBLCIN	SBL/SBR ch volume input terminal
46	SUBL	L/R ch SUB output terminal
47	SUBR	L/R ch SUB output terminal
48	DGND	Digital GND terminal
49	DATA	Control data input terminal
50	CLOCK	Control data input terminal
51	MUTE	External mute control terminal
52	AVEE	Negative side power terminal
53	N.C.	No connected
54	ADCL	L/R ch ADC output terminal
55	ADCR	L/R ch ADC output terminal

Pin No.	Function Name	Detail of Function
56	AGND	Analog GND terminal
57	N.C.	No connected
58	INR1	L/R ch input terminal (input selector)
59	INL1	L/R ch input terminal (input selector)
60	INR2	L/R ch input terminal (input selector)
61	INL2	L/R ch input terminal (input selector)
62	INR3	L/R ch input terminal (input selector)
63	INL3	L/R ch input terminal (input selector)
64	INR4	L/R ch input terminal (input selector)
65	INL4	L/R ch input terminal (input selector)
66	INR5	L/R ch input terminal (input selector)
67	INL5	L/R ch input terminal (input selector)
68	INR6	L/R ch input terminal (input selector)
69	INL6	L/R ch input terminal (input selector)
70	INR7	L/R ch input terminal (input selector)
71	INL7	L/R ch input terminal (input selector)
72	INR8	L/R ch input terminal (input selector)
73	INL8	L/R ch input terminal (input selector)
74	N.C.	No connected
75	INRA/RECR1	L/R ch input terminal (input selector) / L/R ch REC output terminal
76	INLA/RECL1	L/R ch input terminal (input selector) / L/R ch REC output terminal
77	N.C.	No connected
78	INR9	L/R ch input terminal (input selector)
79	INL9	L/R ch input terminal (input selector)
80	N.C.	No connected
81	INRB/RECR2	L/R ch input terminal (input selector) / L/R ch REC output terminal
82	INLB/RECL2	L/R ch input terminal (input selector) / L/R ch REC output terminal
83	INR10/RECR4	L/R ch input terminal (input selector) / L/R ch REC output terminal
84	INL10/RECL4	L/R ch input terminal (input selector) / L/R ch REC output terminal
85	INR11/RECR5	L/R ch input terminal (input selector) / L/R ch REC output terminal
86	INL11/RECL5	L/R ch input terminal (input selector) / L/R ch REC output terminal
87	N.C.	No connected
88	N.C.	No connected
89	N.C.	No connected
90	RECR3	L/R ch REC output terminal
91	RECL3	L/R ch REC output terminal
92	N.C.	No connected
93	FLIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
94	FRIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
95	CIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
96	SWIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
97	SLIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
98	SRIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
99	SBLIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
100	SBRIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)

RX-V461/HTR-6040/DSP-AX461

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



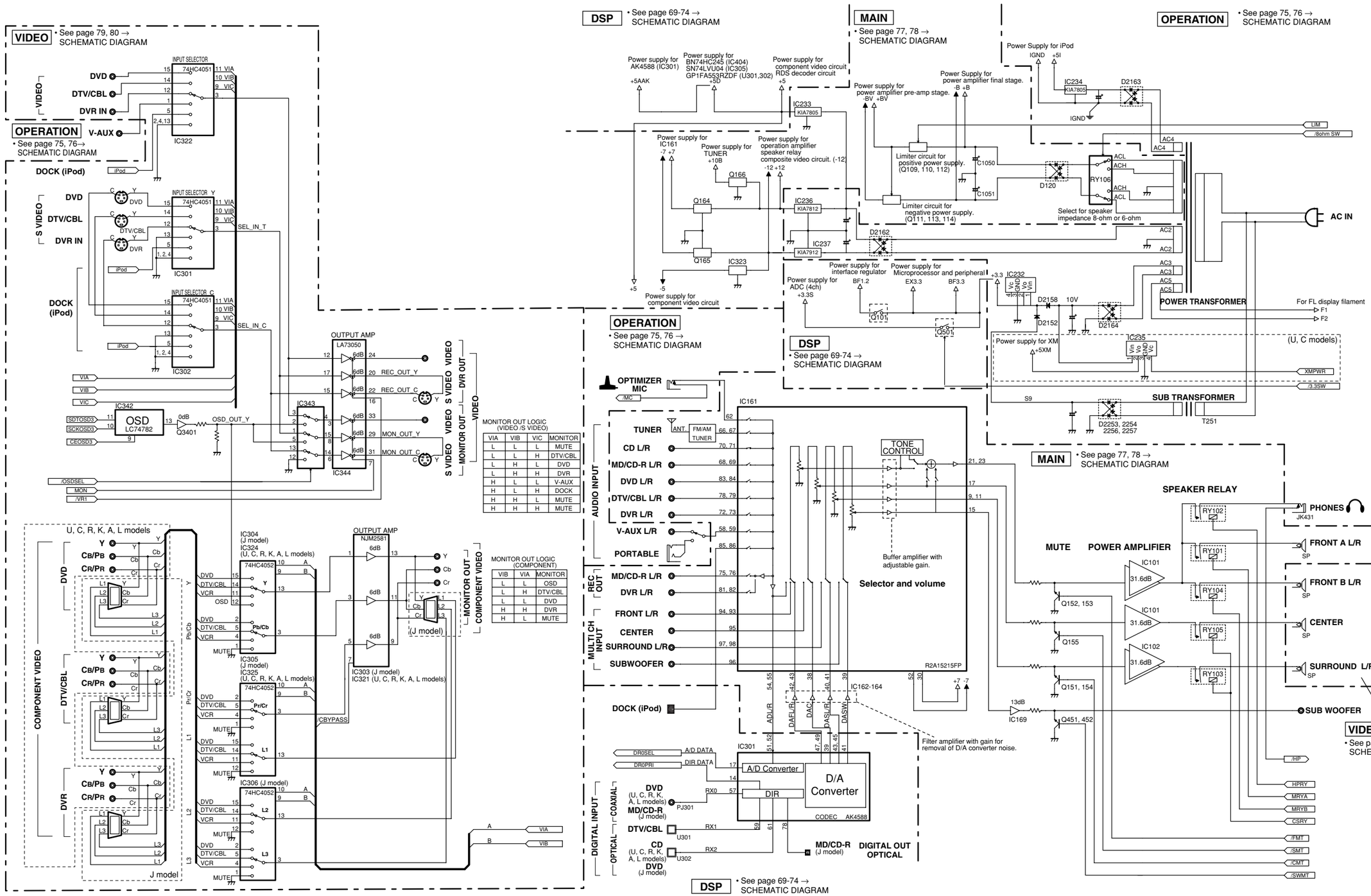


RX-V461/HTR-6040/DSP-AX461

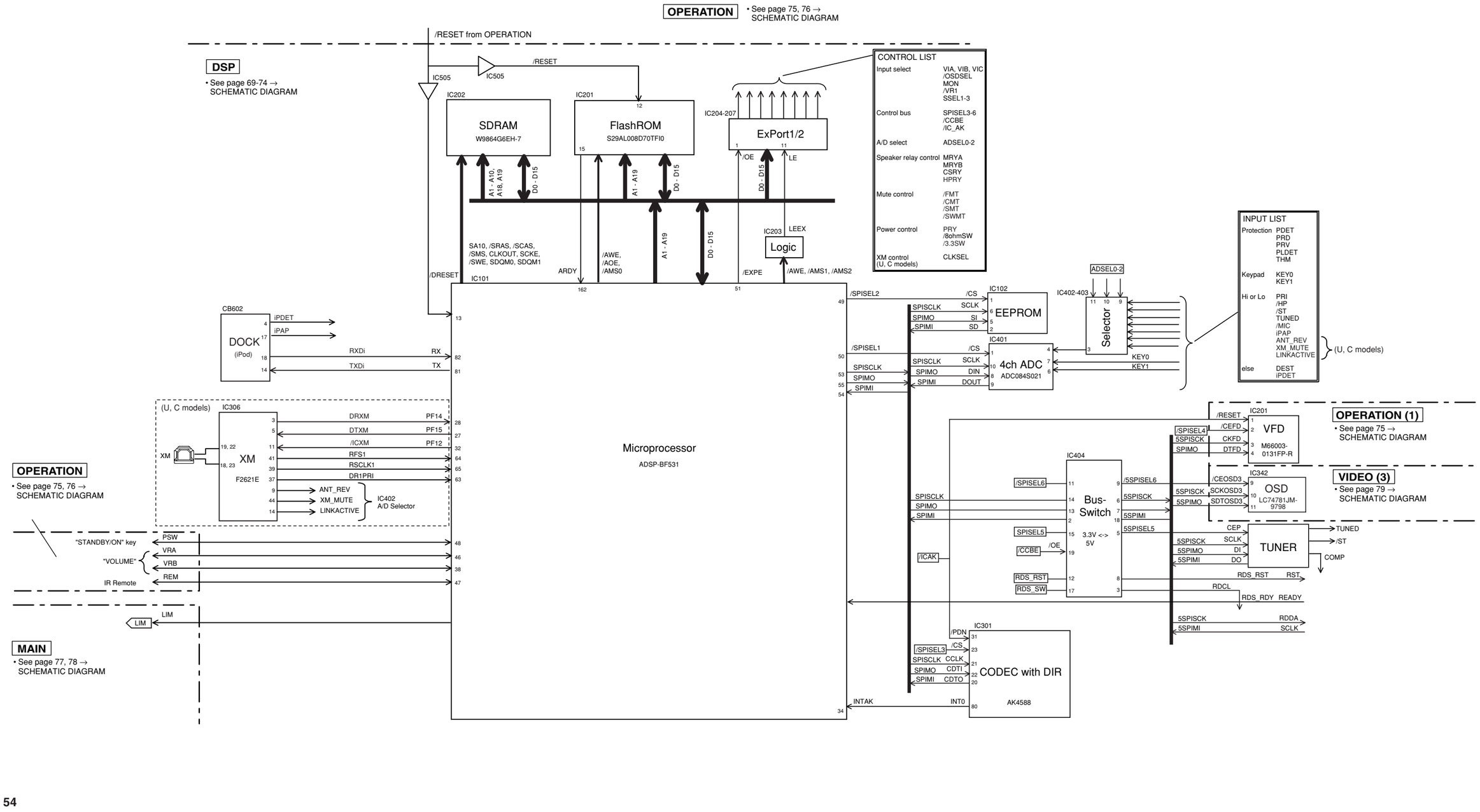
Pin No.	Port Name	Function Name	I/O	Detail of Function
1	$\overline{\text{Reset}}$	/RESET	Reset input	When "L", M66003 is initialized
2	$\overline{\text{CS}}$	/CEFL	Chip select input	When "L", communication with the MCU is possible When "H", any instruction from the MCU is neglected
3	SCK	CKFL	Shift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

■ BLOCK DIAGRAMS

Video, Audio and Power Supply Sections

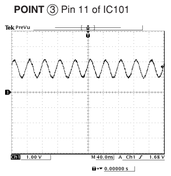


Control Section

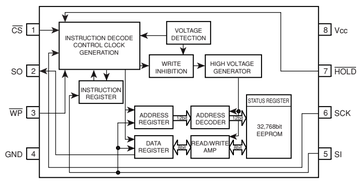


■ SCHEMATIC DIAGRAMS
DSP 1/6

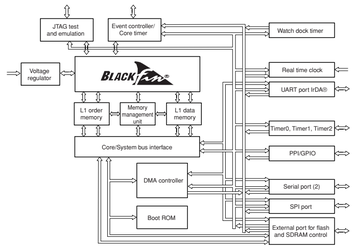
POINT ③ Pin 11 of IC101



IC102: BR25L320F-W EEPROM
SPI BUS 32 k-bit (4,096 x 8-bit) EEPROM



IC101: ADSP-BF531 CPU
Microprocessor



NOTICE (model)
(U)····· JAPAN
(U)····· U.S.A
(C)····· CANADA
(R)····· GENERAL
(T)····· CHINA
(K)····· KOREA
(A)····· AUSTRALIA
(B)····· BRITISH
(G)····· EUROPE
(L)····· SINGAPORE
(E)····· SOUTH EUROPE
(V)····· TAIWAN

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★ Schematic diagram is subject to change without notice.

