

# AV RECEIVER

# HTR-5890

## SERVICE MANUAL

HTR-5890

### IMPORTANT NOTICE

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

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

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

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

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

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

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This Service Manual uses recycled paper.

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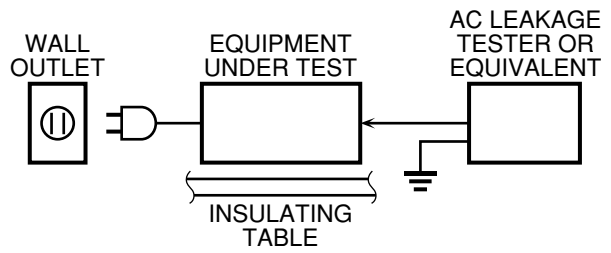
# YAMAHA

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

'05.03

## ■ TO SERVICE PERSONNEL

- Critical Components Information**  
Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
- Leakage Current Measurement (For 120V Models Only)**  
When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.
  - Meter impedance should be equivalent to 1500 ohms shunted by 0.15μF.



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



**“CAUTION”**

“F1, F2: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 10A, 125V FUSE.”

**CAUTION**

F1, F2: REPLACE WITH SAME TYPE 10A, 125V FUSE.

**ATTENTION**

F1, F2: UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE DE 10A, 125V.

## WARNING: CHEMICAL CONTENT NOTICE!

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

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

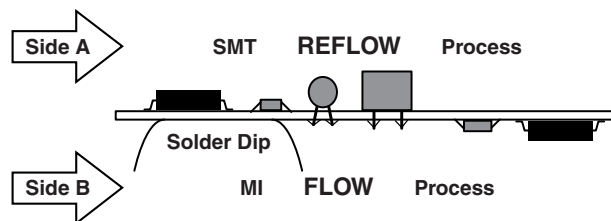
Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

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

## About Lead Free Solder

The P.C.B.s installed in this unit are soldered using the following solder.

	Side A	Side B
<b>DSP P.C.B.</b>	Lead Solder	Lead Free Solder
<b>FUNCTION P.C.B.</b>	Lead Solder	Lead Free Solder
<b>OPERATION P.C.B.</b>	-	Lead Free Solder
<b>MAIN P.C.B.</b>	-	Lead Free Solder
<b>POWER PC.B.</b>	-	Lead Free Solder
<b>VIDEO P.C.B.</b>	-	Lead Free Solder
<b>CONVERSION P.C.B.</b>	Lead Solder	Lead Free Solder



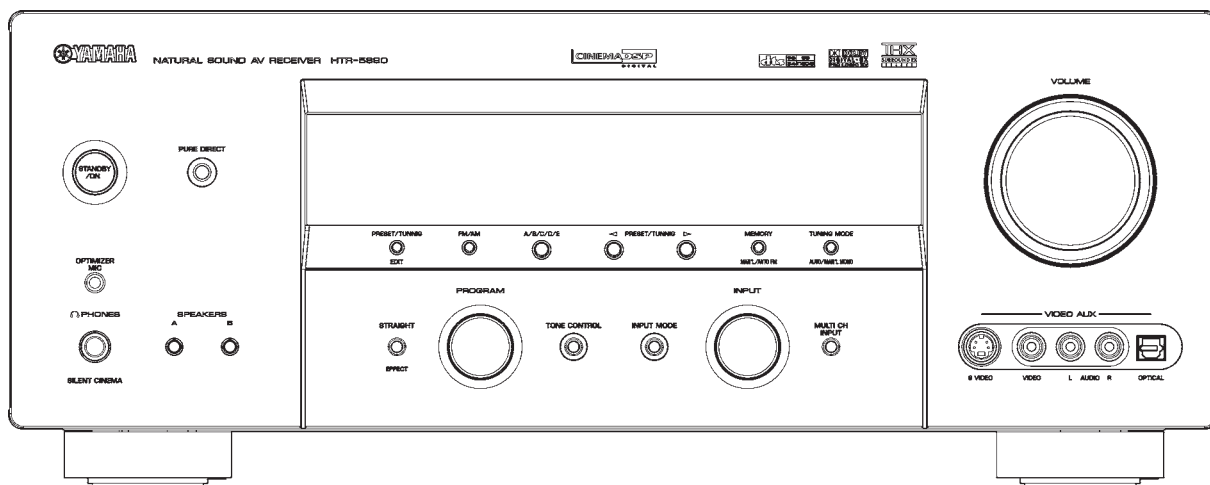
Among some types of lead free solder currently available, it is recommended to use one of the following types for the repair work.

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

**Caution:**

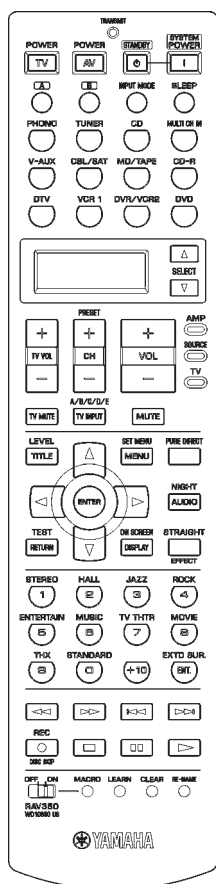
- As the melting point temperature of the lead free solder is about 30°C to 40°C (50°F to 70°F) higher than that of the lead solder, be sure to use a soldering iron suitable to each solder.
- If lead solder must be used, be sure to remove lead free solder from each terminal section of the parts to be replaced and from the area around it completely before soldering, or make sure that the lead free solder and lead solder melt together fully.

## FRONT PANEL



HTR-5890

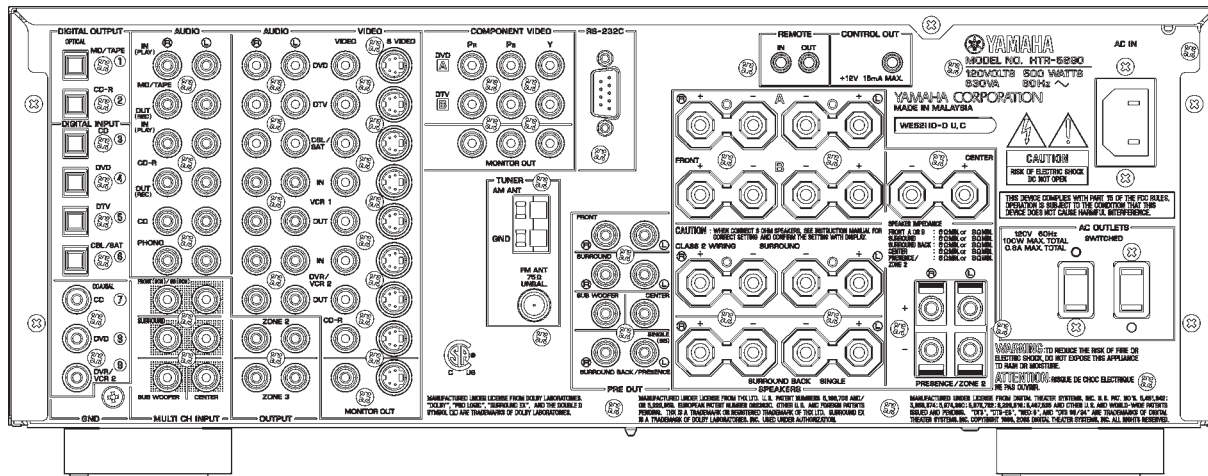
## REMOTE CONTROL PANEL



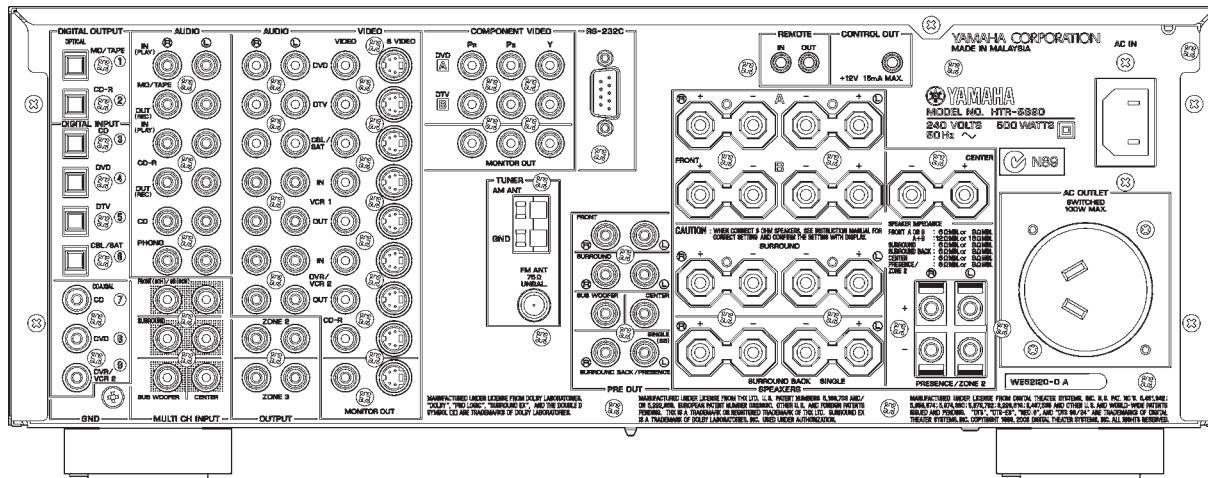
REAR PANELS

U, C models

HTR-5890



A model



## ■ SPECIFICATIONS

### ■ Audio Section

#### Minimum RMS Output Power (Power Amp. Section)

(20 Hz to 20 kHz, 0.04% THD, 8 ohms)

FRONT L/R .....	120 W + 120 W
CENTER .....	120 W
SURROUND L/R .....	120 W + 120 W
SURROUND BACK L/R .....	120 W + 120 W

#### Dynamic Power Per Channel (IHF)

FRONT L/R (8/6/4/2 ohms) ..... 155/195/250/330 W

#### Dynamic Headroom

8 ohms ..... 1.11 dB

#### Damping Factor (20 Hz to 20 kHz, SPEAKER-A, 8 ohms)

FRONT L/R ..... 140 or more

#### Input Sensitivity / Input Impedance

(1 kHz 100 W / 8 ohms, Multi CH IN)

PHONO (MM) .....	3.5 mV / 47 k-ohms
CD, etc. ....	200 mV / 47 k-ohms
MULTI CH INPUT	
FRONT L/R, CENTER, SURROUND L/R, SUB WOOFER	
.....	200 mV / 47 k-ohms

#### Maximum Input Signal Level

PHONO (MM) (1 kHz, 0.1% THD) ..... 100 mV or more  
 CD, etc. (1 kHz, 0.5% THD) ..... 2.4 V or more

#### Output Level / Output Impedance

REC OUT .....	200 mV / 1.2 k-ohms
PRE OUT (FRONT L/R, CENTER, SURROUND L/R, SURROUND BACK L/R) .....	1.0 V / 500 ohms
SUB WOOFER (20 Hz) .....	2.0 V / 500 ohms
ZONE 2 OUT .....	1.0 V / 1.2 k-ohms
ZONE 3 OUT .....	1.0 V / 1.2 k-ohms

#### Frequency Response (10 Hz to 100 kHz)

CD, PURE Direct to FRONT L/R ..... +0 / -3.0 dB

#### RIAA Equalization Deviation (20 Hz to 20 kHz)

PHONO (MM) ..... 0 ± 0.5 dB

#### Headphone Jack Rated Output / Impedance

(1 kHz, 40 mV, 8 ohms)  
 CD, etc. INPUT ..... 150 mV / 100 ohms

#### Total Harmonic Distortion (20 Hz to 20 kHz)

PHONO (MM) to REC OUT (1 V) ..... 0.02 % or less  
 CD, etc. (STEREO) to FRONT L/R SP OUT (60 W, 8 ohms) ..... 0.04 % or less

#### Signal to Noise Ratio (IHF-A Network)

PHONO (MM) (Input shorted) to SP OUT (5 mV)  
 U, C models ..... 86 dB or more  
 A model ..... 81 dB or more  
 CD, etc. (Input shorted, STEREO) to SP OUT (250 mV) ..... 100 dB or more

#### Residual Noise (IHF-A Network)

FRONT L/R SP OUT ..... 150 µV or less

#### Channel Separation (STEREO)

PHONO (Input shorted, 1 kHz / 10 kHz)  
 ..... 60 dB or more / 55 dB or more  
 CD, etc. (Input 5.1 k-ohms shorted, 1 kHz / 10 kHz)  
 ..... 60 dB or more / 45 dB or more

#### Tone Control Characteristics

BASS  
 Boost/Cut ..... ±6 dB (50 Hz)  
 Turnover Frequency ..... 350 Hz  
 TREBLE  
 Boost/Cut ..... ±6 dB (20 kHz)  
 Turnover Frequency ..... 3.5 kHz

#### Filter Characteristics

FRONT, CENTER, SURROUND, SURROUND BACK SP Small (H.P.F.)  
 ..... fc=40/60/80/90/100/110/120/160/200 Hz / 12 dB oct.  
 SUBWOOFER (L.P.F.)  
 ..... fc=40/60/80/90/100/110/120/160/200 Hz / 24 dB oct.

### ■ Video Section

#### Video Signal Type

(Gray Back)  
 U, C models ..... NTSC  
 A model ..... PAL  
 (Video Conversion)  
 U, C models ..... NTSC  
 A model ..... NTSC/PAL

#### Composite Video Signal Level

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

#### S-Video Signal Level

Y ..... 1 Vp-p / 75 ohms  
 C ..... 0.286 Vp-p / 75 ohms

#### Component Video Signal Level

Y ..... 1 Vp-p / 75 ohms  
 Pb/Pr ..... 0.7 Vp-p / 75 ohms

#### Video Maximum Input Level

..... 1.5 Vp-p or more

#### Video Signal to Noise Ratio

..... 60 dB or more

#### Monitor Out Frequency Response

Composite Video Signal, S-Video Signal ..... 5 Hz to 10 MHz, -3 dB  
 Component Video Signal ..... 5 Hz to 60 MHz, -3 dB

### ■ FM Section

#### Tuning Range

U, C models ..... 87.5 to 107.9 MHz  
 A model ..... 87.5 to 108.00 MHz

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

Mono ..... 2.0 µV (17.3 dBf)  
 Stereo ..... 25 µV (39.2 dBf)

#### Usable Sensitivity (IHF)

Mono ..... 1.0 µV (11.2 dBf)

#### Selectivity

at 400 kHz ..... 70 dB

#### Signal to Noise Ratio (IHF)

Mono ..... 76 dB  
 Stereo ..... 70 dB

#### Harmonic Distortion (1 kHz)

Mono ..... 0.2 %  
 Stereo ..... 0.3 %

#### Stereo Separation (1 kHz)

..... 42 dB

#### Frequency Response (20 Hz to 15 kHz)

..... +0.5 / -2 dB

#### Antenna Input

..... 75 ohms unbalanced

### ■ AM Section

#### Tuning Range

U, C models ..... 530 to 1,710 kHz  
 A model ..... 531 to 1,611 kHz

#### Usable Sensitivity

..... 300 µV/m

#### Antenna

..... Loop Antenna

### ■ General

#### Power Supply

U, C models ..... AC 120 V, 60 Hz  
 A model ..... AC 240 V, 50 Hz

#### Power Consumption

U, C models ..... 500 W / 630 VA  
 A model ..... 500 W

#### Standby Power Consumption (Reference Data)

..... 0.5 W or less

#### AC Outlets

2 switched outlets  
 U, C models ..... 100 W max. total / 0.8 A max. total  
 1 switched outlet  
 A model ..... 100 W max. total

#### Dimensions (W x H x D)

..... 435 x 171 x 424 mm (17-1/8" x 6-3/4" x 16-11/16")

#### Weight

..... 15.0 kg (33 lbs. 1 oz.)

#### Finish

U model ..... Black color  
 C, A models ..... Silver color

#### Accessories / 付属品

Remote Control x 1, Batteries (Manganese Dry) x 4, Power Cable x 1, Indoor FM Antenna x 1, AM Loop Antenna x 1, Speaker Terminal Wrench x 1, Optimizer Microphone x 1,

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

U .....	U.S.A. model	C .....	Canadian model
A .....	Australian model		



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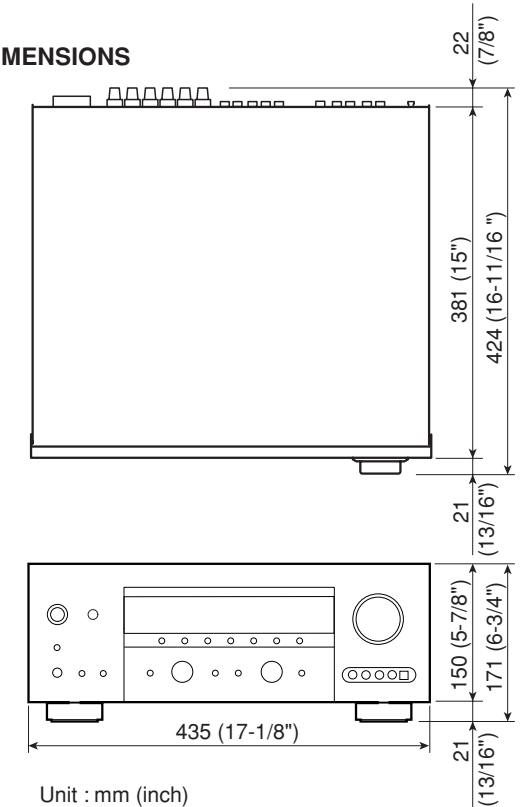


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### • DIMENSIONS



### • The variable range of the parameter (Min/Max/Step)

Parameter name	Pro Logic	Pro Logic II Movie/Game	Pro Logic II Music	Neo:6	2ch	DD/dts/AAC	6.1/ES	Unit
DSP LEVEL	-6/3/1	-	-	-	-6/3/1	-6/3/1	-6/3/1	dB
(P.) INIT. DLY	-	-	-	-	1/99/1	1/99/1	1/99/1	ms
(P.) ROOM SIZE	-	-	-	-	0.1/2.0/0.1	0.1/2.0/0.1	0.1/2.0/0.1	-
LIVENESS	-	-	-	-	0/10/1	0/10/1	0/10/1	-
S. INIT. DLY	10/25/1	-	-	-	-	1/49/1	1/49/1	ms
S. ROOM. SIZE	0.1/2.0/0.1	-	-	-	0.1/2.0/0.1	0.1/2.0/0.1	0.1/2.0/0.1	-
S. LIVENESS	0/10/1	-	-	-	0/10/1	0/10/1	0/10/1	-
SB. INT.DLY	-	-	-	-	-	-	1/49/1	ms
SB. ROOM, SIZE	-	-	-	-	-	-	0.1/2.0/0.1	-
SB. LIVENESS	-	-	-	-	-	-	0/10/1	-
REV. TIME	-	-	-	-	1.0/5.0/0.1	1.0/5.0/0.1	1.0/5.0/0.1	s
REV. DLY	-	-	-	-	0/250/1	0/250/1	0/250/1	ms
REV. LEVEL	-	-	-	-	0/100/1	0/100/1	0/100/1	%
PANORAMA	-	OFF	OFF/ON	-	-	-	-	-
DIMENSION	-	0 (STD)	-3/+3/1	-	-	-	-	-
CT WIDTH	-	0	0/7/1	-	-	-	-	-
C. IMAGE	-	-	-	0/0.5/0.1	-	-	-	-
DIALG. LIFT	-	-	-	-	0/5/1	0/5/1	0/5/1	-
PLII/PLIIX	-	PLII/PLIIX	PLII/PLIIX	-	-	-	-	-

7ch Stereo Parameter		Unit
CT LEVEL	0/100/1	%
SL LEVEL	0/100/1	%
SR LEVEL	0/100/1	%
SB LEVEL	0/100/1	%
PL LEVEL	0/100/1	%
PR LEVEL	0/100/1	%