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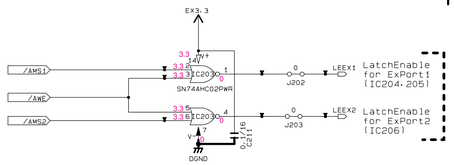
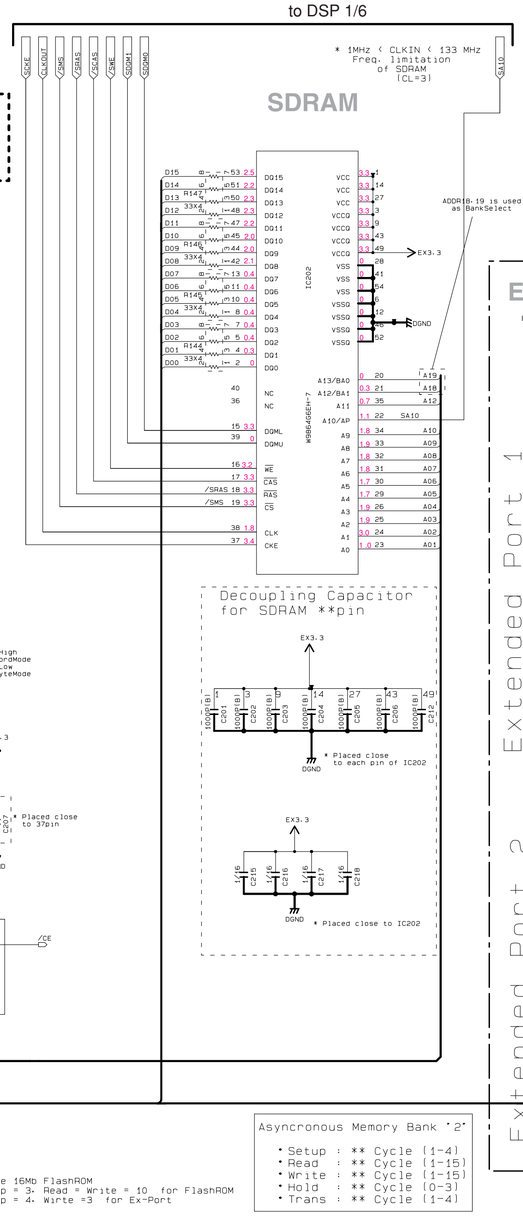
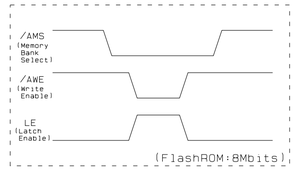
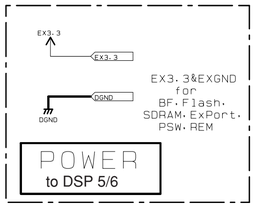
DSP 2/6









NOTICE (model)
(J)····· JAPAN
(U)····· U.S.A
(C)····· CANADA
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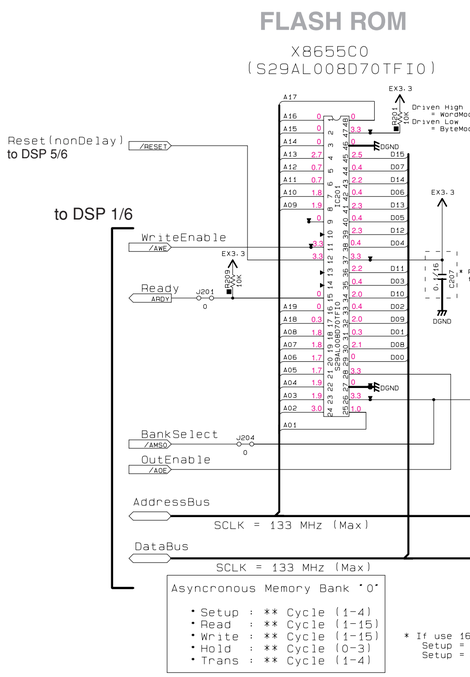
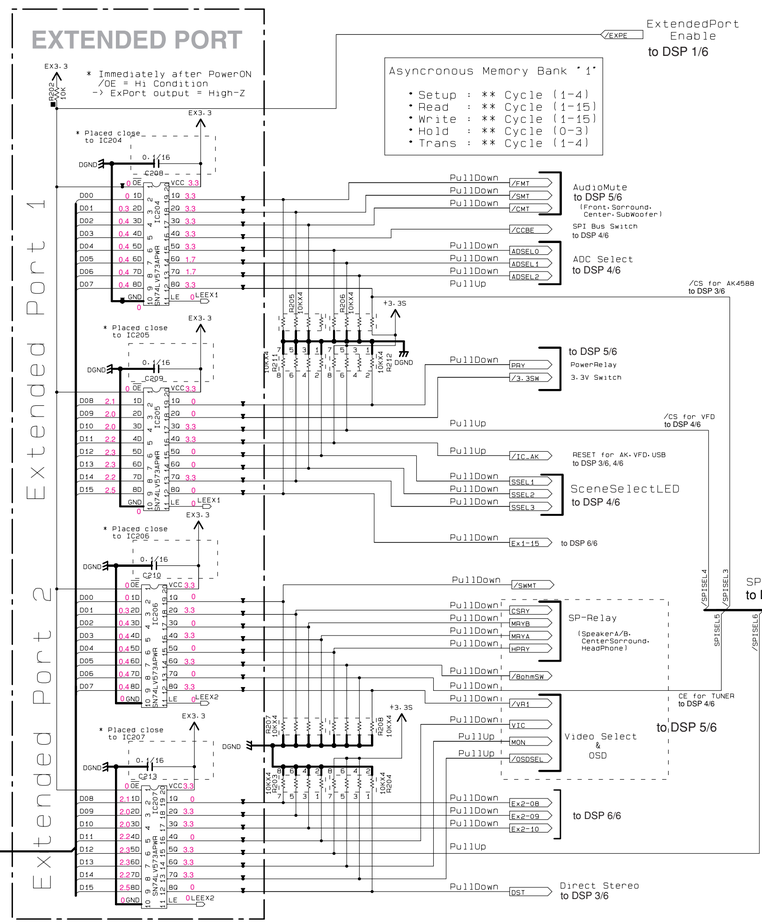
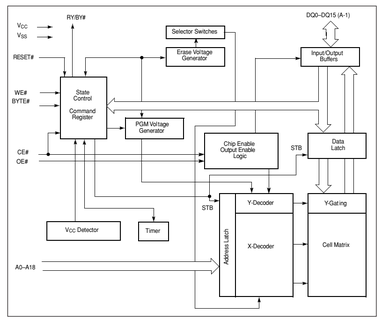
(E)····· SOUTH EUROPE
(V)····· TAIWAN

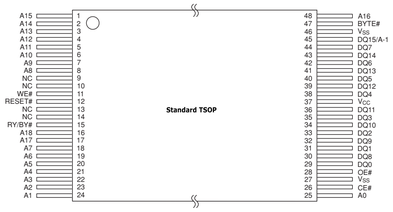


* If use 16Mb FlashROM
Setup = 3, Read = Write = 10 for FlashROM
Setup = 4, Wirte =3 for Ex-Port

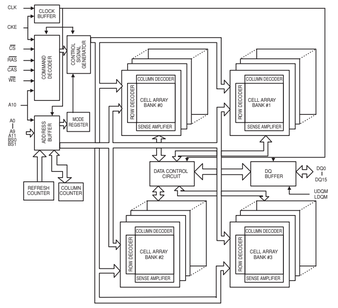


IC201: S29AL008D70TFI0
8 M-bit (1 M x 8-bit/512 K x 16-bit) COMS 3.0 volt-only boot sector flash memory

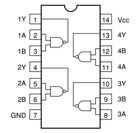




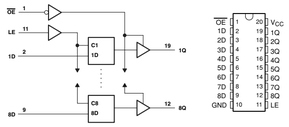
IC202: W9864G6EH
1 M x 4 banks x 16-bit SDRAM



IC203: SN74AHC02PWR
Quadruple 2-input positive-NOR gates



IC204-207: SN74LV573APWR
Octal 3-state D-latches with 3-state outputs



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★ Schematic diagram is subject to change without notice.

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DSP 3/6

Interchangeable Parts at Manufacture-Stage		
Mark	Reference Parts Number	Parts Name
&31	IC302-307	SN74LV157APWR 74VHC157MTCX_NF40

NOTICE (model)
(J)····· JAPAN
(U)····· U.S.A
(C)····· CANADA
(R)····· GENERAL
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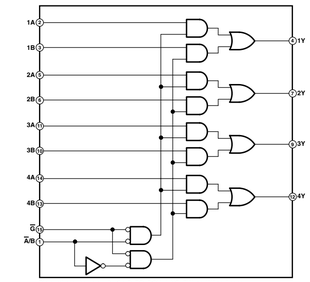
(E)····· SOUTH EUROPE
(V)····· TAIWAN

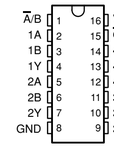
Destination Part List

SXX	LOC	J	UC	R	A	K	L	
s1	C319	US13510 0.1/16	x	x	x	x	x	
s2	L311	W53720 PZ2012U600-3ROT	x	x	x	x	x	OPT OUT
s3	U303	W55970 GP1FAV507TKOF	x	x	x	x	x	
s11	C337 C339 C330 C331 C323 C353 C338 C320 C332 C340	x	US13510 0.1/16	x	x	x	x	
s12	C335 C336	x	US06050 5PCH	x	x	x	x	
s13	C341	x	UR83747 47/16	x	x	x	x	
s15	CB302	x	WJ45870 CAM-D9605440248	x	x	x	x	
s16	D301 D302 D303	x	WE67480 AVRL1614R1NTB	x	x	x	x	XM
s17	IC306	x	X81924O F2628E-01-TR	x	x	x	x	
s18	IC307	x	X61234O SN74LV157APWR	x	x	x	x	
s19	J302 J301	x	RD35000 0	x	x	x	x	
s21	L306	x	W53720 PZ2012U600-3ROT	x	x	x	x	
s22	R315 R316	x	RD35610 100	x	x	x	x	
s23	R318 R317	x	RD35610 1K	x	x	x	x	
s24	R320 R319 R322 R321 R307 R312	x	RD35710 10K	x	x	x	x	
s25	R323	x	RE04433 33X4	x	x	x	x	
s26	R324	x	RD35510 100	x	x	x	x	
s27	R308 R310	x	RE04433 33X4	x	x	x	x	
s28	R325	x	RD35633 3.3K	x	x	x	x	
s29	R326 R327	x	RD35847 470K	x	x	x	x	
s31	XL302	x	WH45530 45.1584MHZ	x	x	x	x	
s41	R338	RE04433 33X4	x	RE04433 33X4	RE04433 33X4	RE04433 33X4	RE04433 33X4	BYPASS

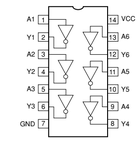
IC302, 307: SN74LV157APWR
Quadruple 2-line to 1-line data selectors/multiplexers



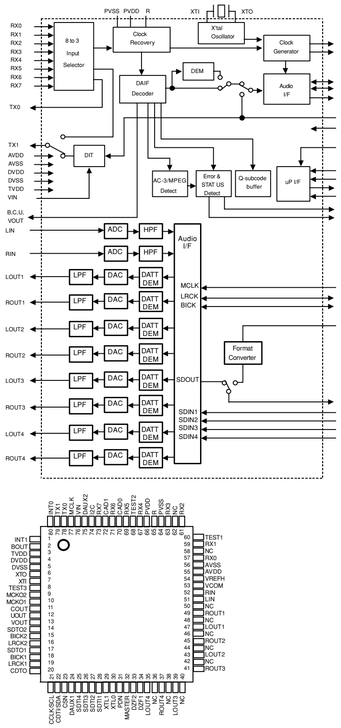
Pin numbers shown are for the D, DB, DGV, J, NS, PW, and W packages.



IC305: SN74LVU04APWR
Hex inverters



IC301: AK4588VQ
2/8-channel audio CODEC with DIR



DIGITAL IN
DIG1 (COAX)
DVD (U, C, R, K, A, L models)
MD/CD-R (J model)
* DGND Connect to Rear Pannel
DIG2 (OPT)
all:DTV/CBL
DIG3 (OPT)
CD (U, C, R, K, A, L models)
DVD (J model)
to DIR
REAR
XM
iPod
DIG4
DIG3
DIG2
DIG1
BOTTOM

DIGITAL OUT
J model
DIG4 (OPT)
MD/CD-R

CODEC with DIR
ANALOG L
from AnalogIN
DIGITAL IN
ChipAddress=CAD1-CAD0="10"
I2C="L" =SerialMode
under ±1% tolerance needed
from CLKSEL
MSCLK
AK4588VQ
IC301
CODEC with DIR
MasterCLK of DIR(AK4588)
DIRMCK
DROPRI (DIR)
RSCLKO
RFSO
DROSEC (ADC)
TSCLKO
TFSO
MASTER="L" -> SlaveMode only
X'tal Freq=24.576MHz
DATA1 from Direct Stereo SW
DAFR
DAFL
DASR
DASL
DASW
DAIC
FL
SL
SW
C
Audio Out
to DSP 5/6
INTAK
Interrupt from AK4588
SPI Bus
to DSP 1/6
IC_AK
Reset AK4588 to DSP 2/6
CLKSEL
ClockSelect to DSP 6/6

AnalogIN
ANALOG L
to DSP 5/6
to AK4588
Attenuate
ADFL
ADFR
LIN
RIN

VIH = 2.2V –
VIL = – 0.8V
VOH = TVDD-0.4 –
VOL = – 0.4V

XM-Radio
to DSP 6/6
UART(XM) to DSP 6/6
Reset for XM to DSP 6/6
XM Status to DSP 4/6
Decoupling Capacitor for XM(IC306) *4pin
* Placed close to each pin of IC306
XM
F2621E-01-TR
IC306
XM Antenna
AVRL1614R1NTB
U, C models
XM_MUTE
XM Status to DSP 4/6

Clock Select
R, K, A, L, J models
U, C models (XM Radio)
SEL=L -> OUT=A
SEL=H -> OUT=B

MICRO-PROCESSOR
SPORT0-R to DSP 1/6
SPORT1-R to DSP 1/6
SPORT0/1-T to DSP 1/6
BF SPORT Output
DIR Output
DTOPRI

Direct Stereo
Hi:Direct Stereo
Lo:DSP
Direct Stereo to DSP 2/6
DATA1 to DAC Input

+5D (all 5V except XM)
E (Analog GND)
+3.3S (PowerON Mode only)
+5X (XM Antenna)
DGND (DigitalGND)
EX3.3 (BF,Flash, SDRAM,ExPort, PSW,REM)
POWER to DSP 5/6