THX Cinema Parameter	2ch	Unit
DEC	PRO LOGIC/PLII Movie/Neo:6 C	-

## • Set Menu Table

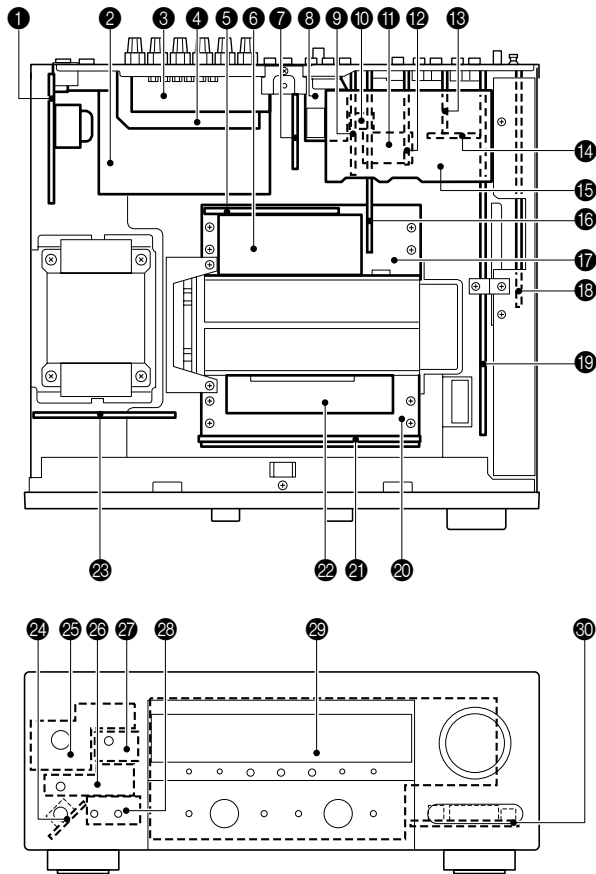
Main category	Sub-category	No.	Main Menu	Sub Menu	Initial Value	Setting Ranges
AUTO SETUP	1 MENU		WIRING		CHECK	CHECK, SKIP
			DISTANCE		CHECK	CHECK, SKIP
			SIZE		CHECK	CHECK, SKIP
			EQUALIZING		FLAT	SKIP, FRONT, FLAT, LOW, MID, HIGH
			LEVEL		CHECK	CHECK, SKIP
			SETUP		AUTO	AUTO, STEP
			WIRING		--	--
			DISTANCE		--	--
			SIZE		--	--
			EQUALIZING		--	--
			LEVEL		--	--
			A WIRING		L/C/R/SR/SBR/SBL/SL/SWFR/FL/FR	OK, NONE
			B DISTANCE		L/C/R/SR/SBR/SBL/SL/SWFR/FL/FR	xx.x m, xx.x ft
			C SIZE		L/C/R/SR/SBR/SBL/SL/SWFR/FL/FR	LARGE, SMALL, NONE
			D EQUALIZING		L/R/C/SR/SBR/SBL/SL/FL/FR	
			E LEVEL		L/C/R/SR/SBR/SBL/SL/SWFR/FL/FR	-10~-0~+10 dB
			F EXIT			SET, CANCEL
MANUAL SETUP	1 BASIC MENU		ROOM SIZE		M	S, M, L
			SUBWOOFER		YES	YES, NONE
			PRESENCE SP		NONE	NONE, YES
			Speakers (Advance to below steps when SET is selected.)		7	2, 3, 4, 5, 7, 8, 9
			TEST TONE			Cancelled after initial setting
			CONFIRM		YES	YES, NO (→ to SOUND_SP_LEVEL)
			CENTER SP		SMALL	NONE, SMALL, LARGE
			FRONT SP		SMALL	SMALL, LARGE
			SURR. L/R SP		SMALL	NONE, SMALL, LARGE
			SURR B L/R SP		SMLx2	NONE, SMLx1, SMLx2, LRGx1, LRGx2
			PRESENCE SP		NONE	NONE/YES
			LFE/BASS OUT		SWFR	SWFR, FRNT, BOTH
			CROSS OVER		80 (THX)	40, 60, 80, 90, 100, 110, 120, 160, 200 Hz
			FL : FR	-----  -----	Center	Center (±20 step)
			FL : C	-----  -----	Center	Center (±20 step)
			FL : SL	-----  -----	Center	Center (±20 step)
			SL : SB	-----  -----	Center	Center (±20 step)
	SL : SR	-----  -----	Center	Center (±20 step)		
	FL : SWFR	-----  -----	Center	Center (±20 step)		
	F : PRES	-----  -----	Center	Center (±20 step)		
	UNIT		feet	meters (m) / feet (ft)		
	m····FRONT L		3.0 m	0.3 to 24.0 m (0.1 m step)		
	m····FRONT R		3.0 m	0.3 to 24.0 m (0.1 m step)		
	m····CENTER		3.0 m	0.3 to 24.0 m (0.1 m step)		
	m····SURR. L		3.0 m	0.3 to 24.0 m (0.1 m step)		
	m····SURR. R		3.0 m	0.3 to 24.0 m (0.1 m step)		
	m····SBL		2.1 m	0.3 to 24.0 m (0.1 m step)		
	m····SBR		2.1 m	0.3 to 24.0 m (0.1 m step)		
	m····SWFR		3.0 m	0.3 to 24.0 m (0.1 m step)		
	m····PRESENCE L		3.0 m	0.3 to 24.0 m (0.1 m step)		
	m····PRESENCE R		3.0 m	0.3 to 24.0 m (0.1 m step)		
	feet··FRONT L		10.0 feet	1.0 to 80 feet (0.5 feet step)		
	feet··FRONT R		10.0 feet	1.0 to 80 feet (0.5 feet step)		
	feet··CENTER		10.0 feet	1.0 to 80 feet (0.5 feet step)		
	feet··SURR. L		10.0 feet	1.0 to 80 feet (0.5 feet step)		
	feet··SURR. R		10.0 feet	1.0 to 80 feet (0.5 feet step)		
	feet··SBL		7.0 feet	1.0 to 80 feet (0.5 feet step)		
	feet··SBR		7.0 feet	1.0 to 80 feet (0.5 feet step)		
	feet··SWFR		10.0 feet	1.0 to 80 feet (0.5 feet step)		
	feet··PRESENCE L		10.0 feet	1.0 to 80 feet (0.5 feet step)		
	feet··PRESENCE R		10.0 feet	1.0 to 80 feet (0.5 feet step)		
	Channel		L	L, R, CT, SR L/R, SB L/R, PRES L/R		
	63 Hz		0 dB	±6 dB (0.5 dB step)		
	160 Hz		0 dB	±6 dB (0.5 dB step)		
	400 Hz		0 dB	±6 dB (0.5 dB step)		
	1 kHz		0 dB	±6 dB (0.5 dB step)		
	2.5 kHz		0 dB	±6 dB (0.5 dB step)		
	6.3 kHz		0 dB	±6 dB (0.5 dB step)		
	16 kHz		0 dB	±6 dB (0.5 dB step)		
	SP LFE LEVEL		0 dB	-20 dB to 0 dB (1 dB step)		
	HP LFE LEVEL		0 dB	-20 dB to 0 dB (1 dB step)		
	SP DYNAMIC RANGE		MAX	MIN, STD, MAX		
	HP DYNAMIC RANGE		MAX	MIN, STD, MAX		
	TEST TONE		OFF	OFF, ON		
	OUTPUT		FRONT L/R	FRONT L/R, L, C, R, SR, SBL, SBR, SL, SWFR		
	FERQ.		88 Hz	35 Hz ... 88 Hz ... WIDE		
	HP BASS		0 dB	-6 dB to +6 dB (0.5 dB step)		
	HP TRBL		0 dB	-6 dB to +6 dB (0.5 dB step)		
	AUDIO MUTE		∞	∞, -20 dB		
	AUDIO DELAY			0 ~ 240 ms (1 ms step)		
	DIALG LIFT		OFF	OFF/ON		
	DUAL MONO (J)		MAIN	MAIN, SUB, ALL		
	PR/SB SELECT		SB	SB, PR		
	GRAPHIC EQ					
	E LFE LEVEL					
	F DYNAMIC RANGE					
	G LOW FREQ.TEST					
	H HP TONE CTRL					
	I AUDIO SET					
	J PR/SB SELECT					

3 INPUT MENU	A I/O ASSIGNMENT	[A] CV INPUT 1	DVD	
		[B] CV INPUT 2	DTV	
		(1) OPTICAL OUT 1	MD/TAPE	
		(2) OPTICAL OUT 2	CD-R	
		(3) OPTICAL IN 1	CD	
		(4) OPTICAL IN 2	DVD	
		(5) OPTICAL IN 3	DTV	
		(6) OPTICAL IN 4	CBL/SAT	
		(7) COAXIAL IN 1	CD	
	(8) COAXIAL IN 2	DVD		
	(9) COAXIAL IN 3	DVR/VCR2		
	B INPUT MODE	AUTO	AUTO, LAST	
	C INPUT RENAME	DVD → __ DVD ___		
	D EXT INPUT SET	1 6ch/8ch	6ch	6 ch, 8 ch
		2. 8CH INPUT FRONT	DVD	
		3 CENTER to	CENTER	CENTER, FRONT
		4 SWFR to	SWFR	SWFR, FRONT
		5 SL/SR	SL/SR	SL/SR, FRONT
	A DISPLAY SET	DIMMER	0	-4 to 0 (1 step)
OSD SHIFT		0	0 ±5 (1 step)	
GRAY BACK		AUTO	AUTO, OFF	
V CONV.		ON	OFF, ON	
CMPNT OSD		ON	OFF, ON	
B MEMORY GUARD		OFF	OFF, ON	
C PARAM.INI	PARAM INIT	Parameters are initialized when keys of asterisk * marked numbers are pressed (0 to 9)		
D SP IMP.SET		8 ohms	8 ohms, 6 ohms	
	SP B SET	FRONT	FRONT, ZONE B	
	ZONE2 SET	VAR.	VAR., FIX	
E ZONE SET	ZONE2 OUT	OFF	OFF, ON	
	ZONE2 AMP			



INTERNAL VIEW

HTR-5890



- ① POWER (5) P.C.B.
- ② MAIN (1) P.C.B.
- ③ POWER (7) P.C.B.
- ④ MAIN (5) P.C.B.
- ⑤ POWER (6) P.C.B.
- ⑥ MAIN (3) P.C.B.
- ⑦ VIDEO (4) P.C.B.
- ⑧ TUNER
- ⑨ CONVERSION P.C.B.
- ⑩ VIDEO (8) P.C.B.
- ⑪ VIDEO (7) P.C.B.
- ⑫ VIDEO (3) P.C.B.
- ⑬ VIDEO (5) P.C.B.
- ⑭ VIDEO (6) P.C.B.
- ⑮ VIDEO (2) P.C.B.
- ⑯ VIDEO (1) P.C.B.
- ⑰ MAIN (2) P.C.B.
- ⑱ DSP P.C.B.
- ⑲ FUNCTION P.C.B.
- ⑳ MAIN (4) P.C.B.
- ㉑ POWER (1) P.C.B.
- ㉒ POWER (3) P.C.B.
- ㉓ OPERATION (7) P.C.B.
- ㉔ OPERATION (5) P.C.B.
- ㉕ OPERATION (2) P.C.B.
- ㉖ OPERATION (4) P.C.B.
- ㉗ OPERATION (8) P.C.B.
- ㉘ OPERATION (6) P.C.B.
- ㉙ OPERATION (1) P.C.B.
- ㉚ OPERATION (3) P.C.B.



## DISASSEMBLY PROCEDURES

(Remove parts in the order as numbered.)  
Disconnect the power cable from the AC outlet.

### 1. Removal of Top Cover

- Remove 2 screws (①), 4 screws (②) and 5 screws (③). (Fig. 1)
- Slide the Top Cover rearward to remove it. (Fig. 1)

### 2. Removal of Front Panel Unit

- Remove 9 screws (④) and then slide the Front Panel Unit forward. (Fig. 1)
- Remove CB25, CB505, CB509, CB512, CB861 ~ CB863 and then remove the Front Panel Unit. (Fig. 2)

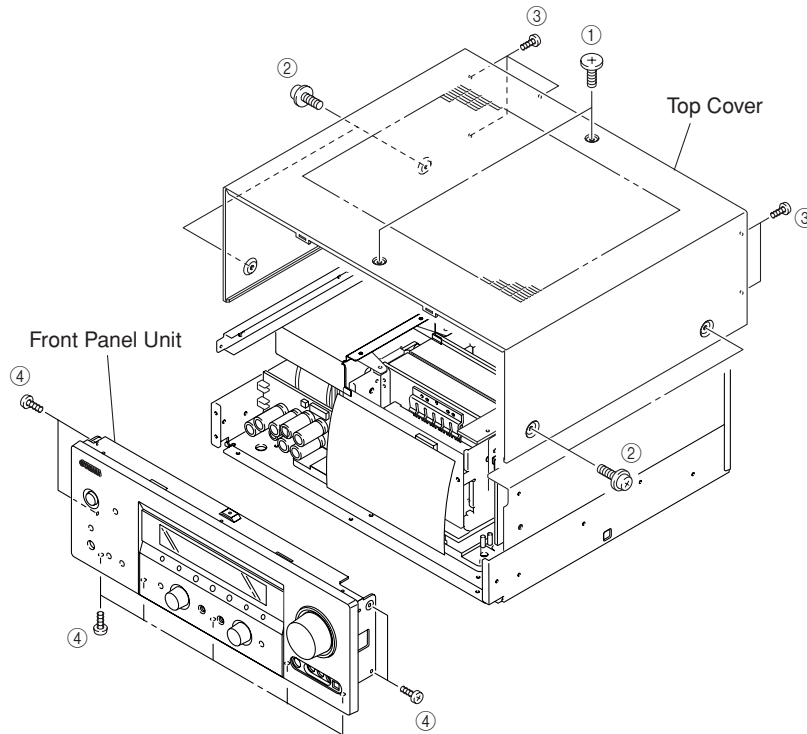


Fig. 1

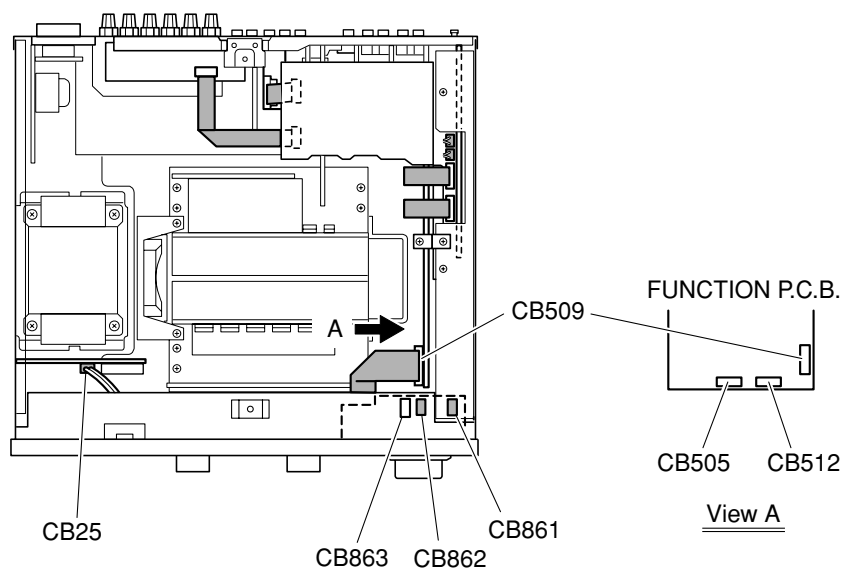


Fig. 2

**3. Removal of DSP P.C.B.**

- a. Remove 2 screws (⑤) and then remove the Support. (Fig. 4)
- b. Remove 5 screws (⑥) and then remove the Bracket. (Fig. 4)
- c. Remove 1 screw (⑦). (Fig. 4)
- d. Remove 8 screws (⑧). (Fig. 5)
- e. Remove CB501, CB503 ~ CB505. (Fig. 3)
- f. Remove the DSP P.C.B. and Shield Case upward. (Fig. 4)

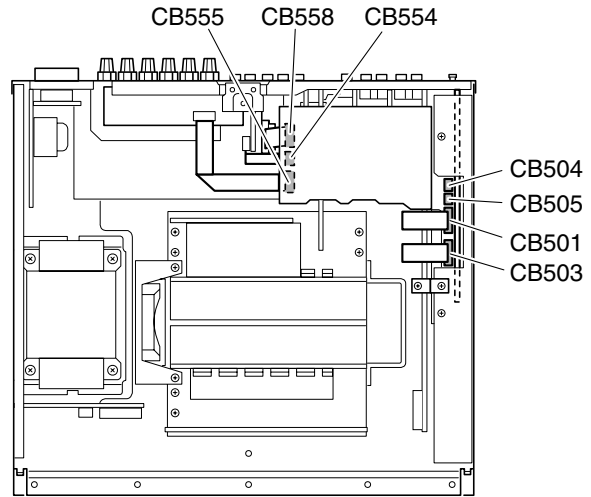


Fig. 3

**4. Removal of VIDEO (2) P.C.B.**

- a. Remove 1 screw (⑨). (Fig. 4)
- b. Remove CB554, CB555 and CB558. (Fig. 3)
- c. Remove the VIDEO (2) P.C.B. which is connected directly to the lower P.C.B. with connectors. (Fig. 4)

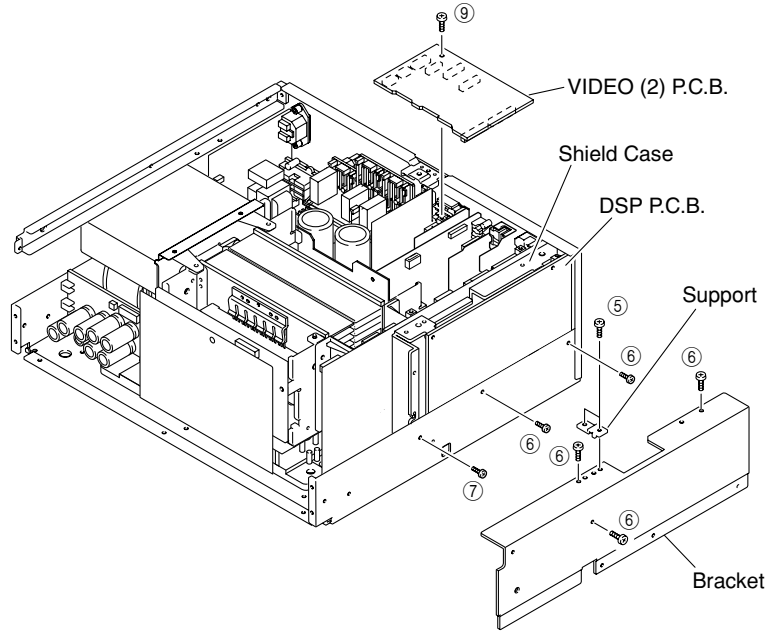


Fig. 4

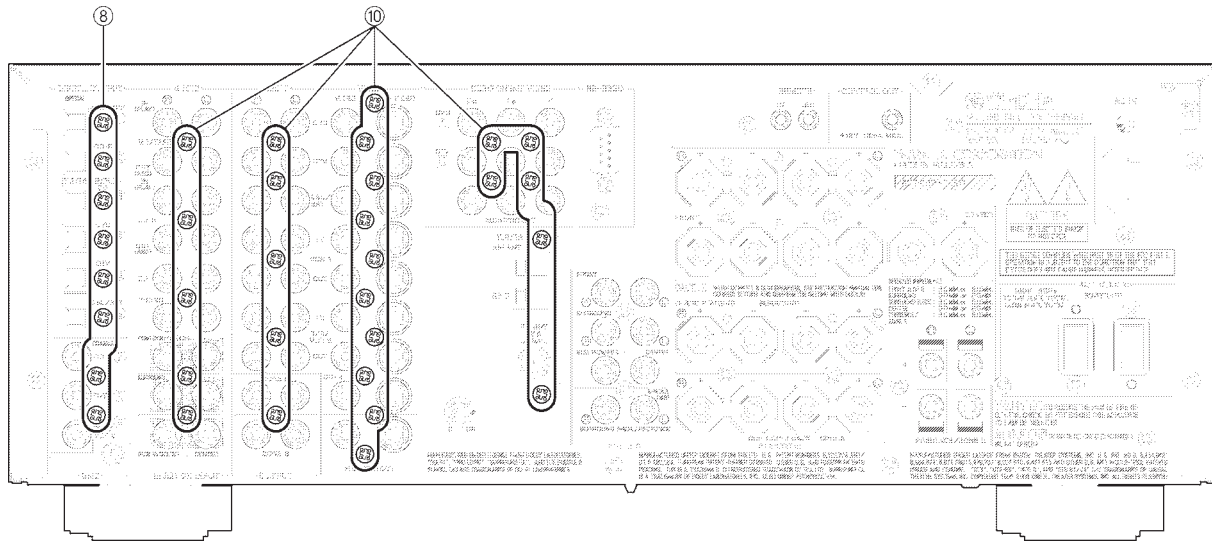


Fig. 5

## 5. Removal of VIDEO (1), (3), (5) ~ (8), FUNCTION, CONVERSION P.C.B.s and Tuner

- Remove 26 screws (⑩). (Fig. 5)
- Remove VIDEO (1), (3), (5) ~ (8), FUNCTION, CONVERSION P.C.B.s and Tuner.

### When checking the P.C.B.:

- Put the Rubber Sheet and a Cloth over the equipment. Then place the P.C.B. upside down on the Cloth and check it. (Fig. 6)
- Reconnect all cables (connectors) that have been disconnected.

Be sure to use the extension cable for servicing for the following section.

FUNCTION P.C.B. CB505 – OPERATION (1) P.C.B. CB864:  
MF113500 (13P 500mm)

FUNCTION P.C.B. CB512 – OPERATION (1) P.C.B. CB852:  
MF115500 (15P 500mm)

- When connecting the flat cable, use care for the polarity.

- In this unit, the ground of P.C.B.s shown below is connected to the rear panel. When these P.C.B.s are removed from the rear panel, connect the ground to the rear panel or chassis, using a lead wire or the like. (Fig. 7)

DSP P.C.B. : PJ501 (DIGITAL INPUT)  
FUNCTION P.C.B. : PJ504 (MULTI CH INPUT)  
VIDEO (1) P.C.B. : JK605 (S VIDEO)  
VIDEO (3) P.C.B. : PJ705 (VIDEO)  
VIDEO (5) P.C.B. : PJ503 (DVR/VCR 2)  
CONVERSION P.C.B.: PJ801 (COMPONENT VIDEO)

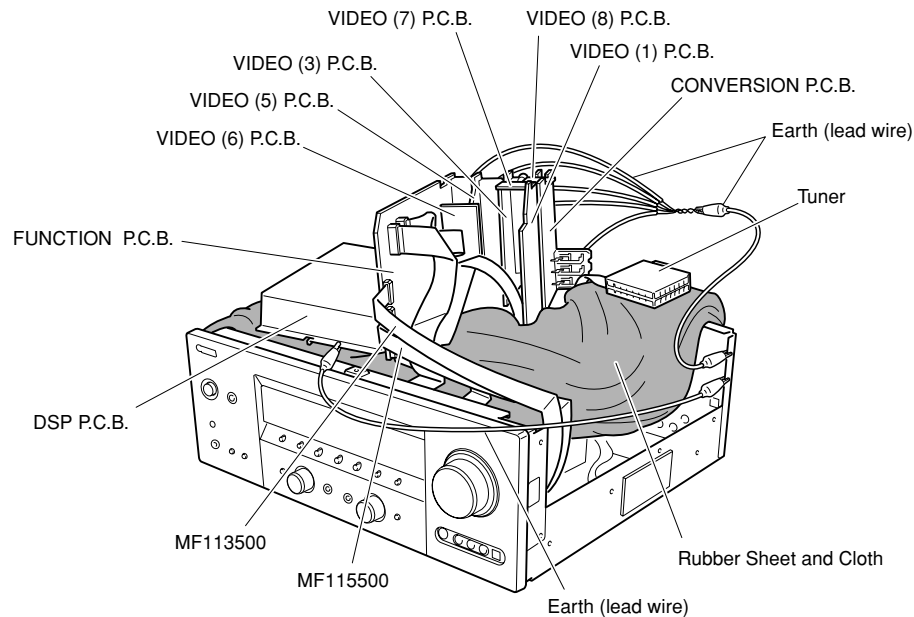


Fig. 6

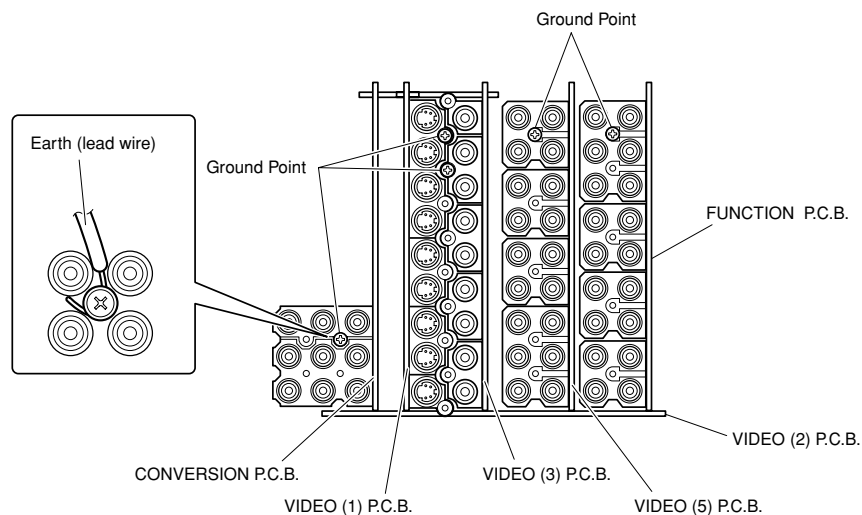


Fig. 7

**6. Removal of Fan**

- a. Remove 4 push rivets (11) and then remove the Cover. (Fig. 8)
- b. Remove CB32. (Fig. 8)
- c. Remove 2 screws (12) and 2 screws (13). (Fig. 8)
- d. Remove the Fan together with the frame by lifting them up. (Fig. 8)

**7. Removal of Amp Unit**

- a. Remove 2 push rivets (14) and then remove the Duct. (Fig. 8)
- b. Remove 4 screws (15) and 4 screws (16). (Fig. 8)
- c. Remove the Amp Unit. (Fig. 8)

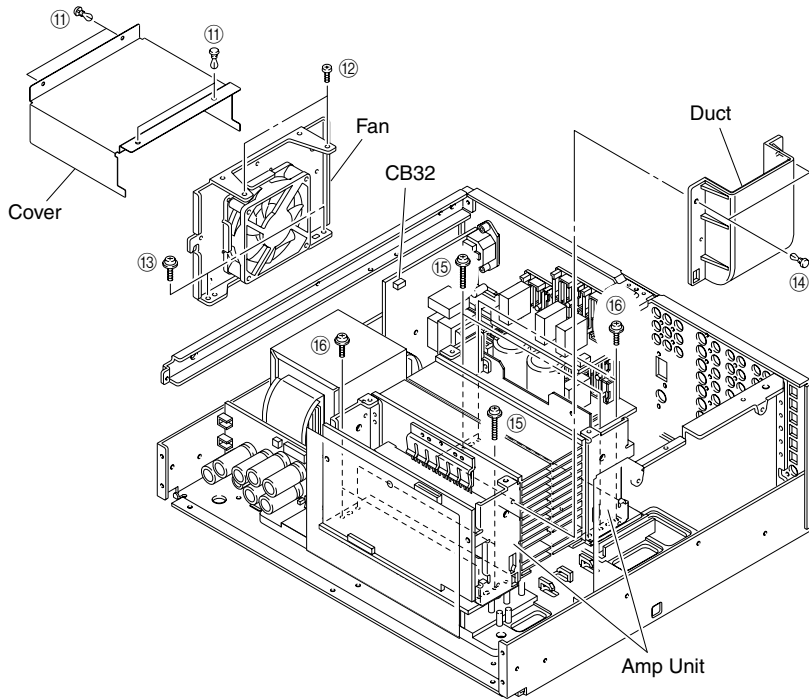
**When checking the Amp Unit:**

- Put the Amp Unit together with the heat sink upright on the art base and check them. (Fig. 9)
- Reconnect all cables (connectors) that have been disconnected.

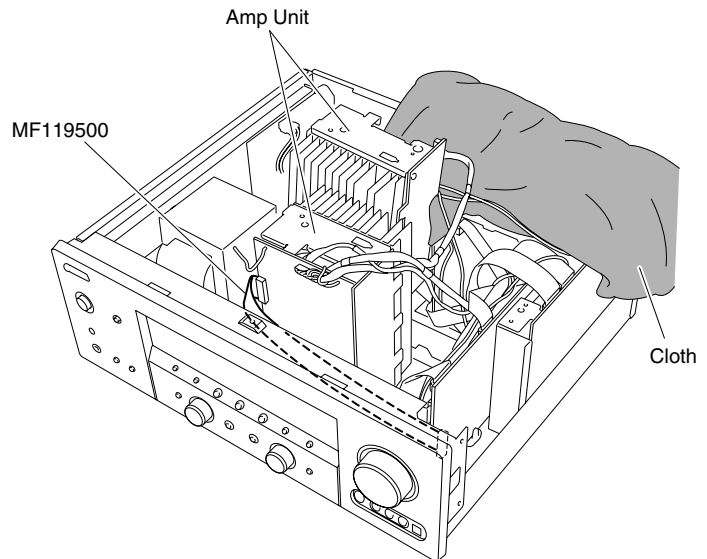
Be sure to use the extension cable for servicing for the following section.

FUNCTION P.C.B. CB507 – POWER (1) P.C.B. CB22: MF119500 (19P 500mm)

- When connecting the flat cable, use care for the polarity.



**Fig. 8**



**Fig. 9**

## ■ UPDATING FIRMWARE

After replacing the IC512 on the FUNCTION P.C.B. with the service part (X4678A00), update the firmware according to the following procedure.

### Equipment required

- PC with RS-232C serial port (OS: Windows98/Me/2000/XP)
- Firmware loading program (YAVBoot\_V518.exe)
- Firmware (V1500\_xxx.mot)
- RS-232C cross cable "D-Sub 9-pin Female".
 

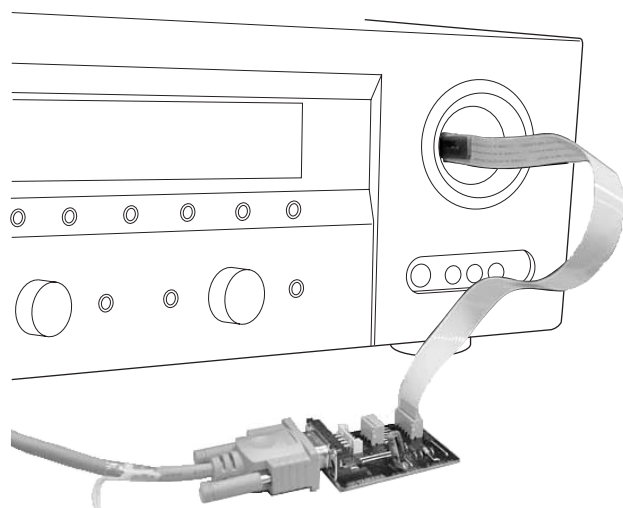
Pin No.2 RxD	X	Pin No.2 RxD
Pin No.3 TxD	X	Pin No.3 TxD
Pin No.5 GND	—	Pin No.5 GND
Pin No.7 RTS	X	Pin No.7 RTS
Pin No.8 CTS	X	Pin No.8 CTS

### Preparations

Download the firmware loading program and firmware from the specified download sources to the same directory of the PC for updating the firmware.

### Firmware updating procedure

1. With the power turned off, connect the RS-232C cross cable and RS-232C conversion adapter between the PC and the RS-232C port of the unit as shown below.



2. After executing the firmware loading program, select the program type and port settings as follows:

#### Program Type Select

Program Type: V1500

#### COM > SETTING Menu

#### Port Setting Dialog

Port: Select proper port #  
 Bits per second: 9600  
 Data bits: 8  
 Parity: None  
 Stop bits: 1  
 Flow control: Hardware

3. Turn on the power to the unit.
4. To connect the line, click the CONNECT button or the COM menu, then click the CONNECT.

#### COM > CONNECT Menu

After connecting, the "Connected" message is displayed in the status bar.

5. Click the File Change button and then select the file to be loaded.  
 To start loading, click the Program Macro button.

#### <CAUTION>

Never disconnect the power cable of the unit while loading the firmware, or the flash ROM data may be destroyed.

6. When the firmware loading is finished, the checksum information will be displayed on the information box.
7. To disconnect the line, click the BREAK button or click the COM menu, then click the BREAK.

#### COM > BREAK Menu

For more information, access to the "FIRMWARE UPDATE PROCEDURES" on the WEB SITE.

## ■ SELF DIAGNOSIS FUNCTION (DIAG)

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.

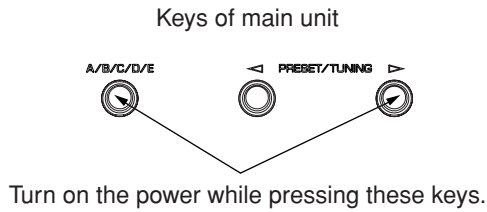
No	DIAG menu	sub-menu
1	DA601-YSS930 1.YSS 0dB	1. YSS 0dB
		2. YSS FULL BIT
2	BYPASS 2.ANALOG BYPAS	1. ANALOG BYPASS
		2. DSP BYPASS
3	RAM THROUGH 3.RAM 0dB	1. RAM 0dB
		2. MAIN ATT
4	PRO LOGIC / NEO6 4.PRO LOGIC I	1. PRO LOGIC I
		2. PRO LOGIC II
		3. NEO: 6
5	SPEAKER SET 5.FRNT:SML 0dB	1. FRONT: SMALL 0dB
		2. CENTER: NONE
		3. LFE/BASS: FRONT
		4. PRESS MIX: 5ch
		5. SURROUND B: MUTE
		6. SURROUND LR: MUTE
		7. SURROUND LR: NONE
6	EXTERNAL INPUT 6.6CH INPUT_6	1. 6CH INPUT_6OHMS
		2. 6CH INPUT_8OHMS
		3. 8CH INPUT_6OHMS
		4. 8CH INPUT_8OHMS
7	MIC CHECK 7.MIC CHECK	MIC CHECK
8	EFFECT OFF/ DISPLAY CHECK 8. VFD CHECK	1. VFD CHECK (Initial display)
		2. VFD DISP OFF (All segments OFF)
		3. VFD DISP ALL (All segments ON 100%)
		4. VFD DIMMER (All segments ON 50%)
		5. CHECKED PATTERN (ON in lattice)
9	MANUAL TEST 9.TEST ALL	1. TEST ALL
		2. TEST FRONT L
		3. TEST CENTER
		4. TEST FRONT R
		5. TEST SURROUND R
		6. TEST SURROUND BACK R
		7. TEST SURROUND BACK L
		8. TEST SURROUND L
		9. TEST PRESENCE L
		10. TEST PRESENCE R
		11. TEST LFE
10	RS-232C 10.TxRxData:xx	1. TX DATA
		2. HARD FLOW
11	FACTORY PRESET 11.PRESET INHI	1. PRESET INHIBIT (memory initialization inhibited)
		2. PRESET RESERVED (memory initialized)

No	DIAG menu	sub-menu
12	AD DATA CHECK /FAN TEST    DC:007 PS:025	1. DC/PS (protection)
		2. THM/FAN OUT
		3. REC-OUT
		4. IMP SW/POWER LIMIT
		5. K0/K1 (panel key)
		6. FAN DRIVE TEST: HIGH
		7. FAN DRIVE TEST: MID
		8. FAN DRIVE TEST: LOW
13	V CONV STATUS L:XXXXXXXX	1. LOW BYTE DATA
		2. HIGH BYTE DATA (Not applied to this model.)
14	IF STATUS    ISI:440308C000	1. IS 1 (5 Byte)
		2. IS 2 (4 Byte)
		3. CS 1 (5 Byte)
		4. CS 2 (5 Byte)
		5. CS 3 (5 Byte)
		6. CS 4 (5 Byte)
		7. CS 5 (4 Byte)
		8. BS1 (5 Byte)
		9. BS2 (5 Byte)
		10. BS3 (5 Byte)
		11. BS4 (5 Byte)
		12. BS5 (5 Byte)
		13. BS6 (5 Byte)
		14. BS7 (2 Byte)
		15. TI1 (5 Byte)
		16. TI2 (1 Byte)
		17. MTT (5 Byte)
15	DSP RAM CHECK YSS    BUS:NoEr	1. YSS930 BUS CHECK
		2. SECOND DECODER BUS CHECK
16	PROTECTION SET    PS_Lo:    XXXX	(Not applied to this model.)
17	SOFT SW    17.SW    :PCB	1. SW MODE
		2. MODEL SETTING
		3. TUNER DESTINATION
		4. TUNER EXIST
		5. RDS EXIST
		6. ZONE 2 EXIST
		7. VIDEO FORMAT
18	ROM VERSION/CHECK SUM/ PORT    VER.XXXXXXX	1. VERSION
		2. OPE/DSP VERSION
		3. SUM ALL/PROGRAM
		4. SUM 232C BOOT/MAKER BOOT
		5. PORT
		6. AAC PORT



**• Starting DIAG**

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



**• Starting DIAG in the protection cancel mode**

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

Press the “STANDBY/ON” key while simultaneously pressing those two keys indicated in the figure above. At this time, keep pressing those two keys for 3 seconds or longer.

In this mode, the “SLEEP” segment of the FL display of the main unit flashes to indicate that the mode is DIAG mode with the protection functions disabled.

**CAUTION!**

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

**• Canceling DIAG**

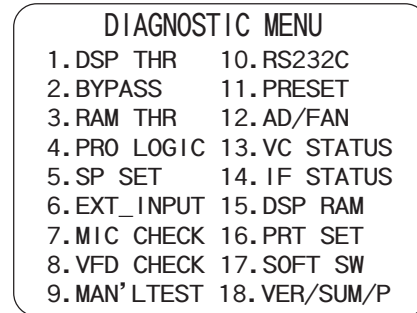
[1] Before canceling DIAG, execute setting for PRESET of DIAG menu No.11 (Memory initialization inhibited or Memory initialized).

\* In order to keep the user memory stored, be sure to select PRESET INHIBIT (Memory initialization inhibited). Any protection history will remain in memory.

[2] Turn off the power by pressing the “STANDBY/ON” key of the main unit or the “STANDBY” key of the remote controller.

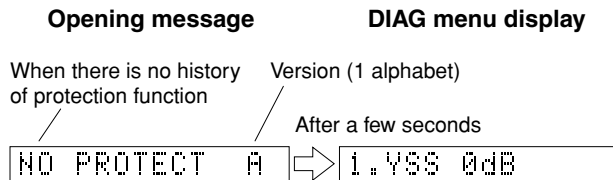
**• Display provided when DIAG started**

When the monitor is connected, DIAGNOSTIC MENU appears on its screen as shown in the figure. (It remains on display until DIAG is cancelled.)

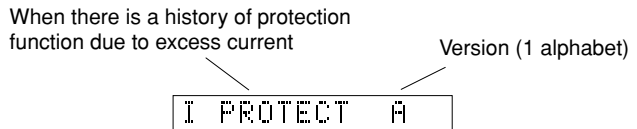


The FL display of the main unit displays the protection function history data and the version (1 alphabet) and then the DIAG menu [sub-menu (YSS 0dB) of DIAG menu No.1 DSP THROUGH] a few seconds later.

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



**When there is a history of protection function:**

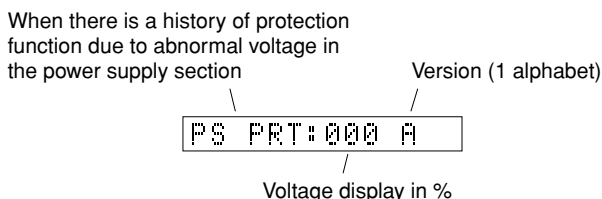


**Cause:** An excessive current flowed through the power amplifier.

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

**Note)**

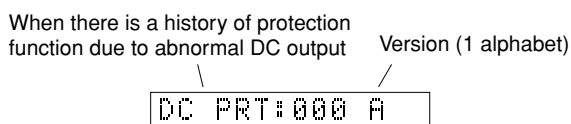
- Applying the power to a unit without correcting the abnormality can be dangerous and cause additional circuit damage.
- The output transistors in each amplifier channel should be checked for damage before applying any power.
- Amplifier current should be monitored by measuring across the emitter resistors for each channel.