POINT ② Pin 6 of IC301

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DSP 4/6

ADC Select0-2

ADSEL2
ADSEL1
ADSEL0

to DSP 2/6

J404 J405 J406

/MIC R419 2.6 1K R418 47K D403 UDZS3.3B

Replace R406,407 to control "DEST" 0 ~ 3.3V

+3.3S R406 8.2K R407 1K DGND

Destination

DEST

SubTrans
HeadPhone
Stereo(Tuner)
TUNED from FFC DSP 5/6

/PDET (3.3V) /HP /ST (3.3V) /TUNED

R402 47K R422 10K R432 33 R433 33 R434 33 R435 33 C405 0.1/16 R423 10K R424 10K

/PDETIN /HPIN

TUNED(3.3V)

Limiter

PowerLimiter

PLDET R436 33 PLDETIN

TBD TBD R405 4.7K R443 3.3K R429 1K D404 UDZS3.3B C404 47/16 D405 D407 1SS355 &41

PRD PRDIN

AMP DC Detect

Thermo

THM R413 100 THMIN

Current Protection

PRI R430 1K R427 47K D403 UDZS3.3B PRIIN

Voltage Protection (MainTrans)

PRV R414 1K D402 UDZS3.3B PRVIN

to DSP 5/6

A/D SELECTOR

ADSEL	COM
2 1 0	
L L L	/MIC
L L H	/ST
L H L	/TUNED
L H H	iPDET
H L L	iPAP
H L H	XM_MUTE
H H L	DEST2
H H H	LINKACTIVE

J409 J402 J403 J408

PLDETIN PRDIN PRVIN THMIN

IC403 SN74LV4051APWR

PRIIN /HPIN COM /PDETIN DEST

iPAP iPDET

iPod to DSP 6/6

XM to DSP 3/6

XM_MUTE LINKACTIVE

Destination R416 51 R410 51

Replace R410,416 to control "DEST2" 0 ~ 3.3V

A/D SELECTOR

ADSEL	COM
2 1 0	
L L L	PRD
L L H	PRV
L H L	THM
L H H	PLDET
H L L	DEST
H L H	PRI
H H L	PDET
H H H	/HP

4ch ADC

IC401 ADC084S021CIMM

SCLK SPISCK DOUT SPIMI DIN SPIMO IN1 IN2 IN3 IN4 /SPISEL1 68X4

KEY1 KEY0

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
&41	D405,407	1SS355 MA111

NOTICE (model)
(J)..... JAPAN
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(L)..... SINGAPORE
(E)..... SOUTH EUROPE
(V)..... TAIWAN

Destinatin Part List

sXX	LOC	J	UC	R	A	K	L	
s51	R410	RD35633 3.3K	RD35722 22K	RD35682 8.2K	X	RD35633 3.3K	RD35647 4.7K	DESTINATION
s52	R416	RD35615 1.5K	RD35656 5.6K	RD35610 1K	RD35710 10K	RD35668 6.8K	RD35633 3.3K	

* Destination for A/D port

R416 [ohm]	1.5 k	5.6 k	1.0 k	6.8 k	100 k	3.3 k
R410 [ohm]	3.3 k	22 k	8.2 k	3.3 k	(open)	4.7 k
DEST2 (2 pin) [V]	2.1-2.4	2.5-2.8	2.8-3.1	1.0-1.3	3.1-3.3	1.8-2.1
A/D value (3.3 V=255)	164-189	190-215	216-239	70-99	240-255	133-163
Destination	J	U, C	R	K	A	L

+3.3S +3.3S (PowerON Mode only)

+5D +5D all +5V

DGND DGND (DigitalGND)

EX3.3 EX3.3 (BF, Flash, SDRAM, ExPort, PSW, REM)

POWER to DSP 5/6

for Remote&PSW

52044 V_CNT MG +3.3S ADKEY0 ADKEY1 /CEFD DTFD CKFD /RSTFD PSW REM VRA VRB SSEL1 SSEL2 SSEL3 /MIC

CB408

ControlSignal (17pin)

Page 75 F10
to OPERATION (1)_CB202

SZ1608K601T(F) L403 L404 100P(SL) C434 100P(SL) C435(3.3V) C432 C433 J401 J410 KEY0 KEY1

SPIMO /SPISEL4 SPISCK R412 33X4 R401 33X4 C408 C416 1000P(B)

R404 33 R428 33 R431 33 R441 10 C407 C439 C430 C431

/MIC MIC Detect to 4chA/D

to DSP 1/6

Interrupt (VolumeEnc, Remote, PowerSW)

VRB VRA REM PSW C417 470P(SL) C413 C414 C415 1000P(B)

5RDCL 5RDS_RST

RDS, TUNER, OSD to DSP 5/6

5V_SPI_BUS

BUS SWITCH

5SPIMI +5D R439 10K R408 10K R411 10K C424 0.1/16 IC402 SN74LV4245PWR

5SPISEL5 5SPISCK 5SPIMO /5SPISEL6

5V <- 3.3V R415 470 0.1 D408 UDZS3.3B SPIMI

SPISEL5 SPISCK SPIMO /SPISEL6 R403 33X4

/CS for OSD

5V -> 3.3V

VIH=2V~
VIL=~0.8V

IC.AK

AK & VFD Reset to DSP 2/6

to DSP 2/6

SSEL1 SSEL2 SSEL3

Scene Select LED to OPE

/CCBE

CCB Enable
TunerMute(3.3V)

RDCL RDS_RST

SPI SW for RDS
Reset for RDS

to DSP 6/6

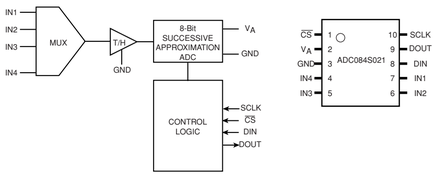
CE for TUNER

to DSP 1/6, 2/6

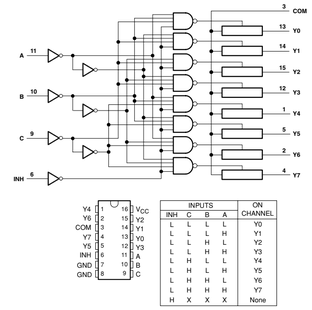
SPI Bus

C418 C419 C420 C421 C422 C423 C424 C425 C426 C427 C428 1000P(B)

IC401: ADC084S021 CIMM
4-channel, 200 ksps, 8-bit A/D converter

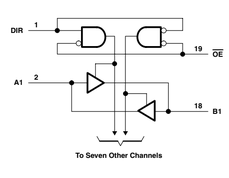


IC402, 403: SN74LV4051APWR
8-channel analog multiplexers/demultiplexers



INPUTS			ON
INH	C	B	A	CHANNEL
L	L	L	L	Y0
L	L	L	H	Y1
L	L	H	L	Y2
L	L	H	H	Y3
L	H	L	L	Y4
L	H	L	H	Y5
L	H	H	L	Y6
L	H	H	H	Y7
H	X	X	X	None

IC404: SN74AHCT245PWR
Octal bus transceivers with 3-state outputs



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★ Schematic diagram is subject to change without notice.

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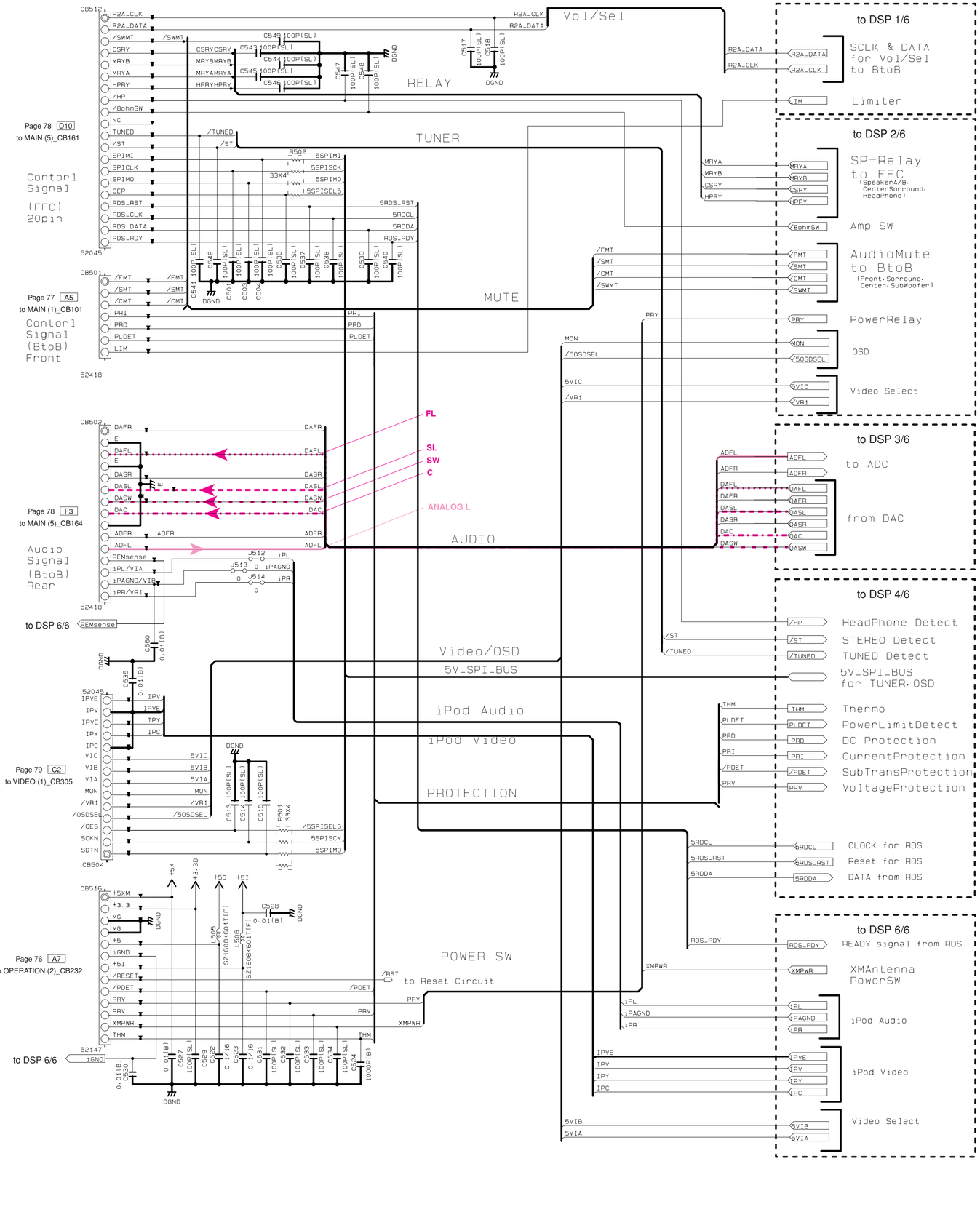
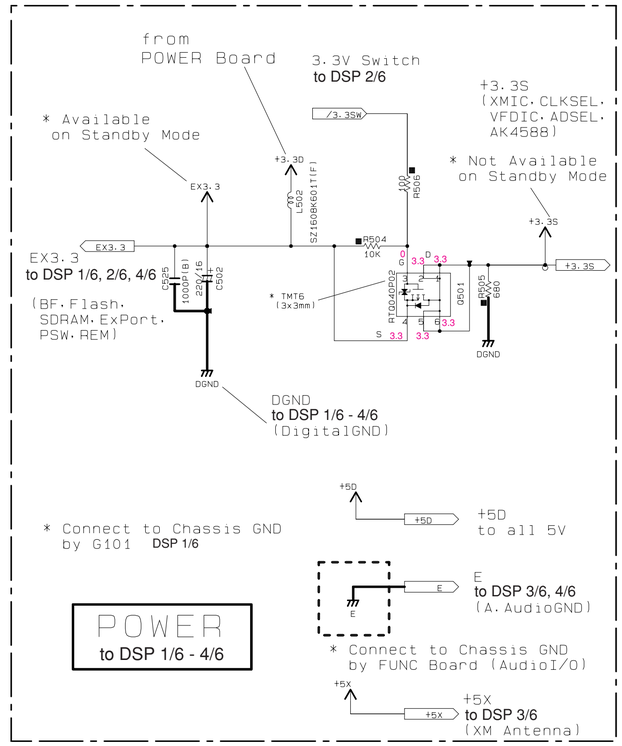
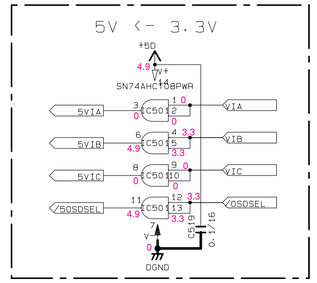
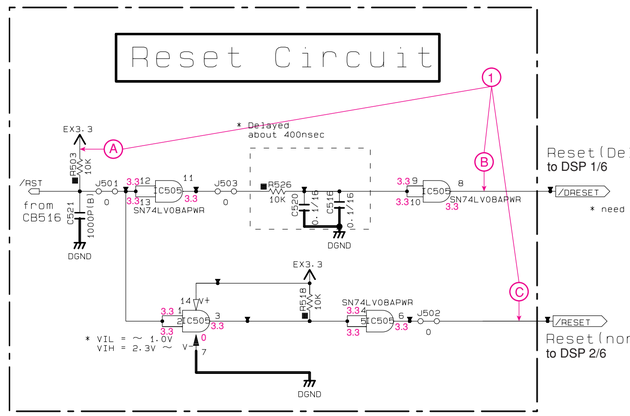
DSP 5/6