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

**Supplementary information:** The abnormal voltage is displayed in % based on 5V as 100%.

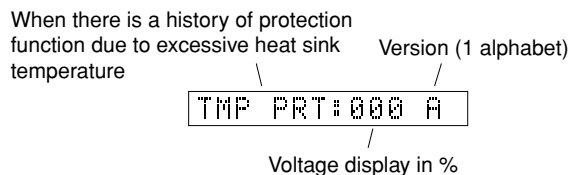
Turning on the power without correcting the abnormality will cause the protection function to work 1 second later and the power supply will be shut off.



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

**Supplementary information:** The abnormal voltage is displayed in % based on 5V as 100%.

Turning on the power without correcting the abnormality will cause the protection function to work 3 seconds later and the power supply will be shut off.



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

**Supplementary information:** The abnormal voltage is displayed in % based on 5V as 500%.

Turning on the power without correcting the abnormality will cause the protection function to work 1 second later and the power supply will be shut off.

- \* Additional causes of protection can be due to loose connections, associated components, CPU, etc.
- \* For the protection voltage value, refer to DIAG menu No.12 described later.

**• History of protection function**

When the protection function has worked, its history is stored in memory with a backup. Even if no abnormality is noted while servicing the unit, an abnormality which has occurred previously can be defined as long as the backup data has been stored.

The history of the protection function is cleared when DIAG is cancelled by selecting PRESET RESERVED (Memory initialized) of DIAG menu No. 11 or when the backup data is erased.

**• Display during menu operation**

During the DIAG operation, the menu list described in the section of the startup screen appears on the superimposed screen and the function at work is indicated on the FL indicator. The contents displayed during the function operation are described in the later section on details of functions.

**• Operation procedure of DIAG menu and SUB-MENU**

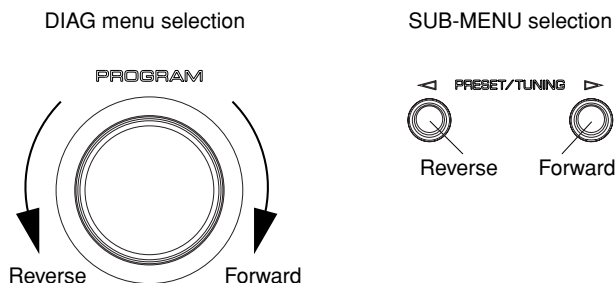
There are 18 MENU items, each of which has some SUB-MENU items.

**DIAG menu selection**

Select the menu using the PROGRAM knob.

**SUB-MENU selection**

Select the sub-menu using ▷ (Forward) and ◁ (Reverse) keys of PRESET/TUNING.



**• Functions in DIAG mode**

In addition to the DIAG menu items, functions as listed below are available.

- Input selection, Multi channel input
- Center/Surround/Surround Back/Sub-woofer level adjustment
- Muting
- Speaker relay A/B
- Power on/off
- Master volume

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

\* It is possible to confirm Menu No.14 IF STATUS while keeping the signal process (operation status) of each DIAG menu by using the input mode key of the main unit.

**• 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: -20dB
- Input: DVD (MULTI CHANNEL INPUT OFF)
- Effect level: 0dB
- Audio mute: OFF
- Speaker relay A/B: ON
- Speaker setting: LARGE / BASS OUT = BOTH
- DIAG menu: DA601-YSS930 (1. YSS 0dB)

**• Details of DIAG menu**

With full-bit output specified in some modes, it is possible to execute 0dBFS output without head margin in each channel.

**1. DA601-YSS930**

This function is for YSS930 only. Main DSP of YSS930 is selected for FRONT output.

Using the sub-menu, it is possible to select 0dB output level or full-bit output.

**YSS 0dB**

- The signal is output including the head margin.



Reference data

INPUT: DVD ANALOG

SUBWOOFER: 50Hz, Others: 1kHz

Input level	Volume	SPEAKER OUTPUT				SUBWOOFER OUTPUT
		FRONT L/R	CENTER	SURROUND L/R	SURROUND BACK	
Both ch, -20 dBm	+6.5 dB	+13.5 dBm	+13.5 dBm	+13.5 dBm	+13.5 dBm	-7.0 dBm

**YSS FULL BIT**

- The signal is output in digital full bit without including the head margin.
- The SWFR signal is output but not in digital full bit.

**1. YSS FULL BIT**

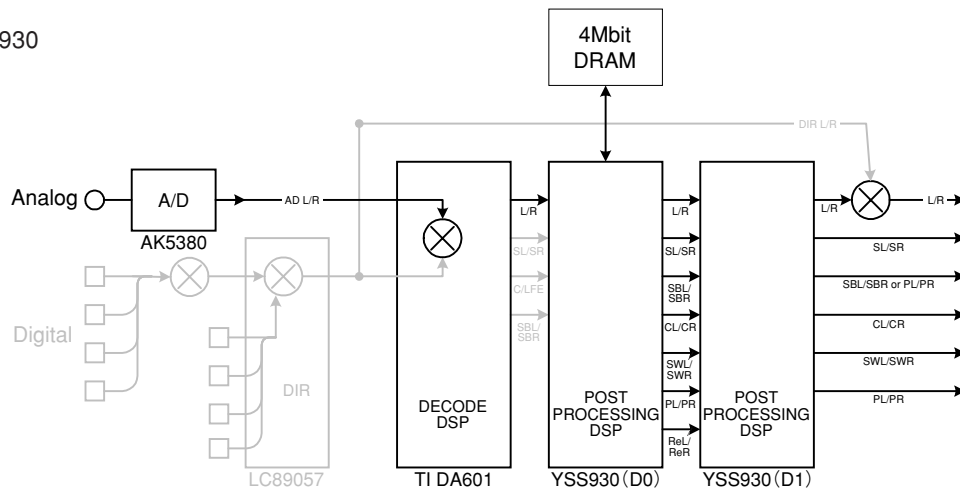
Reference data

INPUT: DVD ANALOG

SUBWOOFER: 50Hz, Others: 1kHz

Input level	Volume	SPEAKER OUTPUT				SUBWOOFER OUTPUT
		FRONT L/R	CENTER	SURROUND L/R	SURROUND BACK	
Both ch, -20 dBm	+6.5 dB	+13.5 dBm	+13.5 dBm	+13.5 dBm	+13.5 dBm	-7.0 dBm

DA601-YSS930  
(ANALOG)



(Shaded items not used in this example)

**2. BYPASS**

**ANALOG BYPASS**

**2. ANALOG BYPASS**

Reference data

INPUT: DVD ANALOG

SUBWOOFER: 50Hz, Others: 1kHz

Input level	Volume	SPEAKER OUTPUT				SUBWOOFER OUTPUT
		FRONT L/R	CENTER	SURROUND L/R	SURROUND BACK	
Both ch, -20 dBm	+6.5 dB	+13.5 dBm	- ∞	- ∞	- ∞	- ∞

DSP BYPASS

2. DSP BYPASS

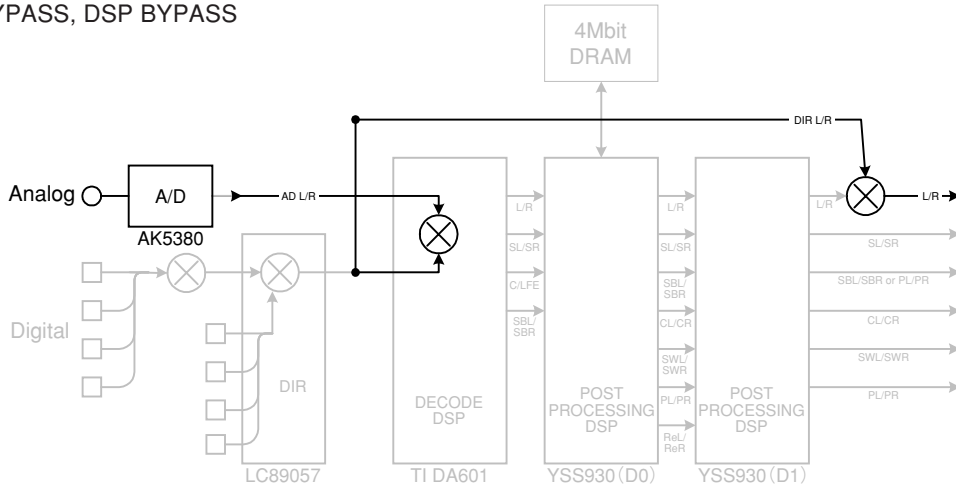
Reference data

INPUT: DVD ANALOG

SUBWOOFER: 50Hz, Others: 1kHz

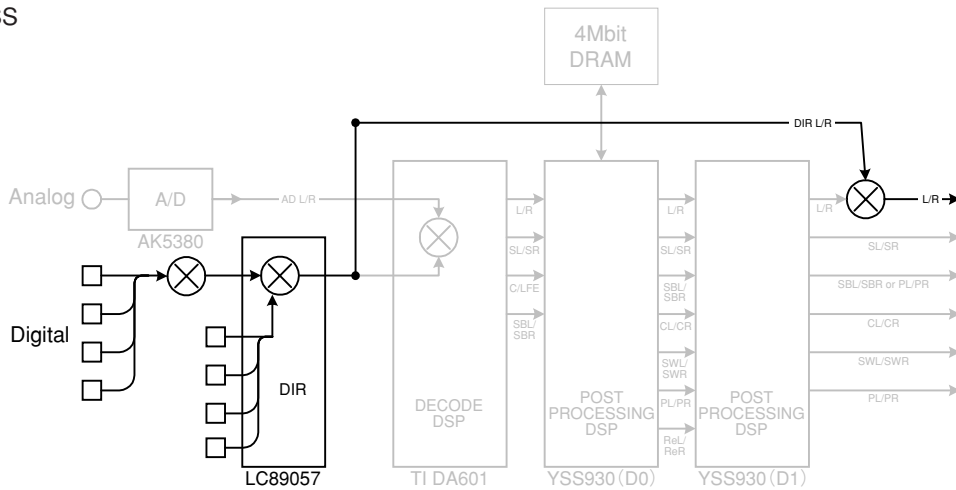
Input level	Volume	SPEAKER OUTPUT				SUBWOOFER OUTPUT
		FRONT L/R	CENTER	SURROUND L/R	SURROUND BACK	
Both ch, -20 dBm	+6.5 dB	- ∞	- ∞	- ∞	- ∞	- ∞

ANALOG BYPASS, DSP BYPASS  
(ANALOG)



(Shaded items not used in this example)

DSP BYPASS  
(DIGITAL)



(Shaded items not used in this example)

### 3. RAM THROUGH

Using the sub-menu, it is possible to select the full-bit output at 0dB output level.

#### RAM 0dB

3.RAM 0dB

Reference data

INPUT: DVD ANALOG

SUBWOOFER: 50Hz, Others: 1kHz

Input level	Volume	SPEAKER OUTPUT				SUBWOOFER OUTPUT
		FRONT L/R	CENTER	SURROUND L/R	SURROUND BACK	
Both ch, -20 dBm	+6.5 dB	+13.5 dBm	+13.5 dBm	+13.5 dBm	+13.5 dBm	-7.0 dBm

#### MAIN ATT

- MAIN -9dB

3.MAIN ATT

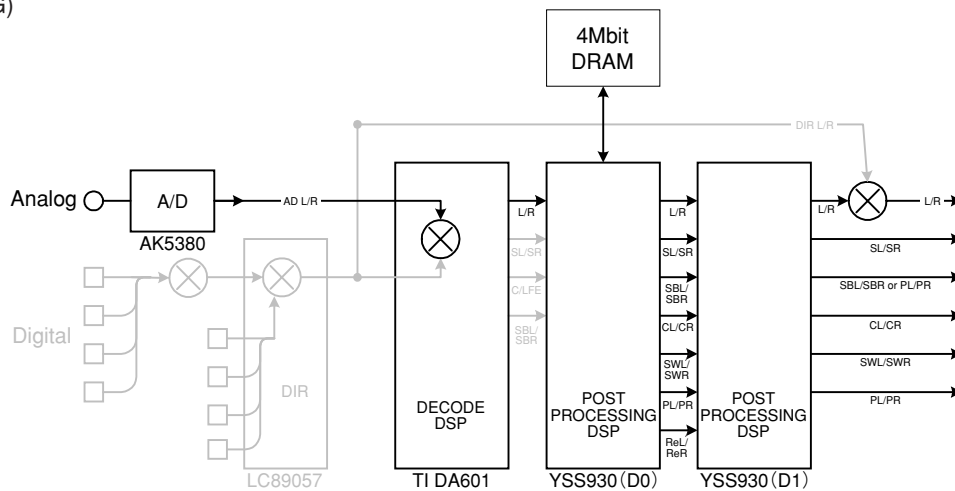
Reference data

INPUT: DVD ANALOG

SUBWOOFER: 50Hz, Others: 1kHz

Input level	Volume	SPEAKER OUTPUT				SUBWOOFER OUTPUT
		FRONT L/R	CENTER	SURROUND L/R	SURROUND BACK	
Both ch, -20 dBm	+6.5 dB	+4.5 dBm	+13.5 dBm	+13.5 dBm	+13.5 dBm	-7.0 dBm

#### RAM THROUGH (ANALOG)



(Shaded items not used in this example)

4. PRO LOGIC / NEO6

PRO LOGIC I

4. PRO LOGIC I

Reference data

INPUT: DVD ANALOG

SUBWOOFER: 50Hz, Others: 1kHz

Input level	Volume	SPEAKER OUTPUT				SUBWOOFER OUTPUT
		FRONT L/R	CENTER	SURROUND L/R	SURROUND BACK	
Each ch, -20 dBm	+6.5 dB	+13.5 dBm	- ∞	- ∞	- ∞	- ∞
Both ch, -20 dBm	+6.5 dB	- ∞	+16.5 dBm	- ∞	- ∞	- ∞

PRO LOGIC II

4. PRO LOGIC II

Reference data

INPUT: DVD ANALOG

SUBWOOFER: 50Hz, Others: 1kHz

Input level	Volume	SPEAKER OUTPUT				SUBWOOFER OUTPUT
		FRONT L/R	CENTER	SURROUND L/R	SURROUND BACK	
Each ch, -20 dBm	+6.5 dB	+13.5 dBm	- ∞	- ∞	- ∞	- ∞
Both ch, -20 dBm	+6.5 dB	- ∞	+16.5 dBm	- ∞	- ∞	- ∞

Neo:6

4. Neo:6

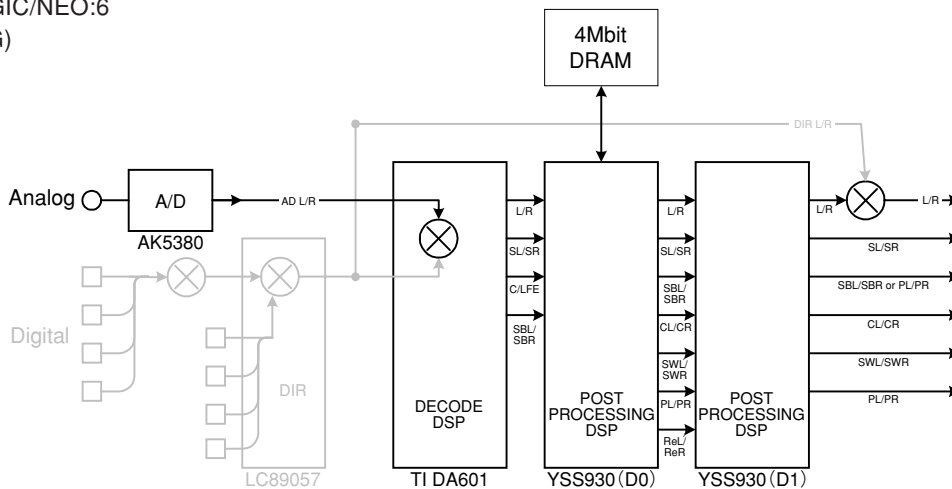
Reference data

INPUT: DVD ANALOG

SUBWOOFER: 50Hz, Others: 1kHz

Input level	Volume	SPEAKER OUTPUT				SUBWOOFER OUTPUT
		FRONT L/R	CENTER	SURROUND L/R	SURROUND BACK	
Each ch, -20 dBm	+6.5 dB	+13.5 dBm	- ∞	- ∞	- ∞	- ∞
Both ch, -20 dBm	+6.5 dB	- ∞	+16.5 dBm	- ∞	- ∞	- ∞

PRO LOGIC/NEO:6 (ANALOG)

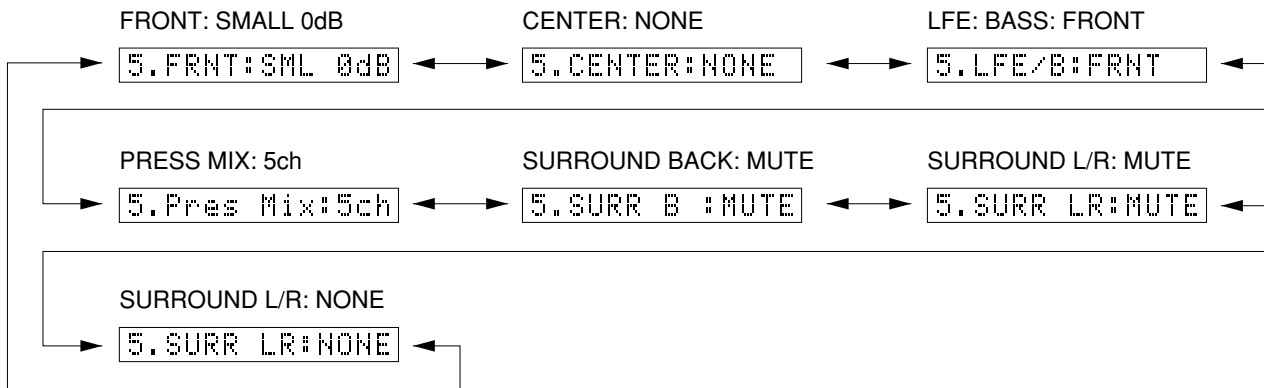


(Shaded items not used in this example)



### 5. SPEAKERS SET

The input signal is automatically identified in the order of dts → DOLBY DIGITAL → AAC → PCM → Analog.  
 There are seven sub-menu items as follows. The signals output from the DSP block are the same as 1.  
 DA601-YSS930: YSS 0dB.



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

Sub-menu	CENTER SP	SURROUND SP	FRONT SP	LFE/BASS
1 FRONT: SMALL 0dB	LARGE	LARGE	SMALL	SWFR
2 CENTER: NONE	NONE	LARGE	LARGE	SWFR
3 LFE/BASS: FRONT	SMALL	SMALL	LARGE	MAIN
4 PRESS MIX: 5CH	LARGE	LARGE	LARGE	SWFR
5 SURROUND BACK: MUTE	LARGE	LARGE	LARGE	SWFR
6 SURROUND: MUTE	LARGE	LARGE	LARGE	SWFR
7 SURROUND: NONE	LARGE	NONE	LARGE	SWFR

**LARGE:** This mode is used with a speaker with high bass reproduction performance (a large unit). Full bandwidth signals are output.  
**SMALL:** This mode is used with a speaker with low bass reproduction performance (a small unit). The signals of 90Hz or less are mixed into the channel specified by LFE/BASS.

**NONE:** This mode is used with no center speaker. The center content is reduced by 3dB and distributed to FRONT L/R.

Reference data

INPUT: DVD ANALOG

SUBWOOFER: 50Hz, Others: 1kHz

Sub-menu	Input level	Volume	SPEAKER OUTPUT				SUBWOOFER OUTPUT
			FRONT L/R	CENTER	SURROUND L/R	SURROUND BACK	
1 FRONT: SMALL 0dB	1 kHz Both ch, -20 dBm	+6.5 dB	+13.5 dBm	+13.5 dBm	+13.5 dBm	+13.5 dBm	-3.0 dBm
2 CENTER: NONE	1 kHz Both ch, -20 dBm	+6.5 dB	+10.5 dBm	- ∞	+13.5 dBm	+13.5 dBm	-7.0 dBm
3 LFE/BASS: FRONT	1 kHz Both ch, -20 dBm	+6.5 dB	- ∞	+13.5 dBm	+13.5 dBm	+13.5 dBm	- ∞
	50 Hz Both ch, -20 dBm	+6.5 dB	+24.0 dBm	+4.5 dBm	+4.5 dBm	+4.5 dBm	-7.0 dBm
4 PRESS MIX: 5CH	1 kHz Both ch, -20 dBm	+6.5 dB	+13.5 dBm	+13.5 dBm	+13.5 dBm	+13.5 dBm	-7.0 dBm
5 SURROUND BACK: MUTE	1 kHz Both ch, -20 dBm	+6.5 dB	+13.5 dBm	+13.5 dBm	+13.5 dBm	+13.5 dBm	-7.0 dBm
6 SURROUND: MUTE	1 kHz Both ch, -20 dBm	+6.5 dB	+13.5 dBm	+13.5 dBm	- ∞	+13.5 dBm	-7.0 dBm
7 SURROUND: NONE	1 kHz Both ch, -20 dBm	+6.5 dB	+13.5 dBm	+13.5 dBm	+13.5 dBm	+13.5 dBm	-7.0 dBm

**6. EXTERNAL INPUT**

It is possible to select the 6ch/8ch input and 6\_/8\_ by using the SUB menu.

**6CH\_INPUT\_6OHMS**

6.6CH INPUT\_6

**6CH\_INPUT\_8OHMS**

6.6CH INPUT\_8

**8CH\_INPUT\_6OHMS**

6.8CH INPUT\_6

**8CH\_INPUT\_8OHMS**

6.8CH INPUT\_8

Reference data

INPUT: MULTI CH INPUT

SUBWOOFER: 50Hz, Others: 1kHz

	Sub-menu	Input level	Volume	SPEAKER OUTPUT				SUBWOOFER OUTPUT
				FRONT L/R	CENTER	SURROUND L/R	SURROUND BACK	
1	6CH_INPUT_6ohms	Both ch, -20 dBm	+6.5 dB	+13.5 dBm	+13.5 dBm	+13.5 dBm	- ∞	-1.0 dBm
2	6CH_INPUT_8ohms	Both ch, -20 dBm	+6.5 dB	+13.5 dBm	+13.5 dBm	+13.5 dBm	- ∞	-1.0 dBm
3	8CH_INPUT_6ohms	Both ch, -20 dBm	+6.5 dB	+13.5 dBm	+13.5 dBm	+13.5 dBm	+13.5 dBm	-1.0 dBm
4	8CH_INPUT_8ohms	Both ch, -20 dBm	+6.5 dB	+13.5 dBm	+13.5 dBm	+13.5 dBm	+13.5 dBm	-1.0 dBm

**7. MIC CHECK**

The signals input through the microphone are output via A/D - D/A.

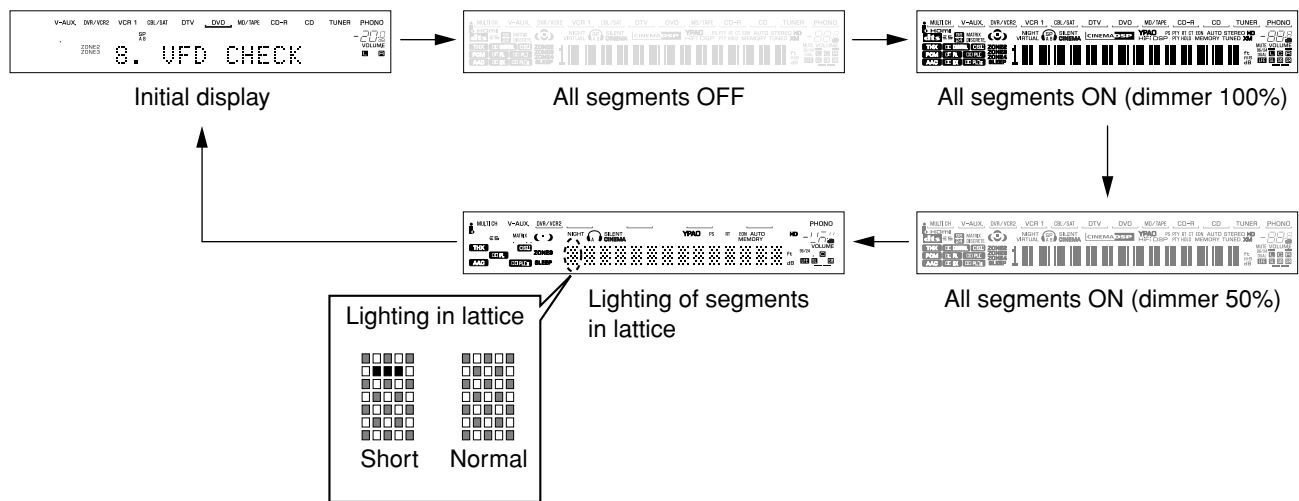
7.MIC CHECK

### 8. EFFECT OFF / DISPLAY CHECK

This program is used to check the FL display section. The display condition varies as shown below according to the sub-menu operation. The signals are processed using EFFECT OFF (The L/R signal is output using ANALOG MAIN BYPASS.)

The video signal internal/external synchronization switching is controlled by the microprocessor. When the initial message is displayed and all the FL segments light up, it is switched to the internal synchronization but other than that it is forced to the external synchronization setting.

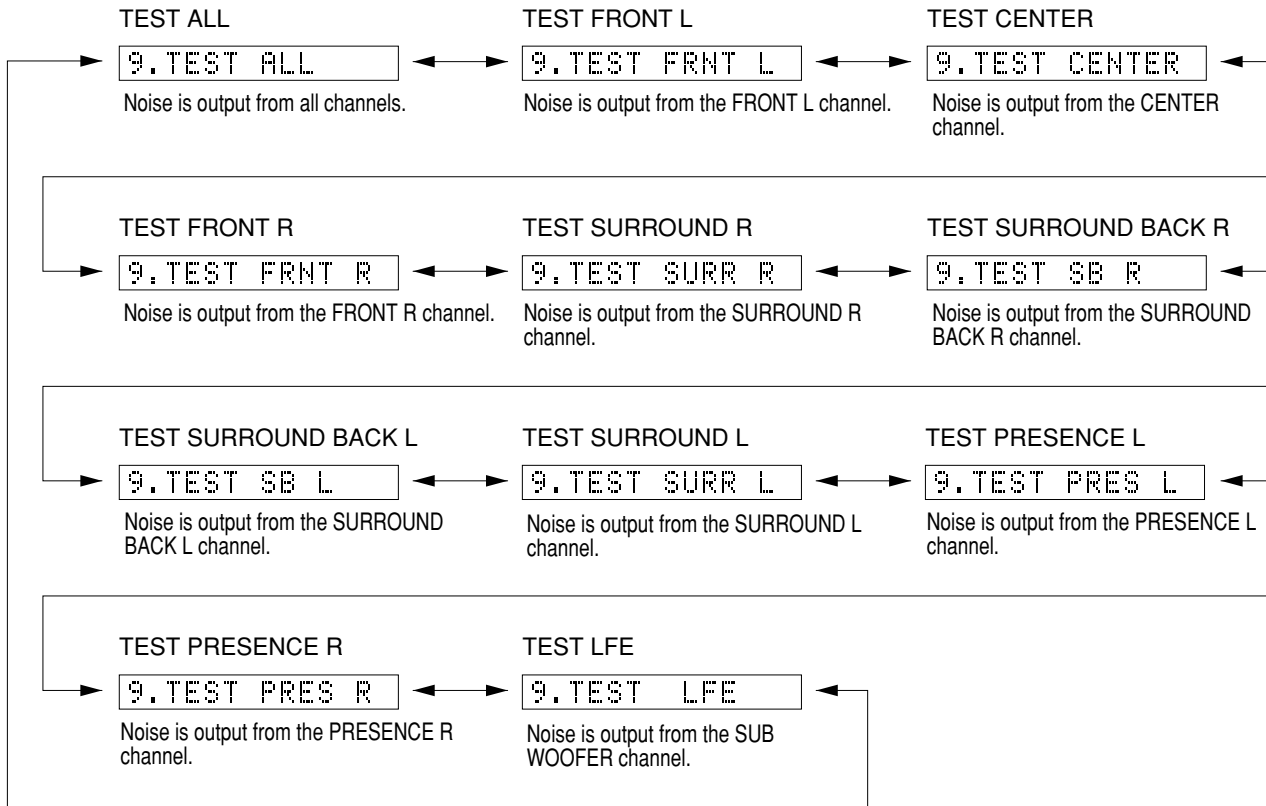
Also, except for the initial display, 128 pictographs for checking the OSD driver are used for the video signal output display.



Segment conditions of the FL driver and the FL tube are checked by turning ON and OFF all segments. Next, the operation of the FL driver is checked by using the dimmer control. Then a short between segments next to each other is checked by turning ON and OFF all segments alternately (in lattice). (In the above example, the segments in the second row from the top are shorted.)

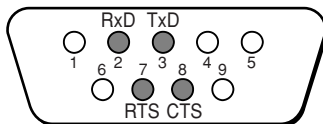
### 9. MANUAL TEST

The noise generator with a built-in DSP outputs the test noise through the channels specified by the sub-menu. The noise frequency for LFE is 35 to 250 Hz. Other than that, the center frequency is 800Hz.



### 10. RS-232C

This menu is used to check transmission of the data and the flow port of the hardware. With the power turned off, short between pins No.2 (RxD) and No.3 (TxD), and between pins No.7 (RTS) and No.8 (CTS) of the RS-232C terminal. (Be sure to turn off the power when shorting the pins.) Start DIAG and select the menu. There are two sub-menu items.



#### TxD/RxD DATA

The sub-menu is used to check transmission of the test data. "OK" appears when the data is transmitted properly and "NG" when it is not. In this mode, NULL command transmission is continued after the test command is transmitted.

```
10.TxRxData:XX
```

#### HARD FLOW

This sub-menu is used to check operation of the flow port of the hardware. "OK" appears when the check result is satisfactory and "NG" when it is not.

```
10.HardFlow:XX
```

### 11. 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 MAIN BYPASS.)

11.PRESET INHI

**PRESET INHIBIT** (Initialization inhibited)

RAM initialization is not executed. Select this sub-menu to protect the values set by the user.



11.PRESET RSRV

**PRESET RESERVED** (Initialization reserved)

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.

**CAUTION:** Before setting to the PRESET RESERVED, write down the existing preset memory content of the Tuner in a table as shown next page. (This is because setting to the PRESET RESERVED will cause the user memory content to be erased.)

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

#### • PRESET STATIONS

STATION		FM FACTORY PRESET DATA (MHz)	
PAGE	NO.	U, C	A
A/C/E	1	87.5	87.50
	2	90.1	90.10
	3	95.1	95.10
	4	98.1	98.10
	5	107.9	108.00
	6	88.1	88.10
	7	106.1	106.10
	8	107.9	108.00

STATION		AM FACTORY PRESET DATA (kHz)	
PAGE	NO.	U, C	A
B/D	1	630	630
	2	1080	1080
	3	1440	1440
	4	530	531
	5	1710	1611
	6	900	900
	7	1350	1350
	8	1400	1404

### 12. AD DATA CHECK / FAN TEST

This menu is used to display the A/D conversion value of the main CPU which detects panel keys of the main unit and protection functions in % using the sub-menu. During signal processing, the condition before execution is maintained.

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.

**DC/PS** (protection detection)

DC: DC detect protection value

Normal value: 1 to 13 (Reference voltage: 5V=100% )

PS: Power supply voltage protection value

Normal value: 19 to 29 (Reference voltage: 5V=100% )

\* If DC or PS is out of the normal value range, the protection function works to turn off the power.

DC:007 PS:025

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

**THM/FAN OUT** (temperature detection/fan drive level)

THM: Temperature detected value

Normal value: 10 to 139 (Reference voltage: 5V=500% )

Fan: Current fan drive level on the left and the past fan drive history on the right.

THM:101 Fan\_/\_

Display	H	M	L
fan drive level	HIGH	MID	LOW

**REC-OUT** (Select position)

Not applied to this model.

REC-OUT:186

**IMP SW/POWER LIMIT** (Impedance/power limiter detection)

IMP: (Not applied to this model)

PL: Power limiter detection value

The voltage value of pin No. 135 of IC520 is displayed, using 5V/256 as standard.

Based on the input voltage value of pin No.135 of IC520, the output of pins No.6 (LC1) and No.7 (LC2) of IC505 is controlled.

IMP:0 PL:029

(Not applied to this model)

Speaker impedance setting		During normal operation	When limiter is operating	Value for starting limiter operation	Value for canceling limiter operation
6 ohms	7CH STEREO or EXT8CH_INPUT	LC1=L LC2=H	LC1=H LC2=H	184	157
	Other than those on the above	LC1=L LC2=H	LC1=H LC2=L	184	157
8 ohms	7CH STEREO or EXT8CH_INPUT	LC1=L LC2=L	LC1=H LC2=L	163	157
	Other than those on the above	LC1=L LC2=L	LC1=L LC2=H	163	157

**K0/K1** (Panel key of main unit)

A/D of the key fails to function properly when the standard value is deviated by  $\pm 4\%$ . In this case, check the constant of partial pressure resistor, solder condition, etc. Refer to table below.

(Reference voltage: 5V=100%)

K0:100 K1:100

Display	K0	K1
00±2	◀ PRESET/TUNING	-
10±2	PRESET/TUNING ▶	SPEAKERS A
20±2	PRESET/TUNING	SPEAKERS B
30±2	FM/AM	INPUT MODE
40±2	MEMORY	A/B/C/D/E
50±2	TUNING MODE	PURE DIRECT
60±2	-	TONE CONTROL
70±2	-	STRAIGHT/EFFECT
100	KEY OFF	KEY OFF

**FAN DRIVE TEST**

HIGH

FAN TEST.HIGH

**FAN DRIVE TEST**

MID

FAN TEST.MID

**FAN DRIVE TEST**

LOW

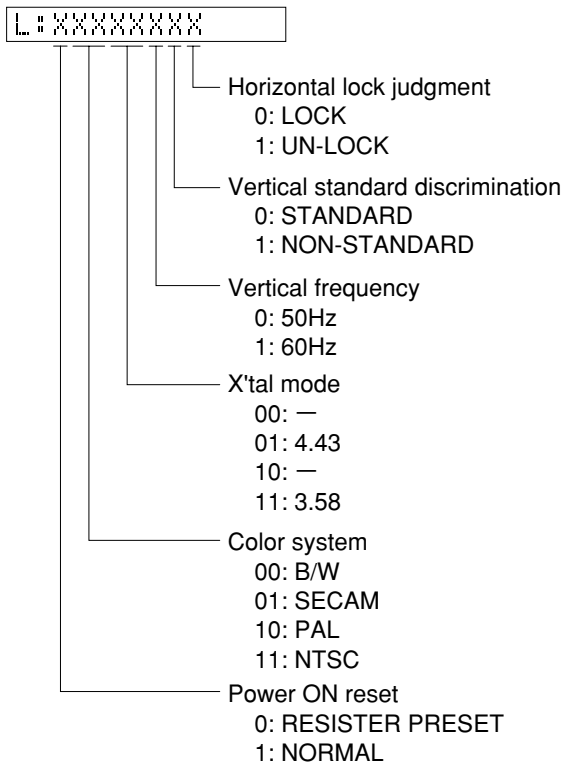
FAN TEST.LOW

**13. V CONV STATUS**

The data received from the video conversion IC (TA1270) is displayed.

**LOW BYTE DATA**

The status information of TA1270 is displayed in the binary notation.



**14. IF STATUS (Input function status)**

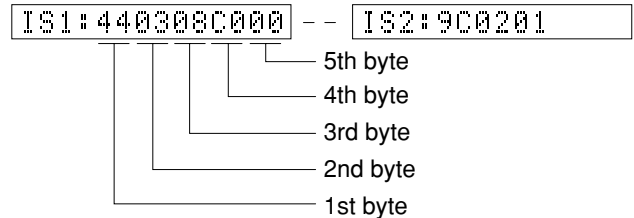
Using the sub-menu, the status data is displayed one after another in the hexadecimal notation.

During signal processing, the status before execution of this menu is maintained.

\* Numeric values in the figure example are for reference.

**IS1-2 (Internal status):**

Indicates the status information of the microprocessor.



<1st byte> Digital input/output setting value  
Upper 4 bits: REC OUT selected /  
lower 4 bits: INPUT selected

Value	Choice	Preset name
0	NONE	
1	OPT A	V-AUX
2	OPT B	CD
3	OPT C	DVD
4	OPT D	D-TV
6	OPT F	CBL/SAT
8	COAX A	CD
9	COAX B	DVD
A	COAX C	DVR/VCR2

**HIGH BYTE DATA**

Not applied to this model.

H:XXXXXXXX



<2nd byte> Fs information of reproduction signal

Display	00	01	02	03	04	05	06	0A	0B	0C	0D
Fs (kHz)	Analog	32	44.1	48	64	88.2	96	Unknown NRM	Unknown DBL	Unknown QUAD	Not defined

<3rd byte> Audio code mode information of reproduction signal

Display	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D
Audio Code	MULTI MONO	1+1	1/0	2/0	3/0	2/1	3/1	2/2	3/2	2/3	3/3	OVER 6.1	MULTI PCE	Unknown

<4th byte> Format information of reproduction signal

\*1: Analog processing used for digital reproduction is not possible because of a commercial bit or 4-ch audio reason.

Display	Signal format
00	Analog (Unlock)
01	Incorrect digital (*1)
10	PCM Audio
20	Digital Data
21	IEC1937 Data
22	None PCM
23	Unknown
50	dts
51	Red dts
54	dts-ES MATRIX
58	dts-ES DISCRETE
5C	dts-ES (Both flag)
60	AAC
C0	Dolby Digital
C1	D.D. Karaoke
C4	D.D.6.1 (D.D.EX)

<5th byte> Signal processing status information

\*2: With digital signals other than 32kHz, 44.1kHz and 48kHz, through processing method is used for reproducible signals.

bit7	MUTE request	bit3	-
bit6	Red dts flashing	bit2	Through & bypass (*2)
bit5	6.1/EX processing	bit1	-
bit4	FULL MUTE (ON: 1)	bit0	dts analog mute

**MTT:** Mute Trigger

MTT:0020000007

Byte No.	Function
1	Mute condition
2	Factor of the last mute
3	Error count of YSS930-FSCNT
4	Mute count by YSS930-FSCNT
5	Error factor of down load of CS49329

**CS1-5:** Indicates channel status information of the input signal (IEC60958).

CS1:0299000200 -- CS5:00000000

**BS1-7:** Indicates information of the bit stream included in the dts signal.

BS1:000070FFFF -- BS7:0000

**TI1-2:**

TI1:FFFFFFFFFF -- TI2:FF

## 15. DSP RAM CHECK

This menu is used to self-diagnose whether or not the bus connection for the YSS930 and the external RAM is made properly.

During signal processing, the status before execution of this menu is maintained.

The address bus and the data bus are checked and the connection condition is displayed.

When no error is detected, "NoEr" appears on display.

### YSS930 Bus Check

```
YSS  BUS:NoEr
```

Display	Description
WAIT	Bus is being checked.
NoEr	No error detected.
DATA	Data bus shorted or open.
RSCS	/RAS or /CAS shorted, or open.
ADDR	Address bus shorted or open.

### SECOND DECODER (DA601) BUS CHECK

```
SD  BUS:NoEr
```

Display	Description
Boot	Booting of DA601 being executed (When booting is continued, possibility is that there is a defective part or poor connection of the microprocessor DA601 SDRAM.)
NoEr	Booting of DA601 has been completed properly.

## 16. PROTECTION SET

Not applied to this model.

## 17. SOFT SW

This menu is used to switch the function settings on P.C.B. through the software so as to activate the product.

The operation mode can be changed by selecting the sub-menu and then using the STRAIGHT key. With SOFT selected for the SW mode, the settings become effective.

The protection function follows the P.C.B. settings. When connected to AC, the unit is initialized to the P.C.B. setting. Display of each function after initialization varies depending on settings on P.C.B.