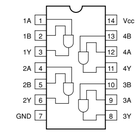




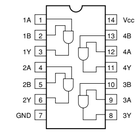




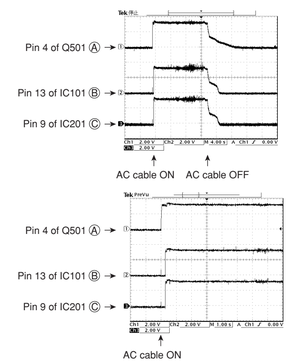
IC501: SN74AHCT08PWR
Quadruple 2-input positive-AND gates



IC505: SN74LV08APWR
Quadruple 2-input positive-AND gate



POINT ① Reset



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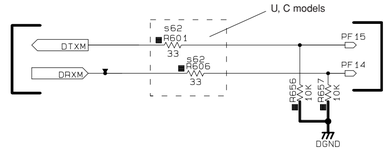
DSP 6/6

Destination Circuit

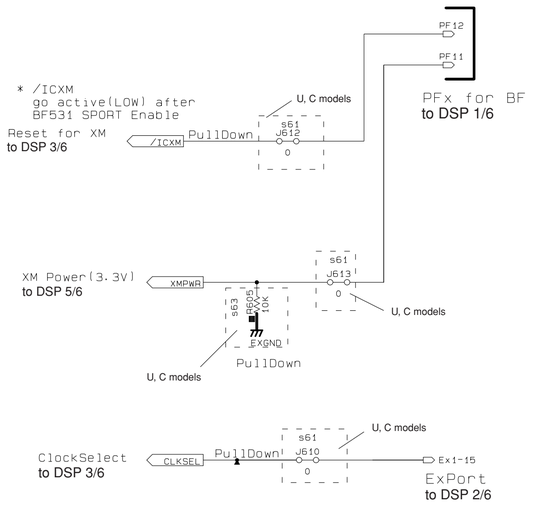
UART for XM
to DSP 3/6



PFx for BF
to DSP 1/6

Video Select
to DSP 5/6

ExPort
to DSP 2/6



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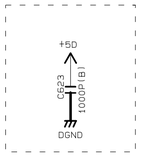

iPod

Destinatin Part List

sXX	LOC	J	UC	R	A	K	L	
s61	J613 J610 J612	X	RD35000 0	X	X	X	X	
s62	R601 R606	X	RD35433 33	X	X	X	X	XM
s63	R605	X	RD35710 10K	X	X	X	X	

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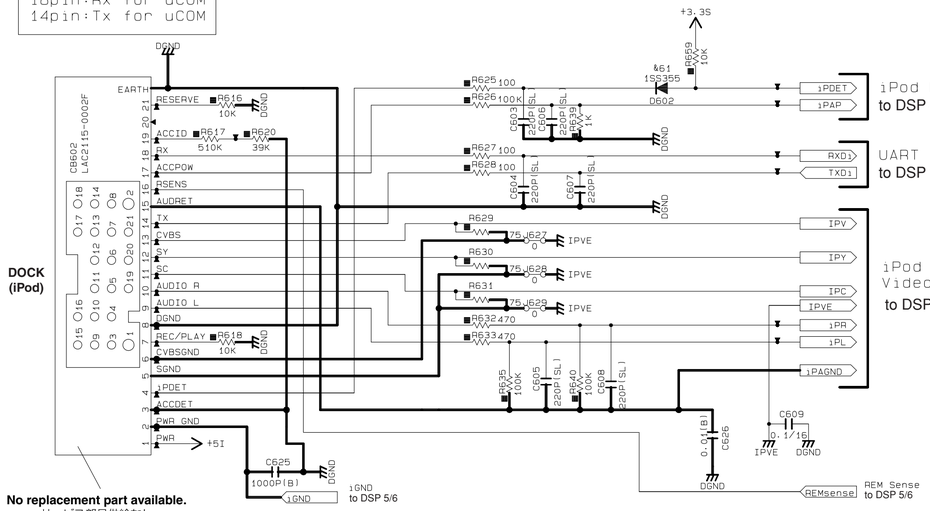
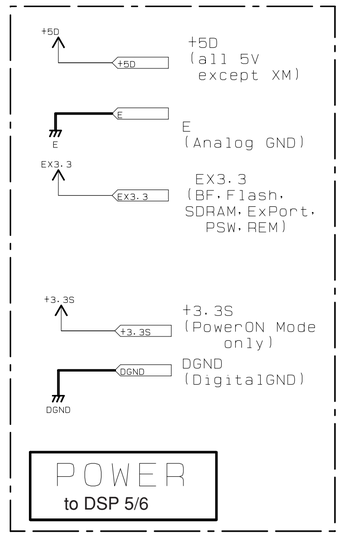
18pin:Rx for uCOM
14pin:Tx for uCOM





Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
&61	D602	1SS355 MA111

OPERATION 1/2

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
☑	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
☒	METAL PLATE RESISTOR
▨	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	⊣⊢
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	⊣⊢
◉	CERAMIC TUBULAR CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
Ⓘ	MICA CAPACITOR	
Ⓟ	POLYPROPYLENE FILM CAPACITOR	
Ⓢ	SEMICONDUCTIVE CERAMIC CAPACITOR	
	POLYPHENYLENE SULFIDE FILM CAPACITOR	

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
&201	Q2001·2005·2014·2017	2SC2412K[Q/R/S] 2SD0601AR/AQL[Q/R/S]
&202	Q2015·2016	2SA1037AK[Q/R/S] 2SA1235A[E/F]
&203	Q2011·2012	DTA114EKA KRA102S-RTK
&204	Q2013	DTC114EKA KRC102S-RTK
&205	V2001	17-BT-29GNK HNA-17MM04T
&206	D2004·2006·2302·2303 D2351-2354	1SS355 MA111

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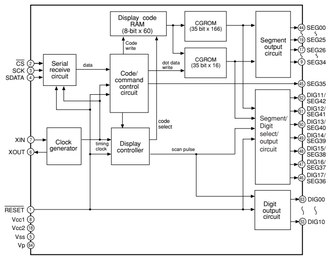
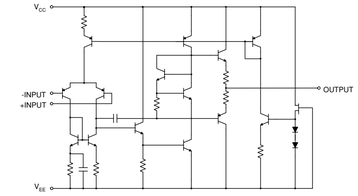
IC201: M66003-0131FP-R
18 digit 5 x 7 segment VFD controller/driver



IC202: AZ4580MTR-E1
Dual low noise operational amplifiers



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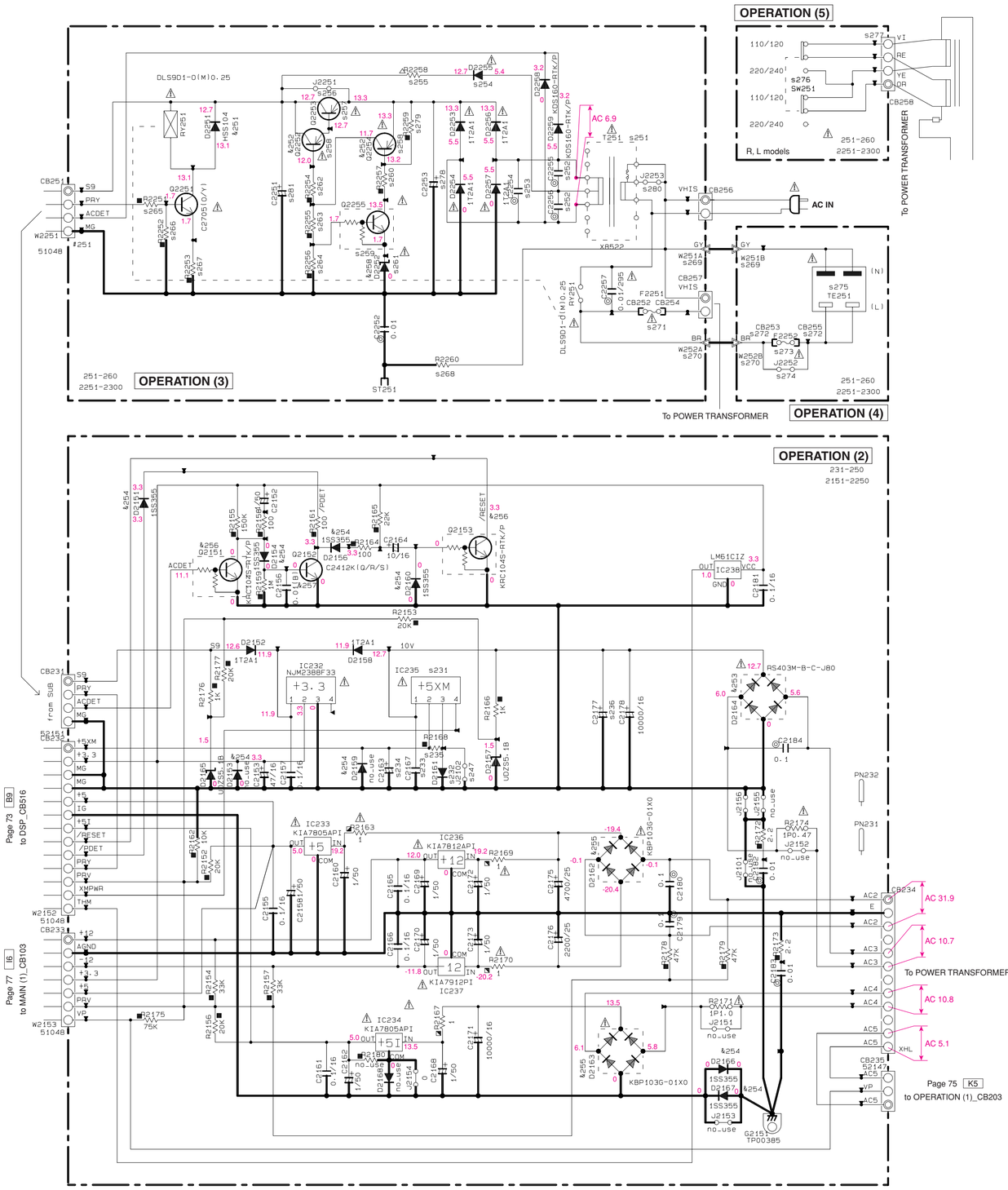
OPERATION 2/2



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⊘	CARBON FILM RESISTOR (P=10)
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⊿	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
▨	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME	
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⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	⫼
◉	CERAMIC TUBULAR CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
ⓘ	MICA CAPACITOR	
Ⓟ	POLYPROPYLENE FILM CAPACITOR	
◍	SEMICONDUCTIVE CERAMIC CAPACITOR	

Destinatin Part List

sXX	LOC	J	UC	R	K	A	L
s231	IC235	X	X6143A0 NJM2388F05	X	X	X	X
s232	D2161	X	V237660 RB500V-40	X	X	X	X
s233	C2167	X	US13510 0.1/16	X	X	X	X
s234	C2163	X	URB3747 47/16	X	X	X	X
s235	R2168	X	RD35610 1K	X	X	X	X
s236	C2177	X	UR73A10 10000/16	X	X	X	X
s247	J2102	VN50000 -	X	VN50000 -	VN50000 -	VN50000 -	VN50000 -
s251	T251	XB520A0 XB520	X8521A0 X8521	X8522A0 X8522	X8523A0 X8523	X8523A0 X8523	X8522A0 X8522
s252	C2256 C2255	X	X	WJ60500 0.01	X	X	WJ60500 0.01
s253	C2254	WJ60500 0.01	WJ60500 0.01	X	WJ60500 0.01	WJ60500 0.01	X
s254	D2255	X	X	VS99780 1T2A1	X	X	VS99780 1T2A1
s255	R2258	X	X	VC75790 2P47	X	X	VC75790 2P47
s256	J2251	VN50000 -	VN50000 -	X	VN50000 -	VN50000 -	X
s257	Q2253	X	X	VP87260 A1708(S/T)	X	X	VP87260 A1708(S/T)
s258	Q2252 Q2254	X	X	IA1015I A1015(Y)	X	X	IA1015I A1015(Y)
s259	Q2255	X	X	WC52920 KRC102M-AT/P	X	X	WC52920 KRC102M-AT/P
s260	R2257	X	X	RD35747 47K	X	X	RD35747 47K
s261	D2252	X	X	VG43700 MTZJ4.7A	X	X	VG43700 MTZJ4.7A
s262	R2254	X	X	RD35610 1K	X	X	RD35610 1K
s263	R2255	X	X	RD35722 22K	X	X	RD35722 22K
s264	R2256	X	X	RD35647 4.7K	X	X	RD35647 4.7K
s265	R2251	RD35647 4.7K	RD35647 4.7K	RD35610 1K	RD35647 4.7K	RD35647 4.7K	RD35610 1K
s266	R2252	RD35810 100K	RD35810 100K	RD35547 470	RD35810 100K	RD35810 100K	RD35547 470
s267	R2253	RD35447 47	RD35447 47	RD35368 6.8	RD35447 47	RD35447 47	RD35368 6.8
s268	R2260	X	V673000 1/2P2.2M	X	X	X	X
s269	W251B W251A	MH18010 -	MH18010 -	MH18010 -	X	MH18010 -	MH18010 -
s270	W252B W252A	MH11012 -	MH11012 -	MH11012 -	X	MH11012 -	MH11012 -
s271	F2251	WB22120 6.00A125V	WB22120 6.00A125V	WB22120 6.00A125V	VV07170 3.15A250V	VV07170 3.15A250V	WB22120 6.00A125V
s272	CB253 CB255	X	WC05070 EYF52BCY	WC05070 EYF52BCY	X	WC05070 EYF52BCY	WC05070 EYF52BCY
s273	F2252	X	WB22120 6.00A125V	VT94290 2.5A250V	X	VT94290 2.5A250V	VT94290 2.5A250V
s274	J2252	VN50000	X	X	X	X	X
s275	TE251	WJ58300 AC-182-UL	WJ58300 AC-182-UL	V586740 AC-182-GB-11VGY	X	VT91500 S2-773T-210	VU54340 S2-762T-214
s276	SW251	X	X	VZ07550 SL14-22AM5F	X	X	VZ07550 SL14-22AM5F
s277	CB258	X	X	V937790 B4P7S-VH	X	X	V937790 B4P7S-VH
s278	C2253	X	X	UR89710 10/100	X	X	UR89710 10/100
s279	R2259	X	X	RD35810 100K	X	X	RD35810 100K
s280	J2253	VN50000	VN50000	X	VN50000	VN50000	X
s281	C2251	UR74922 2200/25	UR74922 2200/25	UR75922 2200/35	UR74922 2200/25	UR74922 2200/25	UR75922 2200/35