### SW MODE

PCB or SOFT can be selected.

```
17.SW  :PCB
```

### MODEL SETTING

V1500 (HTR-5890) model only.

```
17.MODEL:V1500
```

### TUNER DESTINATION

J, UC, AG or RL can be selected.

```
17.DEST :UC
```

### TUNER EXIST

NOT or EXIST can be selected.

```
17.TUNER:EXIST
```

### RDS EXIST

NOT or EXIST can be selected.

```
17.RDS  :NOT
```

### ZONE 2 EXIST

NOT or EXIST can be selected.

```
17.ZONE2:EXIST
```

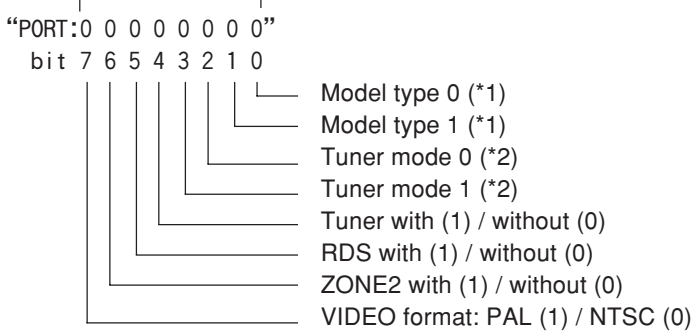
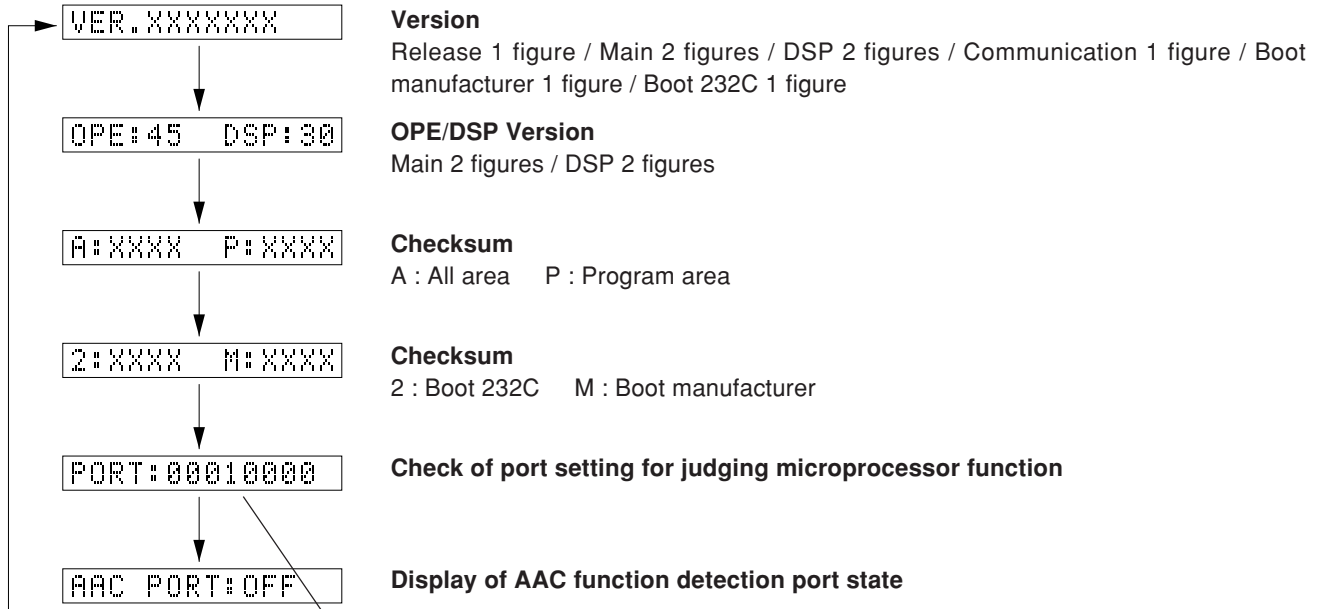
### VIDEO FORMAT

NTSC or PAL can be selected.

```
17.VIDEO:NTSC
```

### 18. MICROPROCESSOR INFORMATION

The version, checksum and the port specified by the microprocessor are displayed. The signal is processed using EFFECT OFF. The checksum is obtained by adding the data at every 16 bits for each program area and expressing the result as a 4-figure hexadecimal data.



\*1 (Model type)

Type 0	Type 1	Model type
0	0	HTR-5890 (V1500)

\*2 (Tuner mode)

Tuner mode 0	Tuner mode 1	Tuner frequency
0	0	AM: 531-1611kHz/9kHz FM: 76.0-90.0MHz/100kHz
0	1	AM: 531-1611kHz/9kHz FM: 87.5-108.0MHz/50kHz
1	0	AM: 530-1710kHz/10kHz FM: 87.5-107.9MHz/200kHz
1	1	R destination, Port6: LOW AM: 530-1710kHz/10kHz FM: 87.5-108.0MHz/100kHz HIGH AM: 531-1611kHz/9kHz FM: 87.5-108.0MHz/50kHz

## ■ AMP ADJUSTMENT

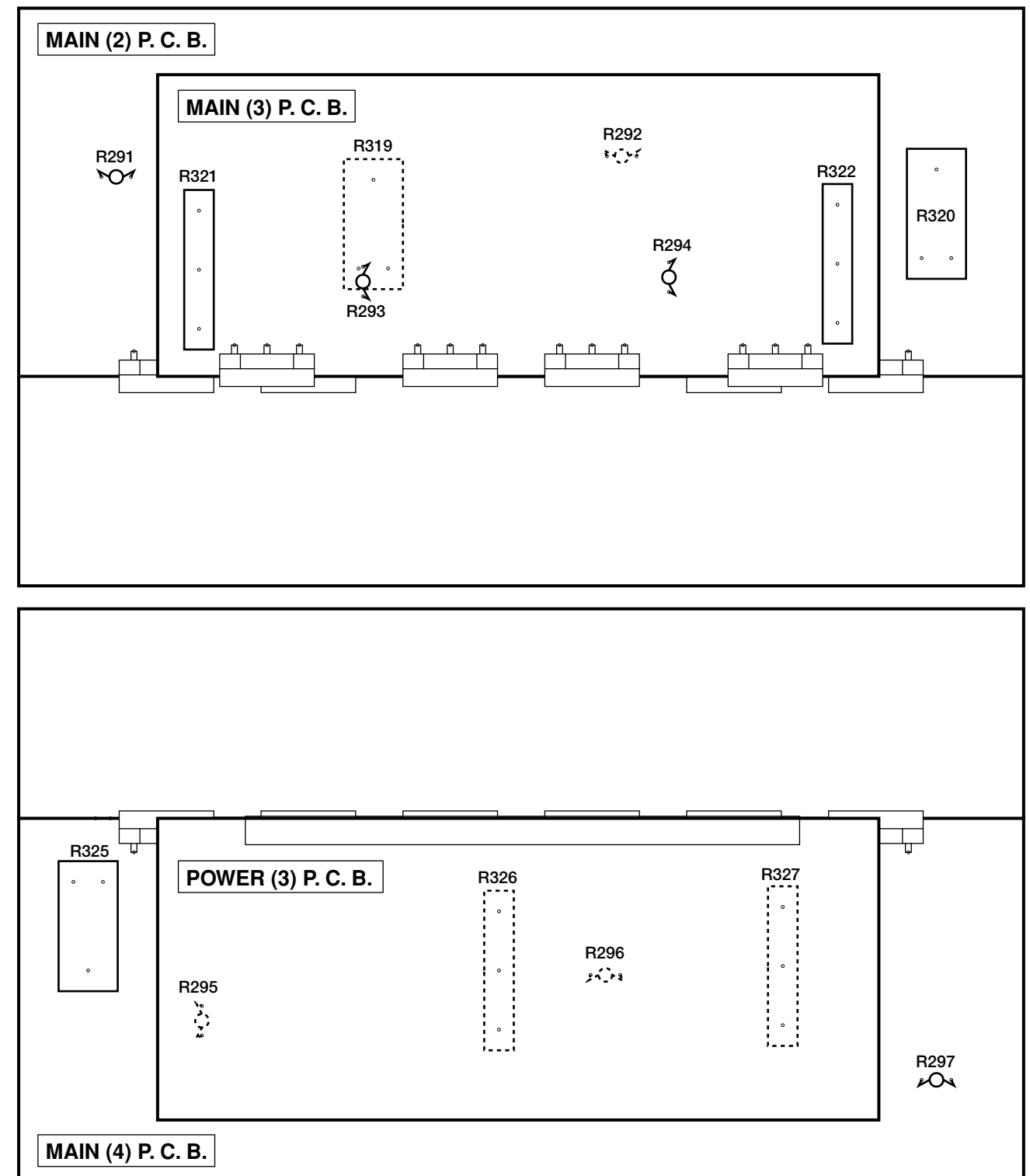
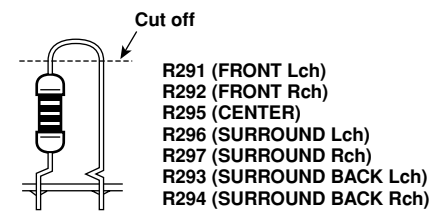
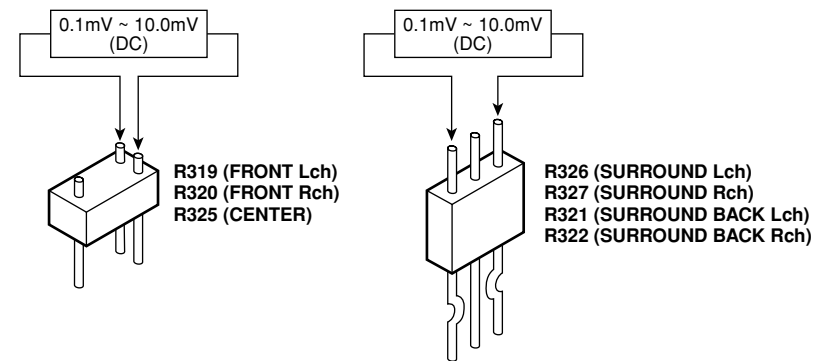
### Confirmation of Idling Current of Amp Unit

- Right after power is turned on, confirm that the voltage across the terminals of R319 (FRONT Lch), R320 (FRONT Rch), R325 (CENTER), R326 (SURROUND Lch), R327 (SURROUND Rch), R321 (SURROUND BACK Lch), R322 (SURROUND BACK Rch) are between 0.1mV and 10.0mV.
- If it exceeds 10.0mV, open (cutoff) R291 (FRONT Lch), R292 (FRONT Rch), R295 (CENTER), R296 (SURROUND Lch), R297 (SURROUND Rch), R293 (SURROUND BACK Lch), R294 (SURROUND BACK Rch) and reconfirm the voltage.

### Attention

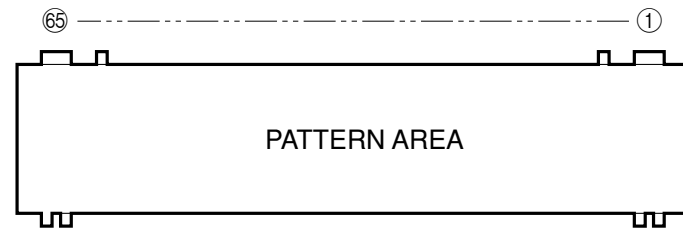
If the idle current exceeds 10.0mV after an amplifier repair, first check for a defective component before cutting the bias resistor.

- Confirm that the voltage is 0.2 mV ~ 15.0 mV after 60 minutes.



## ■ DISPLAY DATA

### ● V851 : 17-BT-23GNK (WD507500)

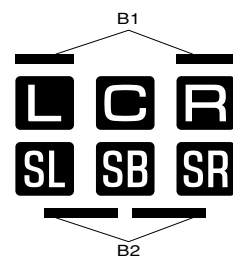
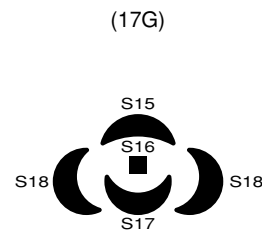
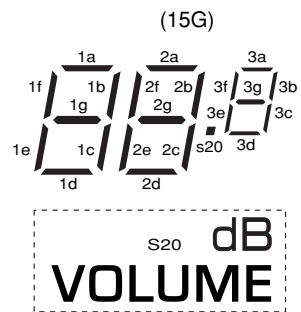
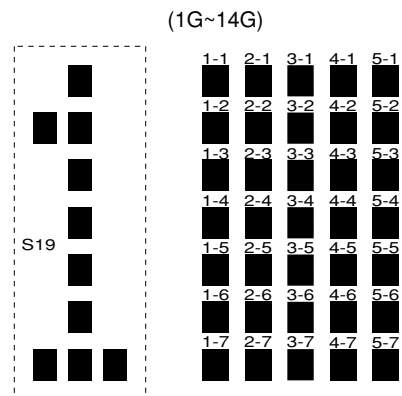
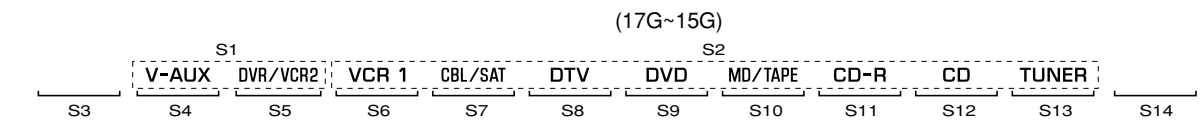
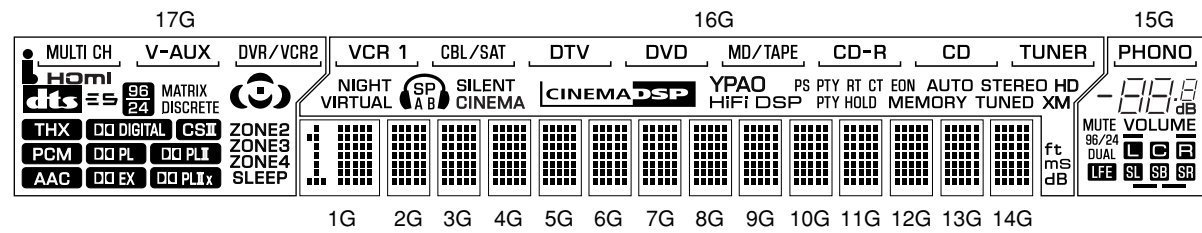


### ● PIN CONNECTION

Pin No.	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	34	
Connection	F2	NX	NP	NP	P37	P36	P35	P34	P33	P32	P31	P30	P29	P28	P27	P26	P25	P24	P23	P22	P21	P20	P19	P18	P17	P16	P15	P14	P13	P12	P11	P10	
Pin No.	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	P9	P8	P7	P6	P5	P4	P3	P2	P1	NC	NC	NC	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 2) NP ..... No pin 3) NC ..... No connection 4) NX ..... No extended Pin 5) 1G ~ 17G ..... Grid

### ● GRID ASSIGNMENT

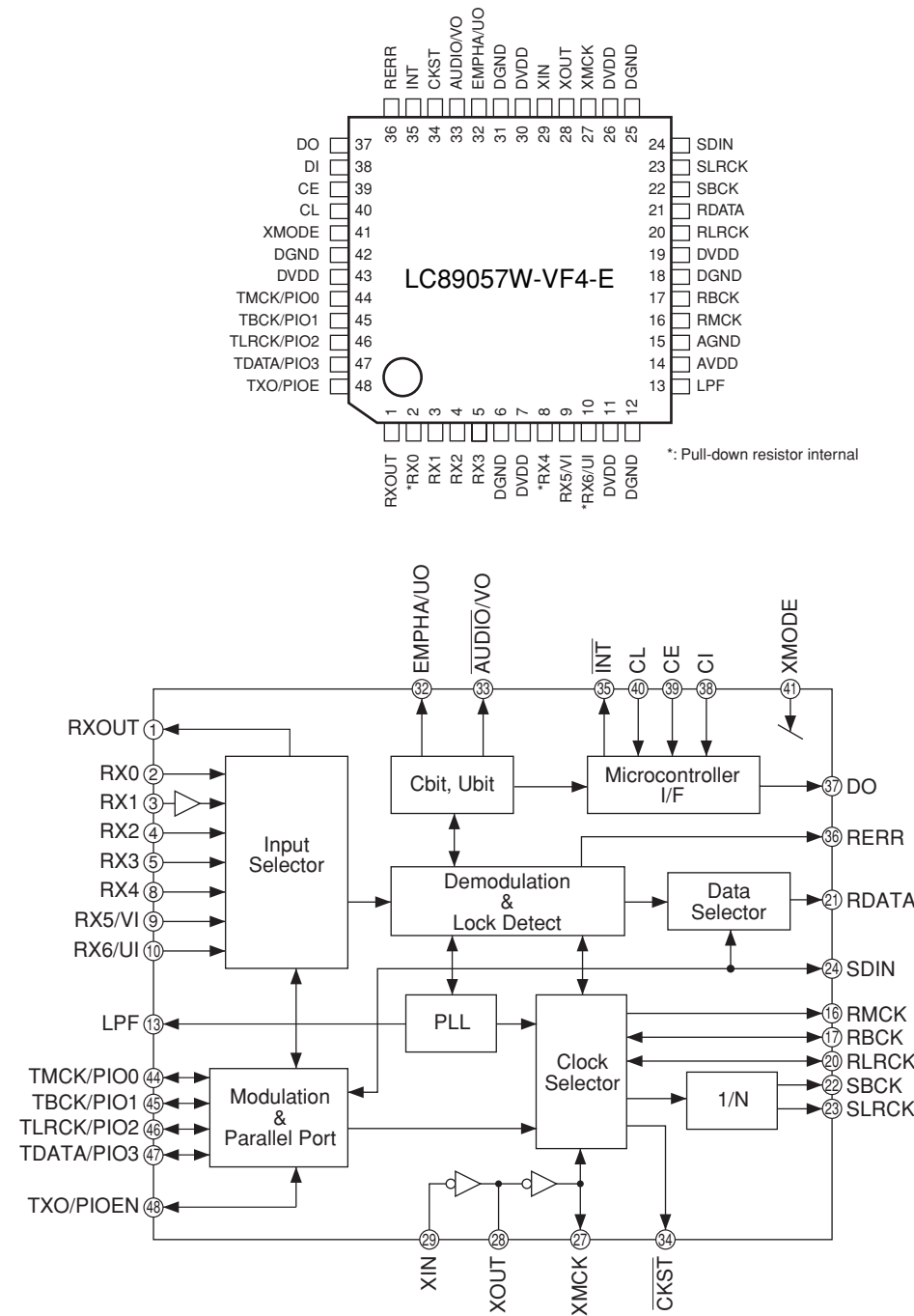


### ● ANODE CONNECTION

	17G	16G	15G	14G~2G	1G
P1		S2	PHONO	1-1	1-1
P2	HOMI	S6	S14	2-1	2-1
P3	MULTI CH	S7	—	3-1	3-1
P4	S3	S8	1a	4-1	4-1
P5	S1	S9	1b	5-1	5-1
P6	S4	S10	1c	1-2	1-2
P7	S5	S11	1d	2-2	2-2
P8		S12	1e	3-2	3-2
P9		S13	1f	4-2	4-2
P10		NIGHT	1g	5-2	5-2
P11	MATRIX	VIRTUAL	2a	1-3	1-3
P12	DISCRETE		2b	2-3	2-3
P13		SP	2c	3-3	3-3
P14		A	2d	4-3	4-3
P15		B	2e	5-3	5-3
P16		SILENT CINEMA	2f	1-4	1-4
P17			2g	2-4	2-4
P18		YPAO	3a	3-4	3-4
P19		HiFi DSP	3b	4-4	4-4
P20		PS	3c	5-4	5-4
P21		PTY	3d	1-5	1-5
P22	S15	RT	3e	2-5	2-5
P23	S16	CT	3f	3-5	3-5
P24	S17	EON	3g	4-5	4-5
P25	S18	PTY HOLD	S20	5-5	5-5
P26	ZONE2	AUTO	MUTE	1-6	1-6
P27	ZONE3	STEREO	96/24	2-6	2-6
P28	ZONE4	HD	DUAL	3-6	3-6
P29	SLEEP	XM		4-6	4-6
P30	—	MEMORY		5-6	5-6
P31	—	TUNED		1-7	1-7
P32	—	ft		2-7	2-7
P33	—	mS		3-7	3-7
P34	—	dB		4-7	4-7
P35	—	—		5-7	5-7
P36	—	—	B1	—	S19
P37	—	—	B2	—	—

■ IC DATA

IC509: LC89057W-VF4-E (DSP P.C.B)  
Digital Audio Interface Transceiver



IC509: LC89057W-VF4-E (DSP P.C.B)  
Digital Audio Interface Transceiver

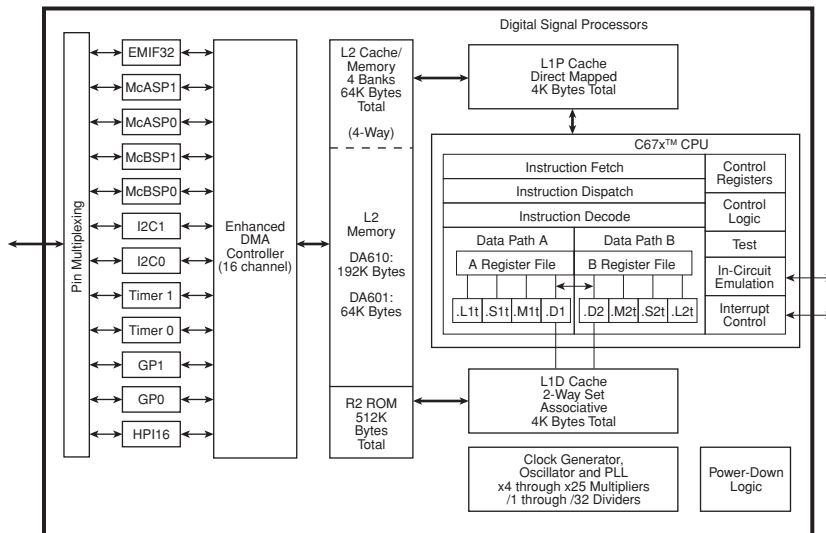
No.	Name	I/O	Function
1	RXOUT	O	Input bi-phase selection data output pin
2	RX0	Is	TTL-compatible digital data input pin
3	RX1	I	Coaxial-compatible digital data input pin with built-in amplifier
4	RX2	Is	TTL-compatible digital data input pin
5	RX3	Is	TTL-compatible digital data input pin
6	DGND		Digital GND
7	DVDD		Digital power supply
8	RX4	Is	TTL-compatible digital data input pin
9	RX5/VI	Is	TTL-compatible digital data / Validity flag input pin for modulation
10	RX6/UI	Is	TTL-compatible digital data / User data input pin for modulation
11	DVDD		PLL digital power supply
12	DGND		PLL digital GND
13	LPF	O	PLL loop filter connection pin
14	ACDD		PLL analog power supply
15	AGND		PLL analog GND
16	RMCK	O	R system clock output pin (256fs, 512fs, XIN, VCO)
17	RBCK	O/I	R bit clock input/output pin
18	DGND		Digital GND
19	DVDD		Digital power supply
20	RLRCK	O/I	R LR clock input/output pin (fs)
21	RDATA	O	Serial audio data input pin
22	SBCK	O	S bit clock output pin (32fs, 64fs, 128fs)
23	SLRCK	O	S LR clock output pin (fs/s, fs, 2fs)
24	SDIN	Is	Serial audio data input pin
25	DGND		Digital GND
26	DVDD		Digital power supply
27	XMCK	O	Oscillation amplifier output pin
28	XOUT	O	Crystal resonator connection output pin
29	XIN	I	Crystal resonator connection, external supply clock input pin (24.576 MHz or 12.288 MHz)
30	DVDD		Digital power supply
31	DGND		Digital GND
32	EMPHA/UO	I/O	Emphasis information / U data output / Chip address setting pin
33	AUDIO/VO	I/O	Non-PCM output / V flag output / Chip address setting pin
34	CKST	I/O	Clock switch transition period signal / Demodulation master or slave function switch pin
35	INT	I/O	Microcontroller interrupt output / Modulation or general-purpose I/O switch pin
36	RERR	O	PLL clock error, data error flag output
37	DO	O	Microcontroller I/F read data output pin (3-state)
38	DI	Is	Microcontroller I/F write data input pin
39	CE	Is	Microcontroller I/F chip enable input pin
40	CL	Is	Microcontroller I/F clock input pin
41	XMODE	Is	System reset input pin
42	DGND		Digital GND
43	DVDD		Digital power supply
44	TMCK/PIO0	I/O	Modulation 256fs system clock input / General-purpose I/O input/output pin
45	TBCK/PIO1	I/O	Modulation 64fs bit clock input / General-purpose I/O input/output pin
46	TLRCK/PIO2	I/O	Modulation fs clock input / General-purpose I/O input/output pin
47	TDATA/PIO3	I/O	Modulation serial audio data input / General-purpose I/O input/output pin
48	TXO/PIOEN	O/I	Modulation data output / General-purpose I/O enable input pin

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

IC512: D601A002PYP180 (DSP P.C.B)

Decoder

\* No service part available.



No.	Name	I/O	Function
1	GP0[4]/(EXT_INT4)	IOZ	General purpose I/O port 4
2	GP0[6]/(EXT_INT6)	IOZ	General purpose I/O port 6
3	CVDD	S	1.2V power supply
4	VSS	GND	Ground
5	DVDD	S	3.3V power supply
6	GP0[5]/(EXT_INT5)	IOZ	General purpose I/O port 5
7	GP0[7]/(EXT_INT7)	IOZ	General purpose I/O port 7
8	CLKS1	I	McBSP1 external clock source
9	DVDD	S	3.3V power supply
10	VSS	GND	Ground
11	CVDD	S	1.2V power supply
12	TINP1/AHCLKX0	I	Timer 1 Input
13	TOUT1/AXRO[4]/AXR1[11]	O	Timer 1 Output
14	CVDD	S	1.2V power supply
15	VSS	GND	Ground
16	CLKX0/ACLKX0	IOZ	McASP0 Transmission BCLK
17	TINP0/AXRO[3]/AXR1[12]	I	Timer 0 Input
18	TOUT0/AXRO[2]/AXR1[13]	O	Timer 0 Output
19	ACLKR0	IOZ	McASP0 Reception BCLK
20	AXRO[1]	IOZ	McASP0 Transmission/reception data 1
21	AFSX0	IOZ	McASP0 Transmission LRCLK
22	CVDD	S	1.2V power supply
23	VSS	GND	Ground
24	AFSR0	IOZ	McASP0 Reception LRCLK
25	DVDD	S	3.3V power supply
26	VSS	GND	Ground
27	AXRO[0]	IOZ	McASP0 Transmission/reception data 0
28	AHCLKR0	I	McASP0 Reception MCLK
29	CVDD	S	1.2V power supply
30	VSS	GND	Ground
31	FSX1	IOZ	McBSP1 Transmission Frame Sync (Input in SPI slave state)
32	DX1	O/Z	McBSP1 Transmission data
33	CLKX1	IOZ	McBSP1 Transmission clock (Input in SPI slave state)
34	VSS	GND	Ground
35	CVDD	S	1.2V power supply
36	CLKR1	IOZ	McBSP1 Reception clock
37	DR1	I	McBSP1 Reception data
38	FSR1	IOZ	McBSP1 Reception Frame Sync
39	VSS	GND	Ground
40	CVDD	S	1.2V power supply

IC512: D601A002PYP180 (DSP P.C.B)

Decoder

No.	Name	I/O	Function
41	SCL0	IOZ	12C0 clock
42	SDA0	IOZ	12C0 data
43	CVDD	S	1.2V power supply
44	DVDD	S	3.3V power supply
45	VSS	GND	Ground
46	CVDD	S	1.2V power supply
47	DVDD	S	3.3V power supply
48	VSS	GND	Ground
49	VSS	GND	Ground
50	CVDD	S	1.2V power supply
51	CVDD	S	1.2V power supply
52	VSS	GND	Ground
53	CVDD	S	1.2V power supply
54	VSS	GND	Ground
55	DVDD	S	3.3V power supply
56	ARDY	I	Asynchronous RAM Ready input
57	/CE3	O/Z	For external memory area, Enable 3
58	DVDD	S	3.3V power supply
59	VSS	GND	Ground
60	CVDD	S	1.2V power supply
61	/CE2	O/Z	For external memory area, Enable 2
62	EA2	O/Z	For external memory, Address 2
63	EA3	O/Z	For external memory, Address 3
64	EA4	O/Z	For external memory, Address 4
65	DVDD	S	3.3V power supply
66	VSS	GND	Ground
67	CVDD	S	1.2V power supply
68	EA5	O/Z	For external memory, Address 5
69	EA6	O/Z	For external memory, Address 6
70	EA7	O/Z	For external memory, Address 7
71	EA8	O/Z	For external memory, Address 8
72	DVDD	S	3.3V power supply
73	VSS	GND	Ground
74	EA9	O/Z	For external memory, Address 9
75	/SDRAS	O/Z	Asynchronous RAM OE / SDRAM RAS / SBS RAM OE
76	EA10	O/Z	For external memory, Address 10
77	ECLKOUT	O/Z	Clock output for EMIF
78	ECLKIN	I	Clock input for EMIF
79	/SDCAS	O/Z	Asynchronous RAM RE / SDRAM CAS / SBSRAM ADS
80	CVDD	S	1.2V power supply
81	VSS	GND	Ground
82	CLKOUT2/GP0[2]	O/Z	Half clock output of device Speed
83	/SDWE	O/Z	Asynchronous RAM WE / SDRAM WE / SBSRAM WE
84	DVDD	S	3.3V power supply
85	VSS	GND	Ground
86	EA11	O/Z	For external memory, Address 11
87	DVDD	S	3.3V power supply
88	VSS	GND	Ground
89	CVDD	S	1.2V power supply
90	EA14	O/Z	For external memory, Address 14
91	EA13	O/Z	For external memory, Address 13
92	EA16	O/Z	For external memory, Address 16
93	EA12	O/Z	For external memory, Address 12
94	EA15	O/Z	For external memory, Address 15
95	EA18	O/Z	For external memory, Address 18
96	CVDD	S	1.2V power supply
97	VSS	GND	Ground
98	DVDD	S	3.3V power supply



## IC512: D601A002PYP180 (DSP P.C.B)

## Decoder

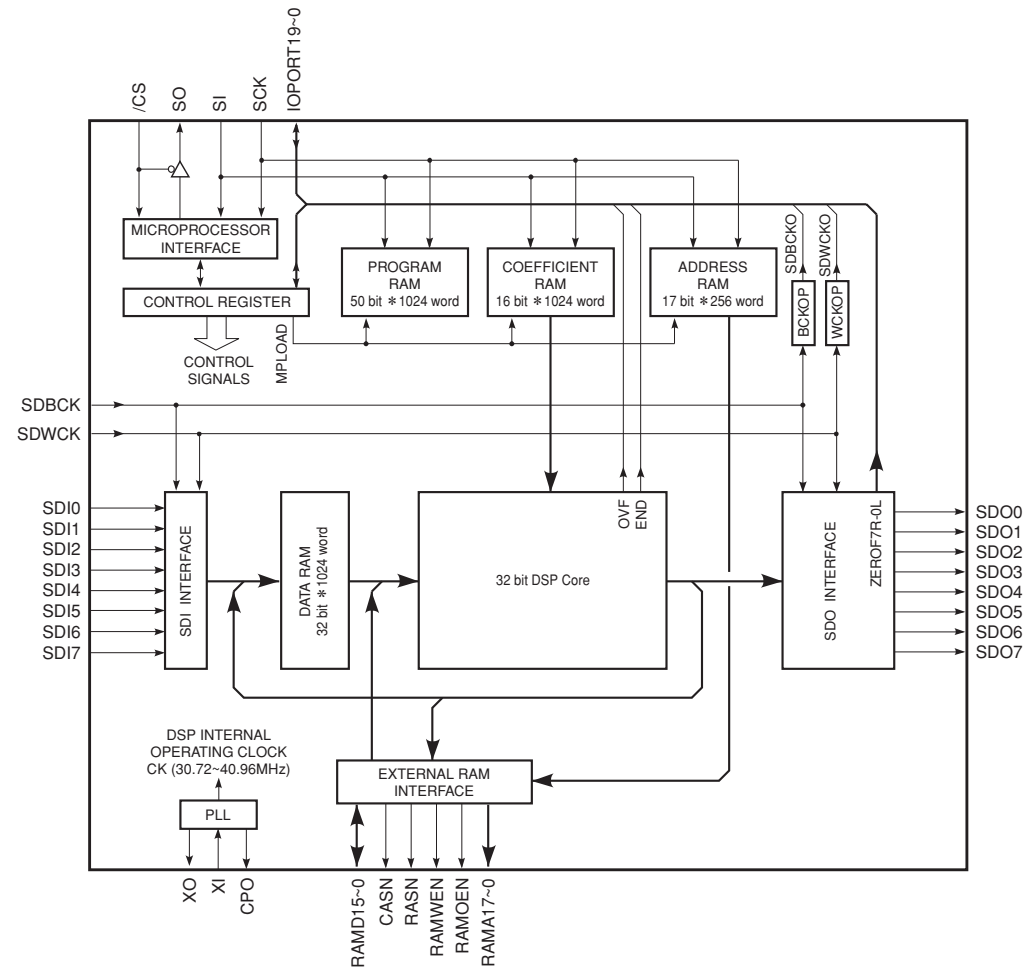
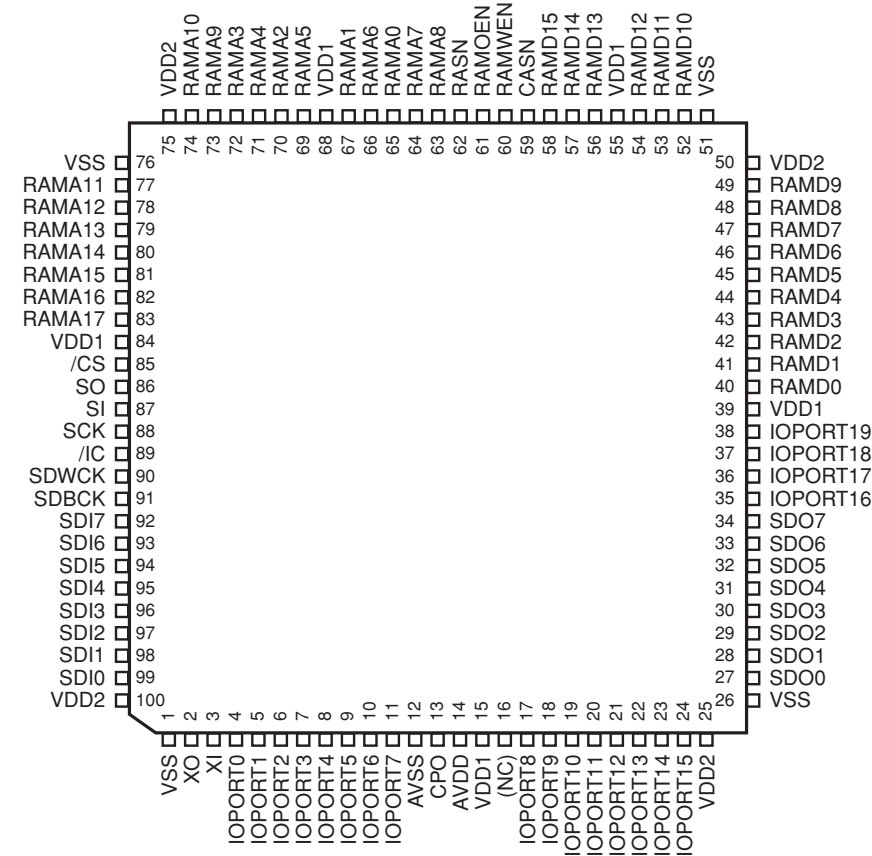
No.	Name	I/O	Function
99	EA17	O/Z	For external memory, Address 17
100	EA19	O/Z	For external memory, Address 19
101	EA20	O/Z	For external memory, Address 20
102	/CE0	O/Z	For external memory area, Enable 0
103	/CE1	O/Z	For external memory area, Enable 1
104	CVDD	S	1.2V power supply
105	CVDD	S	1.2V power supply
106	VSS	GND	Ground
107	DVDD	S	3.3V power supply
108	/BE1	O/Z	For external memory, Byte Enable Control 1
109	EA21	O/Z	For external memory, Address 21
110	/BE0	O/Z	For external memory, Byte Enable Control 0
111	ED13	IOZ	For external memory, Data 13
112	ED15	IOZ	For external memory, Data 15
113	ED14	IOZ	For external memory, Data 14
114	DVDD	S	3.3V power supply
115	VSS	GND	Ground
116	CVDD	S	1.2V power supply
117	ED11	IOZ	For external memory, Data 11
118	ED12	IOZ	For external memory, Data 12
119	ED9	IOZ	For external memory, Data 9
120	ED10	IOZ	For external memory, Data 10
121	ED6	IOZ	For external memory, Data 6
122	ED7	IOZ	For external memory, Data 7
123	ED8	IOZ	For external memory, Data 8
124	CVDD	S	1.2V power supply
125	VSS	GND	Ground
126	DVDD	S	3.3V power supply
127	ED4	IOZ	For external memory, Data 4
128	ED5	IOZ	For external memory, Data 5
129	ED3	IOZ	For external memory, Data 3
130	ED2	IOZ	For external memory, Data 2
131	ED1	IOZ	For external memory, Data 1
132	ED0	IOZ	For external memory, Data 0
133	CVDD	S	1.2V power supply
134	VSS	GND	Ground
135	GP0[1]	IOZ	General purpose I/O0 port 1
136	BUSREQ	O/Z	For external memory, Bus request output
137	/HOLDA	O/Z	For external memory, Hold request approval to host
138	/HOLD	I	For external memory, Hold request from host
139	AFSR1	IOZ	McASP1 reception LRCLK
140	ACLKR1	IOZ	McASP1 reception BCLK
141	DVDD	S	3.3V power supply
142	VSS	GND	Ground
143	AXR1[0]	IOZ	McASP1 transmission/reception data 0
144	AXR1[1]	IOZ	McASP1 transmission/reception data 1
145	AXR1[2]	IOZ	McASP1 transmission/reception data 2
146	AXR18[3]	IOZ	McASP1 transmission/reception data 3
147	AXR1[4]	IOZ	McASP1 transmission/reception data 4
148	VSS	GND	Ground
149	CVDD	S	1.2V power supply
150	AXR1[5]	IOZ	McASP1 transmission/reception data 5
151	AXR1[6]	IOZ	McASP1 transmission/reception data 6
152	AXRO[8]/AXR1[7]	IOZ	McASP1 transmission/reception data 7
153	ACLKX1	IOZ	McASP1 transmission BCLK
154	AMUTE1	OZ	McASP1 MUTE output
155	AFSX1	IOZ	McASP1 transmission LRCLK
156	GP0[0]	IOZ	General purpose I/O0 port 0 (SPI ready signal output Active: H)

## IC512: D601A002PYP180 (DSP P.C.B)

## Decoder

No.	Name	I/O	Function
157	CVDD	S	1.2V power supply
158	VSS	GND	Ground
159	AHCLKX1	IOZ	General purpose I/O0 port 8
160	GP0[8]	IOZ	HPI data pin 8
161	AHCLKR1	IOZ	McASP1 reception MCLK
162	DVDD	S	3.3V power supply
163	VSS	GND	Ground
164	GP0[3]	IOZ	General purpose I/O0 port 3
165	GP0[9]	IOZ	General purpose I/O0 port 9
166	GP0[10]	IOZ	General purpose I/O0 port 10
167	GP0[11]	IOZ	General purpose I/O0 port 11
168	GP0[12]	IOZ	General purpose I/O0 port 12
169	CVDD	S	1.2V power supply
170	VSS	GND	Ground
171	CVDD	S	1.2V power supply
172	GP0[13]	IOZ	General purpose I/O0 port 13
173	GP0[14]	IOZ	General purpose I/O0 port 14
174	GP0[15]	IOZ	General purpose I/O0 port 15
175	NMI	I	Nonmaskable Interrupt ↑ edge
176	/RESET	I	Device reset
177	CVDD	S	1.2V power supply
178	OSCIN	I	X'tal input, Oscillation: 12 to 25MHz
179	OSCOU	O	X'tal output
180	OSCVSS	GND	X'tal GND internal connection
181	OSCVDD	S	X'tal 1.2V power supply internal connection
182	VSS	GND	Ground
183	DVDD	S	3.3V power supply
184	CLKOUT3	O	Programmable clock output up to 32 division of PLL
185	EMU1	IOZ	JTAG emulation pin 1 (1kΩ PD when boundary scanning)
186	EMU0	IOZ	JTAG emulation pin 0 (1kΩ PD when boundary scanning)
187	TDO	O/Z	JTAG Data Out
188	DVDD	S	3.3V power supply
189	VSS	GND	Ground
190	CVDD	S	1.2V power supply
191	TDI	I	JTAG Data In
192	TMS	I	JTAG Mode Select
193	TCK	I	JTAG Clock
194	VSS	GND	Ground
195	CVDD	S	1.2V power supply
196	CVDD	S	1.2V power supply
197	/TRST	I	JTAG Reset
198	RSV2	O/Z	Reserved (unconnected)
199	PLLG	A	Analog GND for PLL
200	RSV0	A	Reserved (unconnected)
201	PLLV	A	Analog 1.2V power supply for PLL
202	PLLHV	A	Analog 3.3V power supply for PLL
203	RSV1	I	Reserved (unconnected)
204	CLKIN	I	Clock input
205	CLKMODE0	I	PLL input clock selection: Clkin or X'tal
206	DVDD	S	3.3V power supply
207	VSS	GND	Ground
208	CVDD	S	1.2V power supply