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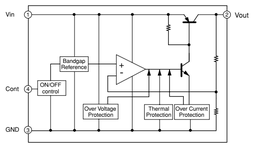
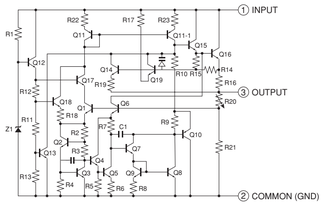
Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
&251	D2251	HSS104 1SS133 1SS176
&252	Q2252.2254	2SA1015[Y] KTA1266[Y]
&253	D2164	RS403M-B-C-J80 TS4B03G-07
&254	D2151.2154.2156 D2160.2166.2167	1SS355 MA111
&255	D2162.2163	KBP103G RS103
&256	Q2151.2153	DTC144EKA KRC104S-RTK
&257	Q2152	2SC2412K[Q/R/S] 2SD601ARL/AQL[Q/R/S]
&258	D2252	MTZJ4.7A GDZJ4.7A

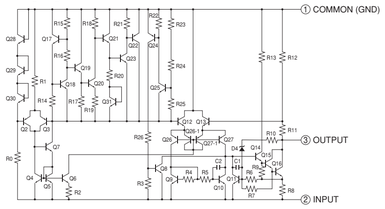
IC232: NJM2388F33
Low dropout voltage regulator with ON/OFF control



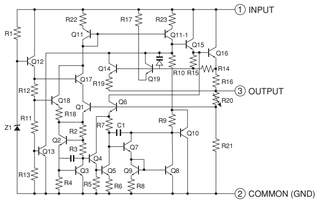
IC236: KIA7812API
Voltage regulator



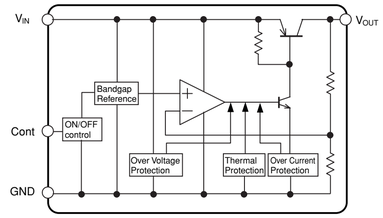
IC237: KIA7912PI
Voltage regulator



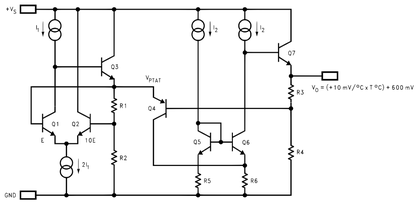
IC233, 234: KIA7805API
Voltage regulator



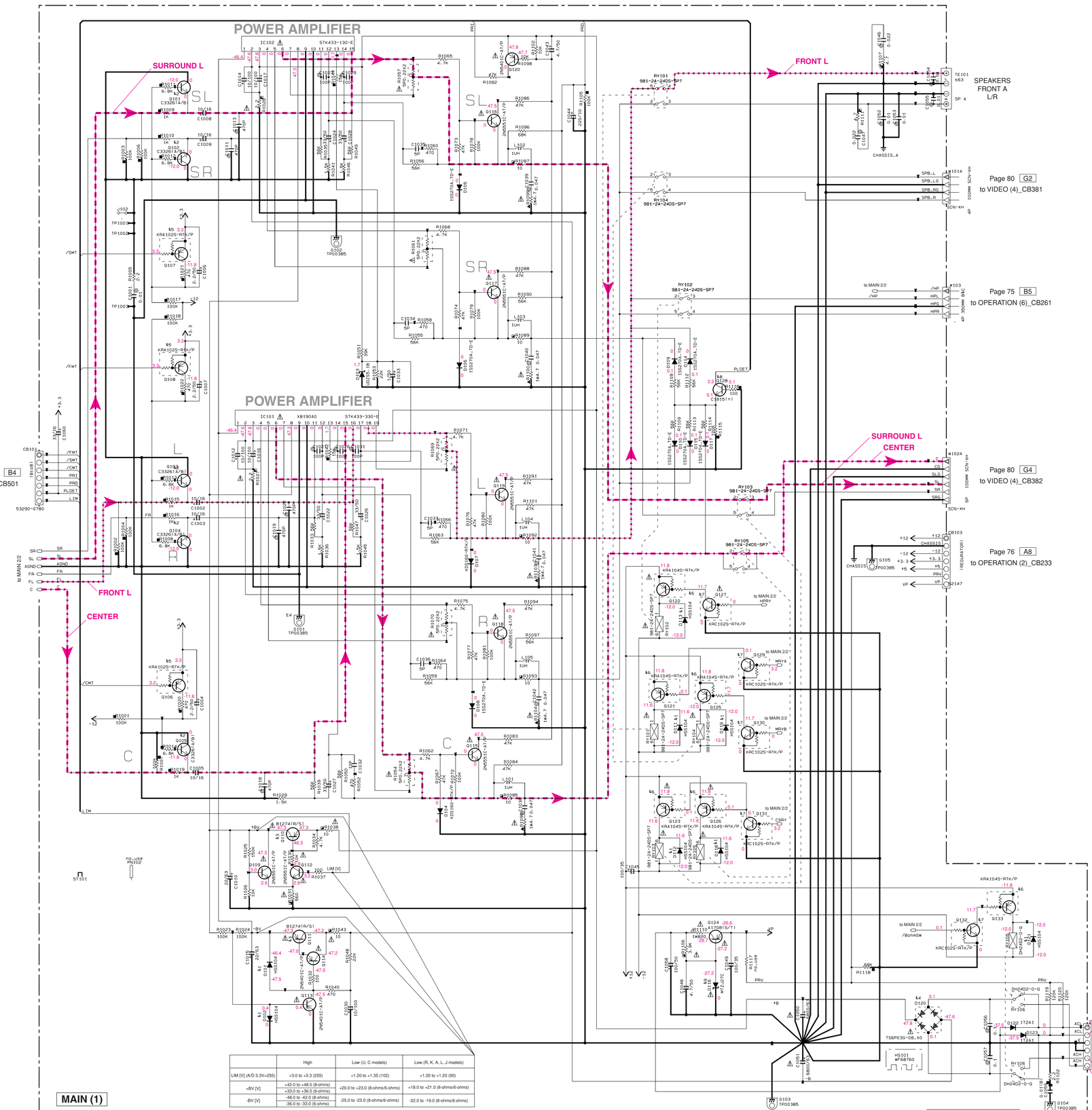
IC235: NJM2388F05
Low dropout voltage regulator with ON/OFF control



IC238: LM61CIZ
Temperature sensor



MAIN 1/2



	High	Low (U, C models)	Low (R, K, A, L, J models)
LIM [V] (A/D 3.3V=255)	+3.0 to +3.3 (255)	+1.20 to +1.35 (102)	+1.00 to +1.20 (90)
+BV [V]	+42.0 to +48.0 (8-ohms)	+20.0 to +23.0 (8-ohms/6-ohms)	+18.0 to +21.0 (8-ohms/6-ohms)
	+33.0 to +36.0 (6-ohms)		
-BV [V]	-48.0 to -42.0 (8-ohms)	-25.0 to -23.0 (8-ohms/6-ohms)	-22.0 to -19.0 (8-ohms/6-ohms)
	-36.0 to -33.0 (6-ohms)		

Destinatin Part List

	LOC	JRA	UC	KL
sXX				
s63	TE101	⊗J26540	⊗J26540	⊗J26550
		J8-405ETV01-021	J8-405ETV01-021	J8-408AIV01-011

CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	H
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	H
◉	CERAMIC TUBULAR CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
Ⓘ	MICA CAPACITOR	
Ⓟ	POLYPROPYLENE FILM CAPACITOR	
◉	SEMICONDUCTIVE CERAMIC CAPACITOR	
Ⓢ	POLYPHENYLENE SULFIDE FILM CAPACITOR	

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
◪	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
◬	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

NOTICE (model)
(J)····· JAPAN
(U)····· U.S.A
(C)····· CANADA
(R)····· GENERAL
(T)····· CHINA
(K)····· KOREA
(A)····· AUSTRALIA
(B)····· BRITISH
(G)····· EUROPE
(L)····· SINGAPORE
(E)····· SOUTH EUROPE
(V)····· TAIWAN

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
&1	D101-102-111-113 118-119-121	HSS104 1SS133 1SS176
&2	D101-105	2SC3326(A/B) 2SC3326(B) 2SC5938(A/B) 2SD1938(F15/T 2SD2704K
&3	D110-111	2SB1274(R/S) 2SB1565(E/F) KTA1046-Y-U/P
&4	D120	TS6P03G-08..XO RS603M-B-C-J80
&5	D106-108	KRA102S-RTK/P DTA114EKA
&6	G121-123-125-126-133	KRA104S-RTK/P DTA144EKA
&7	G127-129-132	KRC102-RTK/P DTC114EKA
&8	G128	2SC1815(Y) KTC3198 Y-AT
&9	D116	MTZJ27C GDZJ27C

IC101: STK433-330-E
3-channel AF power amplifier, stand-by circuit built-in

IC102: STK433-130-E
2-channel AF power amplifier, stand-by circuit built-in

★ All voltages are measured with a 10MΩ/V DC electronic voltmeter.
★ Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
★ Schematic diagram is subject to change without notice.

● 電圧は、内部抵抗10MΩの電圧計で測定したものです。
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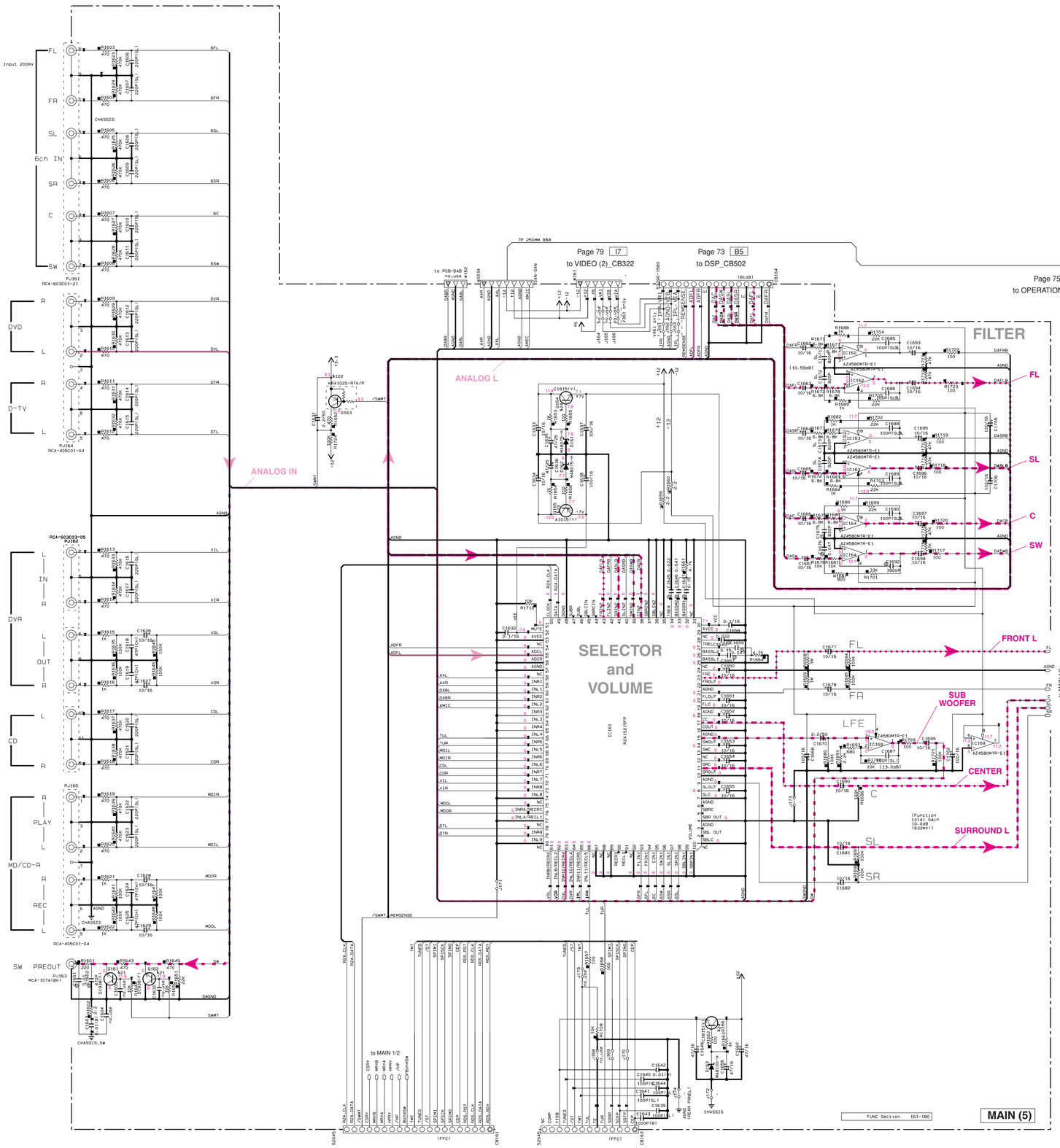
MAIN 2/2



Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
★21	Q161-162	2SD1938(F) 2SC5938A(A/B) 2SD2704K
★22	Q163	KRA102S-RTK/P DTA114EKA
★23	Q165	2SA1015(Y) KTA1266 Y-AT
★24	Q164-166	2SC1815(Y) KTC3198 Y-AT

CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	H
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	
⊛	CERAMIC TUBULAR CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	H
ⓘ	MICA CAPACITOR	
ⓟ	POLYPROPYLENE FILM CAPACITOR	
◉	SEMICONDUCTIVE CERAMIC CAPACITOR	

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
☑	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
◭	METAL FILM RESISTOR
☒	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

NOTICE (model)
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(A)..... AUSTRALIA
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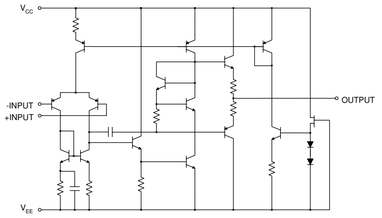
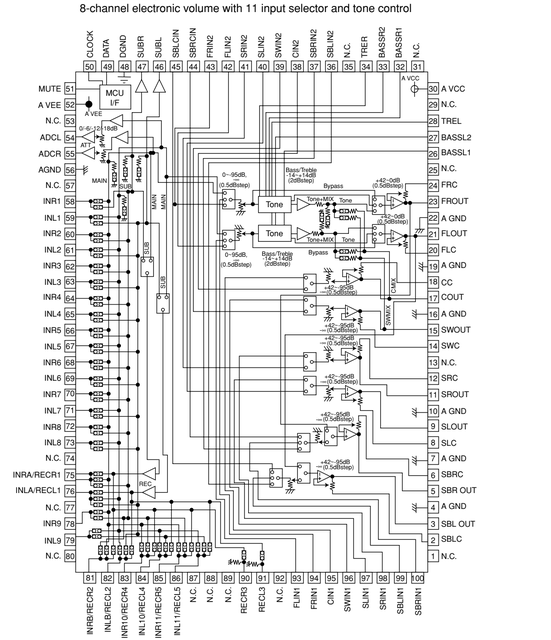
(G)..... EUROPE
(L)..... SINGAPORE
(E)..... SOUTH EUROPE
(V)..... TAIWAN

IC162-164, 169: AZ4580MTR-E1
Dual low noise operational amplifiers



IC161: R2A15215FP
8-channel electronic volume with 11 input selector and tone control



★ All voltages are measured with a 10MΩ/V DC electronic voltmeter.
★ Components having special characteristics are marked ! and must be replaced with parts having specifications equal to those originally installed.
★ Schematic diagram is subject to change without notice.

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VIDEO 1/2

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to DSP_CB504

Page 78 K4
to MAIN (4)_CB193

Interchangeable Parts at Manufacture-Stage			
Mark	Reference Parts Number	Parts Name	
‡301	03001-3013-3201-3204	150365 MA111	
‡302	03201-3401	2SC2412K(Q/R/S) 2SD601AFL/AQL(Q/R/S)	
‡303	IC304-306-324-325	TC74HC4052AF MM74HC4052JX,NL	
‡304	IC301-302-322	MM74HC4051SJX,NL TC74HC4051AF(EL,F)	
‡305	IC343	MM74HC4053JX,NL TC74HC4053AF(EL,F)	
‡306	Q3402	2SC2412K(Q/R/S) KTC3875S-Y,GR-RTK/P 2SD601AFL/AQL(Q/R/S	

NOTICE (model)
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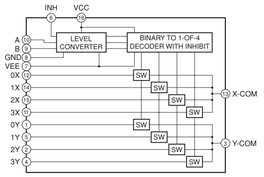
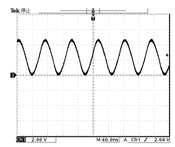
(U)····· U.S.A
(C)····· CANADA
(E)····· GENERAL
(T)····· CHINA
(K)····· KOREA
(A)····· AUSTRALIA
(B)····· BRITISH
(G)····· EUROPE
(L)····· SINGAPORE
(E)····· SOUTH EUROPE
(V)····· TAIWAN

IC304-306, 324, 325: TC74HC4052AF
Analog multiplexer/demultiplexer

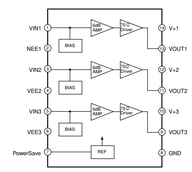


INH	B	A	
0	0	0	0x, 0y
0	0	1	1x, 1y
0	1	0	2x, 2y
0	1	1	3x, 3y
1	X	X	NONE

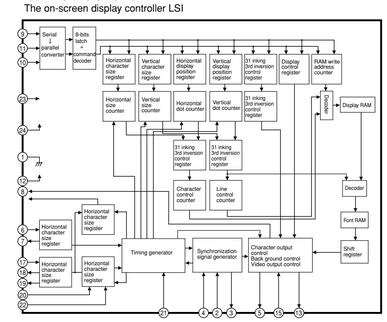
POINT ④ Pin 3 of IC342



IC303, 321: NJM2581M
Video amplifier

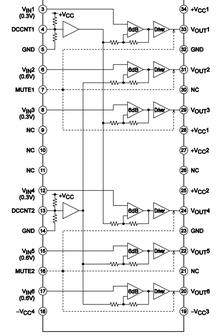


IC342: LC74782JM-8A16-TLM
The on-screen display controller LSI

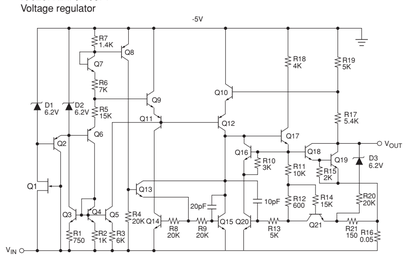


VSS1	1	24	VDD1
XtalIn	2	23	RST
XtalOUT	3	22	CTRL3
CTAL1	4	21	CTRL2
BLANK	5	20	SEPIN
OSCIN	6	19	SEPOUT
OSCOUT	7	18	SEPC
CHARA	8	17	SYNIN
CS	9	16	VDD1
SCLK	10	15	CVIN
SIN	11	14	NC
VDD2	12	13	CVOUT

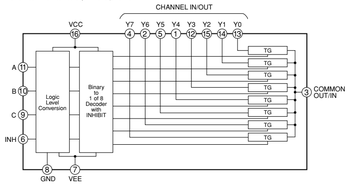
IC344: LA73050-TLM-E
6-channel 75-ohm video driver



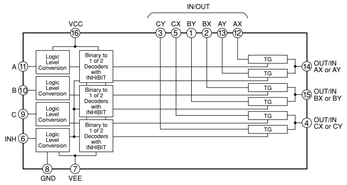
IC323: KIA79M05PI
Voltage regulator



IC301, 302, 322: MM74HC4051SJX
8-channel analog multiplexer



IC343: MM74HC4053SJX
Triple 2-channel analog multiplexer



RESISTOR	
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
☑	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
☒	METAL PLATE RESISTOR
▨	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR	
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
◉	CERAMIC TUBULAR CAPACITOR
◎	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
ⓘ	MICA CAPACITOR
ⓟ	POLYPROPYLENE FILM CAPACITOR
◍	SEMICONDUCTIVE CERAMIC CAPACITOR

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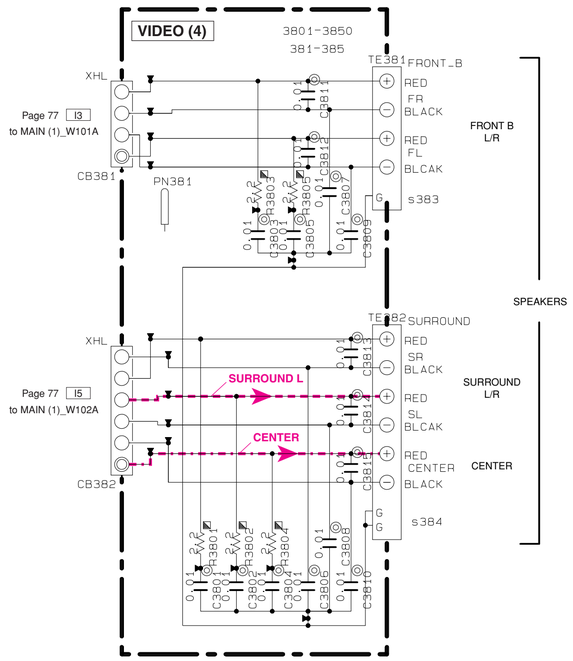
VIDEO 2/2

Destinatin Part List

sXX	LOC	J	UCR	A	K	L
s301	CB301-CB304	WD39840 YKF45-3011	X	X	X	X
s302	R3001-R3012	RD35510 100	X	X	X	X
s303	C3003-C3011 C3015-C3017	US06080 8PCH	X	X	X	X
s304	R3023-R3025 R303B-R3046	RD35475 75	X	X	X	X
s305	C3012-C3014	US06410 0.01	X	X	X	X
s306	D3001-D3013	VT33290 1SS355	X	X	X	X
s307	R3030-R3037	RD35710 10K	X	X	X	X
s308	C3026-C3030 C3032-C3034 C3036-C3037 C3041-C3042	US13510 0.1/16	X	X	X	X
s309	C303B-C3040	US06122 22PCH	X	X	X	X
s310	C3031-C3033 C3035	UR83747 47/16	X	X	X	X
s311	IC304-IC306	XS790A0 TC74HC4052AF	X	X	X	X
s312	C3043-C3044	UR83710 10/16	X	X	X	X
s313	IC303	X2904A0 NJM2581M(TE2)	X	X	X	X
s315	ST301	X	WA78960 -	WA78960 -	WA78960 -	WA78960 -
s321	PJ324-PJ325	X	WG50510 MSD-276V-05N1-L	WG50510 MSD-276V-05N1-L	WG50510 MSD-276V-05N1-L	WG50510 MSD-276V-05N1-L
s322	R3201-R3209 R3218-R3220	X	RD35475 75	RD35475 75	RD35475 75	RD35475 75
s323	R3210-R3212 R3223-R3227	X	RD35710 10K	RD35710 10K	RD35710 10K	RD35710 10K
s324	C3206-C3208 C3210-C3212 C3214-C3217 C3219-C3220	X	US13510 0.1/16	US13510 0.1/16	US13510 0.1/16	US13510 0.1/16
s325	C3209-C3211 C3213	X	UR83747 47/16	UR83747 47/16	UR83747 47/16	UR83747 47/16
s326	C3215-C3216 C3218	X	US06122 22PCH	US06122 22PCH	US06122 22PCH	US06122 22PCH
s327	IC324-IC325	X	XS790A0 TC74HC4052AF	XS790A0 TC74HC4052AF	XS790A0 TC74HC4052AF	XS790A0 TC74HC4052AF
s328	IC321	X	X2904A0 NJM2581M(TE2)	X2904A0 NJM2581M(TE2)	X2904A0 NJM2581M(TE2)	X2904A0 NJM2581M(TE2)
s329	C3221-C3222	X	UR83710 10/16	UR83710 10/16	UR83710 10/16	UR83710 10/16
s330	D3201-D3204	X	VT33290 1SS355	VT33290 1SS355	VT33290 1SS355	VT33290 1SS355
s331	C3201-C3203	X	US06080 8PCH	US06080 8PCH	US06080 8PCH	US06080 8PCH
s332	ST321	WA78960 -	X	X	X	X
s341	XL341	VV94980 14.31818MHZ	VV94980 14.31818MHZ	WK19610 17.734475MHZ	VV94980 14.31818MHZ	WK19610 17.734475MHZ
s383	TE381	WJ26540 JB-405ET(V0)-02	WJ26540 JB-405ET(V0)-02	WJ26540 JB-405ET(V0)-02	WJ26550 JB-408A(V0)-01	WJ26550 JB-408A(V0)-01
s384	TE382	WJ26560 JB-602AT(V0)-02	WJ26560 JB-602AT(V0)-02	WJ26560 JB-602AT(V0)-02	WJ46410 JB-606A-01	WJ46410 JB-606A-01
s343	C3410	US06122 22P	US06122 22P	US06050 5P	US06122 22P	US06050 5P
s344	C3411	US06133 33P	US06133 33P	US06050 5P	US06133 33P	US06050 5P



NOTICE (model)

(J)····· JAPAN
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RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
⊘	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
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CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	⊣⊢
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	⊣⊢
◉	CERAMIC TUBULAR CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
◍	MICA CAPACITOR	
Ⓟ	POLYPROPYLENE FILM CAPACITOR	
▥	SEMICONDUCTIVE CERAMIC CAPACITOR	

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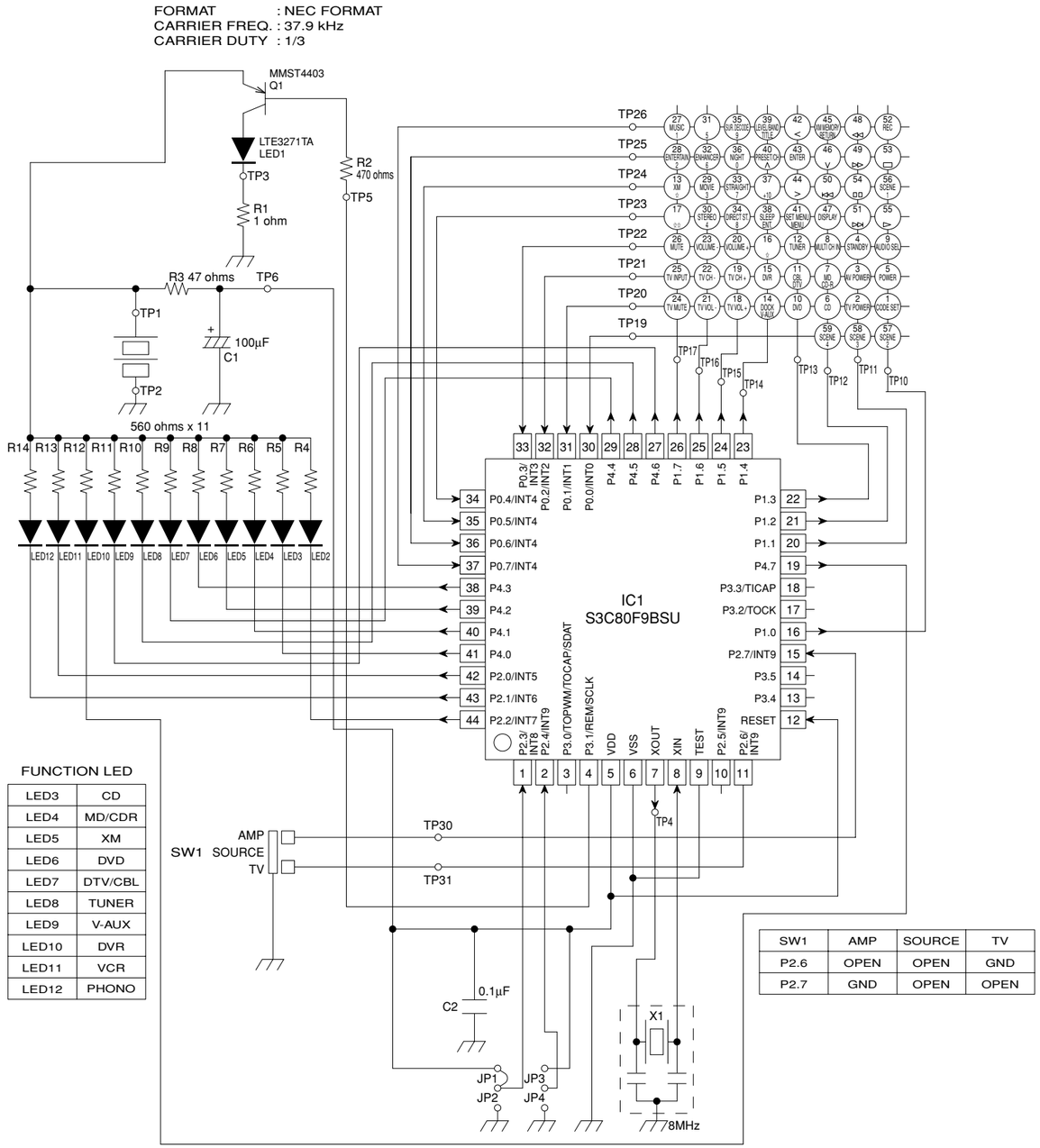
■ REMOTE CONTROL

● RAV328 (U, C models)

• SCHEMATIC DIAGRAM

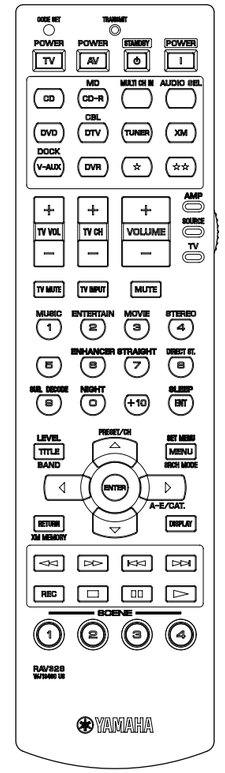


FUNCTION LED

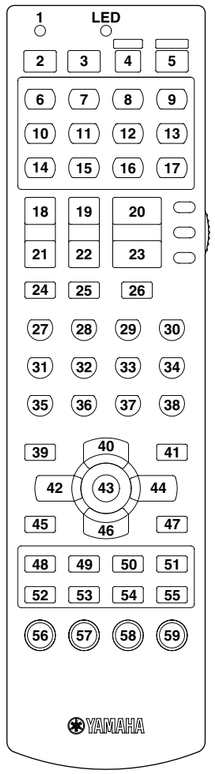
LED3	CD
LED4	MD/CDR
LED5	XM
LED6	DVD
LED7	DTV/CBL
LED8	TUNER
LED9	V-AUX
LED10	DVR
LED11	VCR
LED12	PHONO

SW1	AMP	SOURCE	TV
P2.6	OPEN	OPEN	GND
P2.7	GND	OPEN	OPEN

• PANEL



• KEY NO. LAYOUT



• KEY CODE

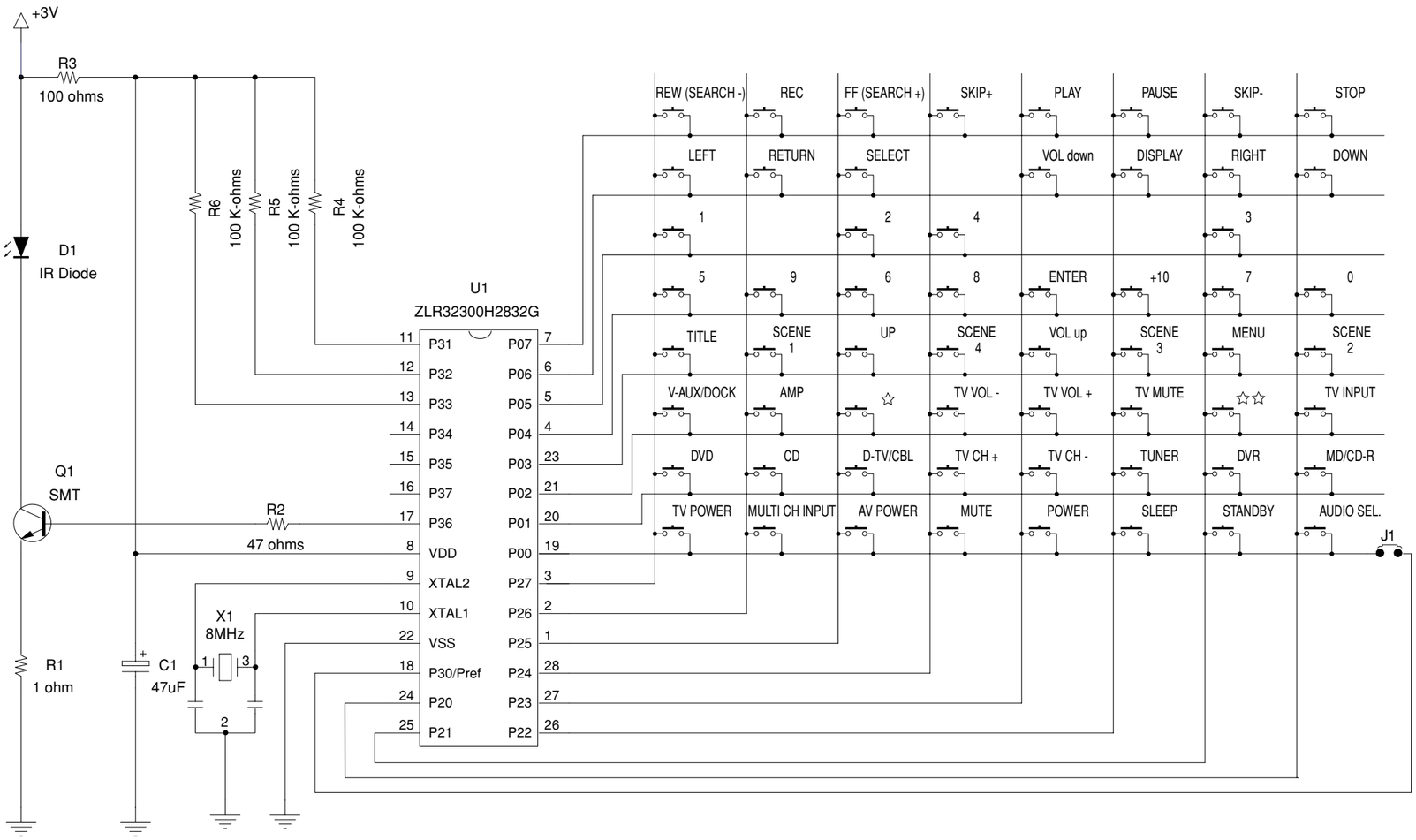
Key No.	Key Label	Common	AMP library Code ID1 MAIN	AMP library Code ID1 ZONE2	AMP library Code ID2 MAIN	AMP library Code ID2 ZONE2	Function
–	LED	–	–	O (10sec)	–	O (10sec)	Linked with IR signal
1	CODE SET	–	–	–	–	–	Change to PRESET mode
4	STANDBY	O	7E-7F	7E-BB	7D-B1	7D-63	Power STANDBY
5	POWER	O	7E-7E	7E-BA	7D-B2	7D-64	Power ON
							Library: All device codes can be entered into all modes. — default: Library / brand
6	CD	O	7A-15	7A-D1	7D-87	7D-67	Output IR signal & change Device mode — default: CD / 62907
7	MD/CD-R	O	7A-C9	7A-CF	7D-86	7D-92	Output IR signal & change Device mode — default: CD-R / 71292
8	MULTI CH IN	O	7A-87		7D-8C		Output IR signal
9	AUDIO SEL.	O	7A-C3		7D-80		Select audio
10	DVD	O	7A-C1	7A-CD	7D-97	7D-6F	Output IR signal & change Device mode — default: DVD / 42543
11	DTV/CBL	O	7A-54	7A-D9	7D-84	7D-6C	Output IR signal & change Device mode — default: TV / nothing
12	TUNER	O	7A-16	7A-D2	7D-89	7D-66	Output IR signal & change Device mode — default: TUNER / 82915
13	XM	O	7A-B4	7A-B8	7D-29	7D-2F	Output IR signal & change Device mode — default: TUNER / 82918
14	V-AUX/DOCK	O	7A-55	7A-D8	7D-8A	7D-68	Output IR signal & change Device mode — default: TUNER / 82981
15	DVR	O	7A-13	7A-D7	7D-82	7D-6E	Output IR signal & change Device mode — default: DVR / 52544
16	VCR	O	7A-0F	7A-D6	7D-81	7D-6D	Output IR signal & change Device mode — default: VCR / nothing
17	PHONO	O	7A-14	7A-D0	7D-88	7D-65	Output IR signal & change Device mode — default: TV / nothing

SWITCH (AMP/SOURCE/TV)	AMP	SOURCE									TV
		6	7	13	10	11	12	14	15	16	17	
		CD	MD/CD-R	XM	DVD	DTV/CBL	TUNER	V-AUX/DOCK	DVR	VCR	PHONO	
2 TV POWER	–>	(TV Power)	(TV Power)	(TV Power)	(TV Power)	TV Power	(TV Power)	(TV Power)	(TV Power)	(TV Power)	TV Power	TV Power
3 AV POWER	–>	Power	Power	Power	Power	(VCR1 Power)	Power	Power	Power	Power	(VCR1 Power)	(VCR1 Power)
18 TV VOL up	–>	(TV VOL up)	(TV VOL up)	(TV VOL up)	(TV VOL up)	TV VOL up	(TV VOL up)	(TV VOL up)	(TV VOL up)	(TV VOL up)	TV VOL up	TV VOL up
19 TV CH up	–>	(TV CH up)	(TV CH up)	(TV CH up)	(TV CH up)	TV CH up	(TV CH up)	(TV CH up)	(TV CH up)	(TV CH up)	TV CH up	TV CH up
20 VOL up	7A-1A 7A-DA 7D-8D 7D-70	VOL up										
21 TV VOL down	–>	(TV VOL down)	(TV VOL down)	(TV VOL down)	(TV VOL down)	TV VOL down	(TV VOL down)	(TV VOL down)	(TV VOL down)	(TV VOL down)	TV VOL down	TV VOL down
22 TV CH down	–>	(TV CH down)	(TV CH down)	(TV CH down)	(TV CH down)	TV CH down	(TV CH down)	(TV CH down)	(TV CH down)	(TV CH down)	TV CH down	TV CH down
23 VOL down	7A-1B 7A-DB 7D-8E 7D-71	VOL down										
24 TV MUTE	–>	(TV Mute)	(TV Mute)	(TV Mute)	(TV Mute)	TV Mute	(TV Mute)	(TV Mute)	(TV Mute)	(TV Mute)	TV Mute	TV Mute
25 TV INPUT	–>	(TV Input)	(TV Input)	(TV Input)	(TV Input)	TV Input	(TV Input)	(TV Input)	(TV Input)	(TV Input)	TV Input	TV Input
26 MUTE	7A-1C 7A-DC 7D-94 7D-72	MUTE										
27 CLASSICAL	7A-88	1	1	1	1	1	P1	1	1	1	1	1
28 CLUB/LIVE	7A-89	2	2	2	2	2	P2	2	2	2	2	2
29 ENTERTAIN	7A-8A	3	3	3	3	3	P3	3	3	3	3	3
30 MOVIE	7A-8B	4	4	4	4	4	P4	4	4	4	4	4
31 STEREO	7A-8C	5	5	5	5	5	P5	5	5	5	5	5
32 ENHANCER	7A-94	6	6	6	6	6	P6	6	6	6	6	6
33 STRAIGHT	7A-56	7	7	7	7	7	P7	7	7	7	7	7
34 PURE DIRECT	7A-DD	8	8	8	8	8	P8	8	8	8	8	8
35 SUR. DECODE	7A-8D	9	9	9	9	9	–	9	9	9	9	9
36 NIGHT	7A-95	0/10	0/10	0	0	0/10	–	0/10	0	0/10	0/10	0/10
37 –	–	+10	+10	–	+10	-/11	–	+10	+10	+10	+10	-/11
38 SLEEP	7A-57	index	index	P. ENTER	Title/index	enter/12	–	enter	Title/index	enter	enter	enter/12
39 LEVEL	7A-86	–	–	BAND	TITLE	–	BAND	–	TITLE	–	–	–
40 UP	7A-9D	–	–	PRESET/CH +	UP	–	PRESET +	VCR CH up	UP	VCR CH up	VCR CH up	–
41 SET MENU	7A-84	–	–	SEARCH MODE	MENU	–	–	–	MENU	–	–	–
42 LEFT	7A-9F	–	–	A-B/CAT. -	LEFT	–	A-B -	–	LEFT	–	–	–
43 ENTER	7A-DE	–	–	ENTER	SELECT	–	–	–	SELECT	–	–	–
44 RIGHT	7A-9E	–	–	A-E/CAT. +	RIGHT	–	A-E +	–	RIGHT	–	–	–
45 RETURN	7A-AA	–	–	MEMORY	Return	–	–	–	Return	–	–	–
46 DOWN	7A-9C	–	–	PRESET/CH -	DOWN	–	PRESET -	VCR CH down	DOWN	VCR CH down	VCR CH down	–
47 ON SCREEN	7A-C2	DISPLAY	DISPLAY	DISPLAY	DISPLAY	DISPLAY	–	–	DISPLAY	–	–	DISPLAY
48 REW (SEARCH)	–>	REW	REW	–	REW	(VCR1REW)	–	REW	REW	REW	REW	(VCR1REW)
49 FF (SEARCH)	–>	FF	FF	–	FF	(VCR1 FF)	–	FF	FF	FF	FF	(VCR1 FF)
50 CHP/SKIP-	–>	SKIP -	SKIP -	–	SKIP -	-	–	–	SKIP -	–	–	–
51 CHP/SKIP+	–>	SKIP +	SKIP +	–	SKIP +	-	–	–	SKIP +	–	–	–
52 REC	–>	DISC SKIP	REC	–	DISC SKIP	(VCR1 REC)	–	REC	REC	REC	REC	(VCR1 REC)
53 STOP	–>	STOP	STOP	–	STOP	(VCR1 STOP)	–	STOP	STOP	STOP	STOP	(VCR1 STOP)
54 PAUSE	–>	PAUSE	PAUSE	–	PAUSE	(VCR1 PAUSE)	–	PAUSE	PAUSE	PAUSE	PAUSE	(VCR1 PAUSE)
55 PLAY	–>	PLAY	PLAY	–	PLAY	(VCR1 PLAY)	–	PLAY	PLAY	PLAY	PLAY	(VCR1 PLAY)

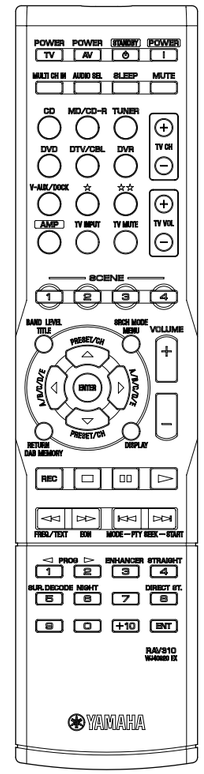
Key No.	Key Label	Common	AMP library Code ID1 MAIN	AMP library Code ID1 ZONE2	AMP library Code ID2 MAIN	AMP library Code ID2 ZONE2	Function
56	SCENE1	O	7A-007F	7A-017E	7A-0C73	7A-0D72	Select SCENE
57	SCENE2	O	7A-037C	7A-047B	7A-0F70	7A-106F	
58	SCENE3	O	7A-0679	7A-0778	7A-126D	7A-136C	
59	SCENE4	O	7A-0976	7A-0A75	7A-156A	7A-1669	

● RAV310 (R, K, A, L, J models)

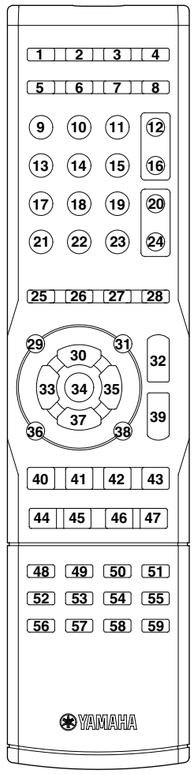
• SCHEMATIC DIAGRAM



• PANEL



• KEY NO. LAYOUT



• KEY CODE

Key No.	Label	Command Key	YAMAHA signal AMP												
1	TV POWER	–	–	(TV Power)	(TV Power)	(TV Power)	(TV Power)	–	(TV Power)	(TV Power)	(TV Power)	(TV Power)	(TV Power)	(TV Power)	(TV Power)
2	AV POWER	–	–	–	7F80	–	7F80	(DVR Power)	048.012	7F01-00	–	–	7F01-20	–	(device)
3	STANDBY	O	7E-7F	STANDBY											
4	POWER	O	7E-7E	POWER ON											
5	MULTI CH INPUT	O	7A-87	MULTI CH INPUT											
6	AUDIO SEL.	O	7A-C3	AUDIO SELECT											
7	SLEEP	O	7A-57	SLEEP										Default	
8	MUTE	O	7A-IC	MUTE										Library	brand
9	CD	O	7A-15	<INPUT key>		Output IR signal and change Device mode								CD	YAMAHA-1
10	MD/CD-R	O	7A-C9	<INPUT key>		Output IR signal and change Device mode								CD-R	YAMAHA
11	TUNER	O	7A-16	<INPUT key>		Output IR signal and change Device mode								TUNER	YAMAHA-2
12	TV CH +	–	–	(TV CH +)	(TV CH +)	(TV CH +)	(TV CH +)	–	(TV CH +)	(TV CH +)	(TV CH +)	(TV CH +)	(TV CH +)	(TV CH +)	(TV CH +)
13	DVD	O	7A-C1	<INPUT key>		Output IR signal and change Device mode								DVD	YAMAHA-1
14	D-TV/CBL	O	7A-54	<INPUT key>		Output IR signal and change Device mode								TV	YAMAHA1
15	DVR	O	7A-13	<INPUT key>		Output IR signal and change Device mode								DVR	YAMAHA
16	TV CH -	–	–	(TV CH -)	(TV CH -)	(TV CH -)	(TV CH -)	–	(TV CH -)	(TV CH -)	(TV CH -)	(TV CH -)	(TV CH -)	(TV CH -)	(TV CH -)
17	V-AUX/DOCK	O	7A-55	<INPUT key>		Output IR signal and change Device mode								TUNER	YAMAHA-6
18	☆	O	7A-B4	<INPUT key>		Output IR signal and change Device mode								TUNER	YAMAHA-4
19	☆ ☆	O	7F01-3F	<INPUT key>		Output IR signal and change Device mode								LD	YAMAHA
20	TV VOL +	–	–	(TV VOL +)	(TV VOL +)	(TV VOL +)	(TV VOL +)	–	(TV VOL +)	(TV VOL +)	(TV VOL +)	(TV VOL +)	(TV VOL +)		(TV VOL +)
21	AMP	O	–	Change to AMP mode											
			Key No Mode	9	10	11	13	14	15	17	18		19		21
				CD	MD/CD-R	TUNER	DVD	D-TV/CBL	DVR	V-AUX/DOCK	XM		NET/USB		AMP
22	TV INPUT	–	–	(TV Input)	(TV Input)	(TV Input)	(TV Input)	–	(TV Input)	(TV Input)	(TV Input)	(TV Input)	(TV Input)	(TV Input)	(TV Input)
23	TV MUTE	–	–	(TV Mute)	(TV Mute)	(TV Mute)	(TV Mute)	–	(TV Mute)	(TV Mute)	(TV Mute)	(TV Mute)	(TV Mute)	(TV Mute)	(TV Mute)
24	TV VOL -	–	–	(TV VOL -)	(TV VOL -)	(TV VOL -)	(TV VOL -)	–	(TV VOL -)	(TV VOL -)	(TV VOL -)	(TV VOL -)	(TV VOL -)	(TV VOL -)	(TV VOL -)
25	SCENE 1	O	7A-007F	SCENE SELECT											
26	SCENE 2	O	7A-037C	SCENE SELECT											
27	SCENE 3	O	7A-0679	SCENE SELECT											
28	SCENE 4	O	7A-0976	SCENE SELECT											
29	TITLE	–	–	–	–	7A-AE	7CB1	–	048. 200	7F01-0D	7A-70	–	7F01-2D	–	7A-86
30	UP	–	–	–	–	7A-10	7CB4	–	048. 088	7F01-0E	7A-6A	–	7F01-2E	–	7A-9D
31	MENU	–	–	–	–	7A-AB	7CB2	–	048. 084	7F01-0F	7A-6D	–	7F01-2F	–	7A-84
32	VOL up	O	7A-1A	VOL UP											
33	LEFT	–	–	–	–	7A-AC	7CB5	–	048. 090	7F01-10	7A-6E	–	7F01-30	–	7A-9F
34	SELECT	–	–	–	–	7A-AD	7CB8	–	048. 092	7F01-11	7A-6F	–	7F01-31	–	7A-DE
35	RIGHT	–	–	–	–	7A-12	7CB6	–	048. 091	7F01-12	7A-6C	7A06	7F01-32	–	7A-9E
36	RETURN	–	–	–	–	7A-AF	7CB7	–	048. 131	7F01-13	7A-71	–	7F01-33	–	7A-AA
37	DOWN	–	–	–	–	7A-11	7CB3	–	048. 089	7F01-14	7A-6B	–	7F01-34	–	7A-9C
38	DISPLAY	–	–	790A	7F9E	7A-B0	7CA6	–	048. 015	7F01-15	7A-72	–	7F01-35	7C13	7A-C2
39	VOL down	O	7A-1B	VOL DOWN											
40	REC	–	–	7A4F	–	–	7C8B	(VCR REC)	048. 055	7F01-16	–	7A04	7F01-36	–	(device)
41	STOP	–	–	7A09	7F84	–	7C85	(VCR Stop)	048. 049	7F01-1D	–	7A03	7F01-3D	7C5B	(device)
42	PAUSE	–	–	7A09	7F83	–	7C83	(VCR Pause)	048. 048	7F01-1A	–	–	7F01-3A	7C5A	(device)
43	PLAY	–	–	7A08	7F82	–	7C82	(VCR Play)	048. 044	7F01-1E	–	7A00	7F01-3E	7C05	(device)
44	REW (SEARCH -)	–	–	7A0D	7F88	7A-A4	7C86	(VCR REW)	048. 041	7F01-17	–	7A01	7F01-37	7C06	(device)
45	FF (SEARCH +)	–	–	7A0C	7F89	7A-A5	7C87	(VCR FF)	048. 040	7F01-18	–	7A02	7F01-38	7C07	(device)
46	SKIP -	–	–	7A0B	7F86	7A-A6	7CB9		048. 033	7F01-1B	–	7A07	7F01-3B	7C02	(device)
47	SKIP +	–	–	7A0A	7F87	7A-A7	7CBA		048. 032	7F01-1C	–	7A40	7F01-3C	7C03	(device)
48	1	–	–	7911	7F91	7A-E5	7C94	–	048. 001	7F01-01	7A-61	–	7F01-21	7C17	7A-59
49	2	–	–	7912	7F92	7A-E6	7C95	–	048. 002	7F01-02	7A-62	–	7F01-22	7C18	7A-58
50	3	–	–	7913	7F93	7A-E7	7C96	–	048. 003	7F01-03	7A-63	–	7F01-23	7C19	7A-94
51	4	–	–	7914	7F94	7A-E8	7C97	–	048. 004	7F01-04	7A-64	–	7F01-24	7C1A	7A-56
52	5	–	–	7915	7F95	7A-E9	7C98	–	048. 005	7F01-05	7A-65	–	7F01-25	7C1B	7A-8D
53	6	–	–	7916	7F96	7A-EA	7C99	–	048. 006	7F01-06	7A-66	–	7F01-26	7C1C	7A-95
54	7	–	–	7917	7F97	7A-EB	7C9A	–	048. 007	7F01-07	7A-67	–	7F01-27	7C1D	–
55	8	–	–	7918	7F98	7A-EC	7C9B	–	048. 008	7F01-08	7A-68	–	7F01-28	7C1E	7A-DD
56	9	–	–	7919	7F99	7A-B1	7C9C	–	048. 009	7F01-09	7A-69	–	7F01-29	7C1F	–
57	0	–	–	7910	7F90	7A-B2	7C93	–	048. 000	7F01-0A	7A-60	–	7F01-2A	7C16	–
58	+10	–	–	791A	7F9A	–	7C9D	–	–	7F01-0B	–	–	7F01-2B	7C5D	–
59	ENTER	–	–	790B	7F8A	7A-B3	7C9E	–	–	7F01-0C	7A-BF	–	7F01-2C	7C15	–