IC516, 518: YSS930-SZ (DSP P.C.B.)  
DSP



IC516, 518: YSS930-SZ (DSP P.C.B.)  
DSP

No.	Name	I/O	Function
1	VSS	-	Digital ground terminal
2	XO	O	Terminal for connecting crystal oscillator
3	XI	I	Terminal for connecting crystal oscillator (12.288 ~ 15.0MHz)
4	IOPORT0	I+/O	General purpose input/output terminal, SDO0 Lch zero-flag output terminal, input/output terminal for branching program conditions
5	IOPORT1	I+/O	General purpose input/output terminal, SDO0 Rch zero-flag output terminal, input/output terminal for branching program conditions
6	IOPORT2	I+/O	General purpose input/output terminal, SDO1 Lch zero-flag output terminal, input/output terminal for branching program conditions
7	IOPORT3	I+/O	General purpose input/output terminal, SDO1 Rch zero-flag output terminal, input/output terminal for branching program conditions
8	IOPORT4	I+/O	General purpose input/output terminal, SDO2 Lch zero-flag output terminal, input/output terminal for branching program conditions
9	IOPORT5	I+/O	General purpose input/output terminal, SDO2 Rch zero-flag output terminal, input/output terminal for branching program conditions
10	IOPORT6	I+/O	General purpose input/output terminal, SDO3 Lch zero-flag output terminal, input/output terminal for branching program conditions
11	IOPORT7	I+/O	General purpose input/output terminal, SDO3 Rch zero-flag output terminal, input/output terminal for branching program conditions
12	AVSS	-	Analog ground terminal (for PLL)
13	CPO	A	Terminal for connecting PLL filter
14	AVDD	-	+2.5V digital power supply (for PLL)
15	VDD1	-	+3.3V digital power supply (for input/output terminal)
16	(NC)	-	(Unconnected)
17	IOPORT8	I+/O	General purpose input/output terminal, SD04 Lch zero-flag output terminal
18	IOPORT9	I+/O	General purpose input/output terminal, SD04 Rch zero-flag output terminal
19	IOPORT10	I+/O	General purpose input/output terminal, SD05 Lch zero-flag output terminal
20	IOPORT11	I+/O	General purpose input/output terminal, SD05 Rch zero-flag output terminal
21	IOPORT12	I+/O	General purpose input/output terminal, SD06 Lch zero-flag output terminal, input terminal 0 for chip address setting
22	IOPORT13	I+/O	General purpose input/output terminal, SD06 Rch zero-flag output terminal, input terminal 1 for chip address setting
23	IOPORT14	I+/O	General purpose input/output terminal, SD07 Lch zero-flag output terminal, input terminal 2 for chip address setting
24	IOPORT15	I+/O	General purpose input/output terminal, SD07 Rch zero-flag output terminal, input terminal 3 for chip address setting
25	VDD2	-	+2.5V digital power supply (for internal circuit)
26	VSS	-	Digital ground terminal
27	SDO0	O	PCM output terminal
28	SDO1	O	PCM output terminal
29	SDO2	O	PCM output terminal
30	SDO3	O	PCM output terminal
31	SDO4	O	PCM output terminal
32	SDO5	O	PCM output terminal
33	SDO6	O	PCM output terminal
34	SDO7	O	PCM output terminal
35	IOPORT16	I+/O	General purpose input/output terminal, overflow detect output terminal
36	IOPORT17	I+/O	General purpose input/output terminal, program end detect output terminal
37	IOPORT18	I+/O	General purpose input/output terminal, 64fs clock output terminal
38	IOPORT19	I+/O	General purpose input/output terminal, fs clock output terminal
39	VDD1	-	+3.3V digital power supply (for input/output terminal)
40	RAMD0	I+/O	Data input/output terminal 0 for external memory
41	RAMD1	I+/O	Data input/output terminal 1 for external memory
42	RAMD2	I+/O	Data input/output terminal 2 for external memory
43	RAMD3	I+/O	Data input/output terminal 3 for external memory
44	RAMD4	I+/O	Data input/output terminal 4 for external memory
45	RAMD5	I+/O	Data input/output terminal 5 for external memory
46	RAMD6	I+/O	Data input/output terminal 6 for external memory
47	RAMD7	I+/O	Data input/output terminal 7 for external memory
48	RAMD8	I+/O	Data input/output terminal 8 for external memory
49	RAMD9	I+/O	Data input/output terminal 9 for external memory
50	VDD2	-	+2.5V digital power supply (for internal circuit)
51	VSS	-	Digital ground terminal
52	RAMD10	I+/O	Data input/output terminal 10 for external memory
53	RAMD11	I+/O	Data input/output terminal 11 for external memory
54	RAMD12	I+/O	Data input/output terminal 12 for external memory
55	VDD1	-	+3.3V digital power supply (for input/output terminal)
56	RAMD13	I+/O	Data input/output terminal 13 for external memory

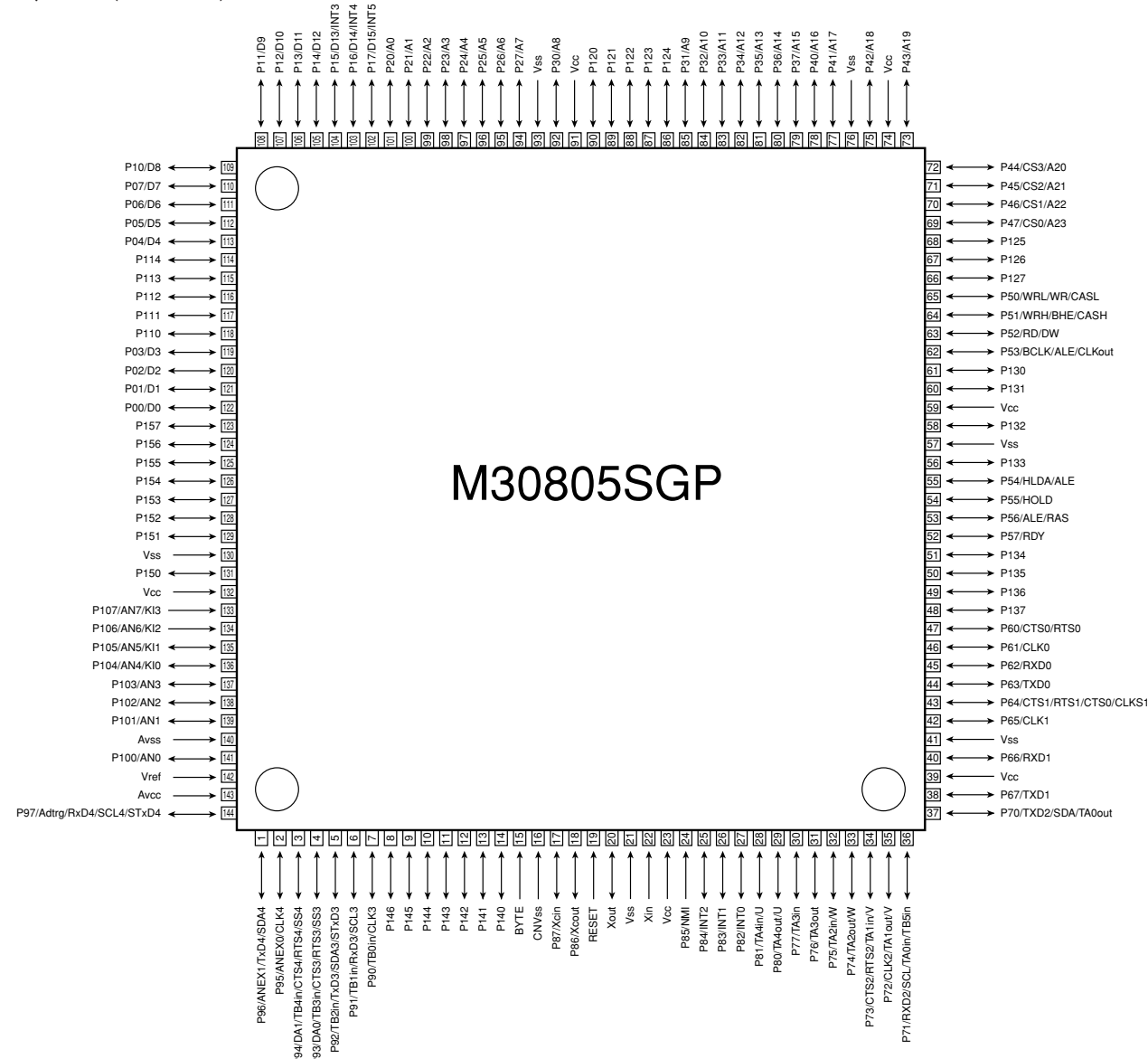
## IC516, 518: YSS930-SZ (DSP P.C.B.)

## DSP

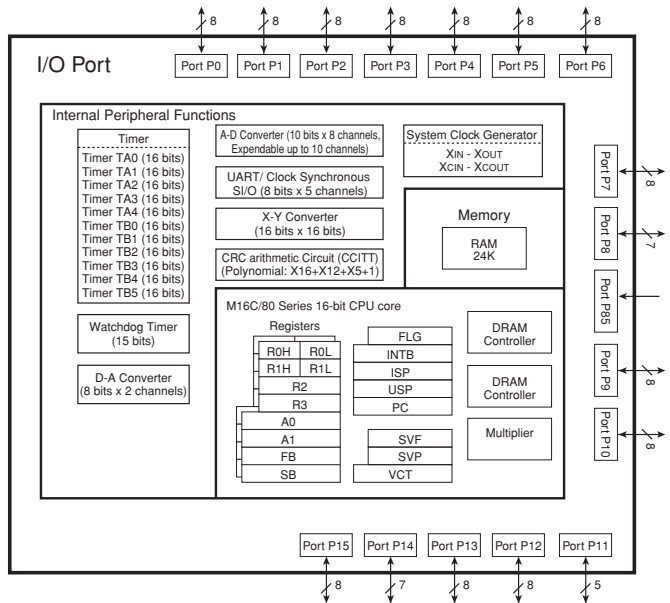
No.	Name	I/O	Function
57	RAMD14	I+/O	Data input/output terminal 14 for external memory
58	RAMD15	I+/O	Data input/output terminal 15 for external memory
59	CASN	O	Column address strobe output terminal for external DRAM
60	RAMWEN	O	Write enable output terminal for external memory
61	RAMOEN	O	Output enable output terminal for external memory
62	RASN	O	Low address strobe output terminal for external DRAM
63	RAMA8	O	Address output terminal 8 for external memory
64	RAMA7	O	Address output terminal 7 for external memory
65	RAMA0	O	Address output terminal 0 for external memory
66	RAMA6	O	Address output terminal 6 for external memory
67	RAMA1	O	Address output terminal 1 for external memory
68	VDD1	-	+3.3V digital power supply (for input/output terminal)
69	RAMA5	O	Address output terminal 5 for external memory
70	RAMA2	O	Address output terminal 2 for external memory
71	RAMA4	O	Address output terminal 4 for external memory
72	RAMA3	O	Address output terminal 3 for external memory
73	RAMA9	O	Address output terminal 9 for external memory
74	RAMA10	O	Address output terminal 10 for external memory
75	VDD2	-	+2.5V digital power supply (for internal circuit)
76	VSS	-	Digital ground terminal
77	RAMA11	O	Address output terminal 11 for external memory
78	RAMA12	O	Address output terminal 12 for external memory
79	RAMA13	O	Address output terminal 13 for external memory
80	RAMA14	O	Address output terminal 14 for external memory
81	RAMA15	O	Address output terminal 15 for external memory
82	RAMA16	O	Address output terminal 16 for external memory
83	RAMA17	O	Address output terminal 17 for external memory
84	VDD1	-	+3.3V digital power supply (for input/output terminal)
85	/CS	Is	Microprocessor interface chip select input terminal
86	SO	Ot	Microprocessor interface data output terminal
87	SI	Is	Microprocessor interface data input terminal
88	SCK	Is	Microprocessor interface clock input terminal
89	/IC	Is	Initial clear input terminal
90	SDWCK	I	Word clock (fs) input terminal for SDI/SDO interface
91	SDBCK	Is	Bit clock (64fs) input terminal for SDI/SDO interface
92	SDI7	I	PCM input terminal
93	SDI6	I	PCM input terminal
94	SDI5	I	PCM input terminal
95	SDI4	I	PCM input terminal
96	SDI3	I	PCM input terminal
97	SDI2	I	PCM input terminal
98	SDI1	I	PCM input terminal
99	SDI0	I	PCM input terminal
100	VDD2	-	+2.5V digital power supply (for internal circuit)

Is: Schmidt trigger input terminal  
I+: Input terminal with pull-up resistor  
O: Digital output terminal  
Ot: 3-state digital output terminal  
A: Analog terminal

IC520 : M30805SGP (FUNCTION P.C.B)  
16bit μ-COM (Main CPU)



M30805SGP



IC520 : M30805SGP (FUNCTION P.C.B)  
16bit μ-COM (Main CPU)

Pin	Pin function	Function	Name	Detail of function	I/O	On	Off	Backup
1	P96/ANEX1/TxD4/SDA4/SRxD4	TxD4	TXDR	232C TX data / YDC TX data	SO	O	OL	OL
2	P95/ANEX0/CLK4	CLK4	RTS	232C RTS / YDC clock	SCK	I/O	OL	OL
3	P94/DA1/TB4in/CTS4/RTS4/SS4	P94	CTS	232C CTS	I	I	I	OL
4	P93/DA0/TB3in/CTS3/RTS3/SS3	DA0	FAN	Fan control	DA-O	I	I	OL
5	P92/TB2in/TxD3/SDA3/SRxD3	TxD3	SDTN	None audio TX data	SO	SO	OL	OL
6	P91/TB1in/RxD3/SCL3/STxD3	RxD3	RXRDS	RDS RX data / Freq data (R ver)	SI	SI	I	OL
7	P90/TB0in/CLK3	CLK3	SCKN	None audio serial clock	SCK	SCK	OL	OL
8	P146	P146	CEB	BU2092 CE / ZONE2 function	O/I	O	OL	OL
9	P145	P145	CES	OSD CE / NTSC ? PAL format	O/I	O	OL	OL
10	P144	P144	RDSE	RDS CE / RDS function	O/I	O	OL	OL
11	P143	P143	CEF	FL CE / Model detect 0	O/I	O	OL	OL
12	P142	P142	/FLR	FL IC reset / Model detect 1	O/I	O	OL	OL
13	P141	P141	RDTP	PLL IC RX data	I	I	I	OL
14	P140	P140	SDTP	PLL IC TX data / Tuner exist	O/I	O	OL	OL
15	BYTE	BYTE	BYTE	16bit data bus: VSS	VSS	VSS	VSS	VSS
16	CNVss	CNVss	CNVss	Processor mode choice	VCC	VCC	VCC	VCC
17	P87/Xcin	P87	BT232C	232C boot signal / 6ch input key	I (PU)	I	I	OL
18	P86/Xcout	P86	BTYDC	YDC boot signal (Flash ROM write)	I	I	I	OL
19	RESET	RESET	/RES	Reset	I	-	-	-
20	Xout	Xout	XOUT	Clock out	OPEN	-	-	-
21	Vss	Vss	VSS	Ground	VSS	VSS	VSS	VSS
22	Xin	Xin	XIN	Clock in	12MHz	-	-	-
23	Vcc	Vcc	VCC	+5V	VCC	VCC	VCC	VCC
24	P85/NMI	NMI	NMI	Un-use (VCC with R)	VCC	VCC	VCC	VCC
25	P84/INT2	INT2	REM1	Remote controller pulse	INT (LoEdge)	I	I	OL
26	P83/INT1	INT1	PSW	Power SW	INT (HiEdge)	I	I	OL
27	P82/INT0	INT0	PDET	Power detect	INT (LoEdge)	I	I	I
28	P81/TA4in/U	TA4in	VSY	Vertical sync pulse	Lo Edge	I	I	OL
29	P80/TA4out/U	P80	/ICY	IC YSS IC	O	O	OL	OL
30	P77/TA3in	TA3in	RXRDR	232C RX data	Double Edge	I	I	OL
31	P76/TA3out	P76	DMT	Digital full mute	O	O	OL	OL
32	P75/TA2in/W	TA2in	INTDSP	DIR, TI (DA601) interrupt	INT (LoEdge)	I	I	OL
33	P74/TA2out/W	P74	VBIT	Digital full mute rear L/R	I	I	I	OL
34	P73/CTS2/RTS2/TA1in/V	CTS2	CEP	PLL IC CE / Tuner step 1	I/O	O	OL	OL
35	P72/CLK2/TA1out/V	P72	SCKP	PLL IC clock / Tuner step 0	I/O	O	OL	OL
36	P71/RxD2/SCL2/TA0in/TB5in	SCL2	SCL	IIC bus clock	I/O	I/O	OL	OL
37	P70/TxD2/SDA2/TA0out	SDA	SDA	IIC bus data	I/O	I/O	OL	OL
38	P67/TxD1	TxD1	SDM	DIR, TI (DA601), YSS930, DAC TX	SO	SO	OL	OL
39	Vcc	Vcc	VCC	+5V	VCC	VCC	VCC	VCC
40	P66/RxD1	RxD1	SDD	DIR, TI (DA601), YSS930, DAC RX	SI	SI	I	OL
41	Vss	Vss	VSS	Ground	VSS	VSS	VSS	VSS
42	P65/CLK1	CLK1	SCK	DIR, TI (DA601), YSS930, DAC clock	SCK	SCK	OL	OL
43	P64/CTS1/RTS1/CTS0/CLKS1	P64	/CSY	YSS930 CE	O	O	OL	OL
44	P63/TxD0	TxD0	DTEV	E-Volume TX data	SO	SO	OL	OL
45	P62/RxD0	P62	CEEV	E-Volume CE	O	O	OL	OL
46	P61/CLK0	CLK0	CKEV	E-Volume clock	SCK	SCK	OL	OL
47	P60/CTS0/RTS0	P60	/CSTI	TI (DA601) CE	O	O	OL	OL
48	P137	P137	/CSDIR	DIR CE	O	O	OL	OL
49	P136	P136	INTFCT	Interrupt factor DIR or TI (DA601)	I	I	I	OL
50	P135	P135	/RCLK	Recout SW control (ROHM) clock	O	O	OL	OL
51	P134	P134	/RTXD	Recout SW control (ROHM) data	O	O	OL	OL
52	P57/RDY	RDY	/RDY	+5V fix	VCC	VCC	VCC	VCC
53	P56/ALE/RAS	ALE	ALE	Open	OPEN	OPEN	OPEN	OPEN
54	P55/HOLD	HOLD	/HOLD	+5V fix	VCC	VCC	VCC	VCC
55	P54/HLDA/ALE	HLDA	HLDA	Open	OPEN	OPEN	OPEN	OPEN
56	P133	P133	/CSDAC	DAC CE	O	O	OL	OL
57	Vss	Vss	VSS	Ground	VSS	VSS	VSS	VSS
58	P132	P132	/MIC	Mic detect	I	I	I	OL
59	Vcc	Vcc	VCC	+5V	VCC	VCC	VCC	VCC
60	P131	P131	SPIRDY	TI (DA601) Serial Ready	I	I	I	OL
61	P130	P130	/ICD	IC DIR IC	O	O	OL	OL



IC520 : M30805SGP (FUNCTION P.C.B)  
16bit  $\mu$ -COM (Main CPU)

Pin	Pin function	Function	Name	Detail of function	I/O	On	Off	Backup
62	P53/BCLK/ALE/CLKout	BCLK	BCLK	Open	OPEN	OPEN	OPEN	OPEN
63	P52/RD/DW	RD	/RD	Flash ROM OE	O	-	-	-
64	P51/WRH/BHE/CASH	WRH	BHE	Open	OPEN	OPEN	OPEN	OPEN
65	P50/WRL/WR/CASL	WRL	/WR	Flash ROM WE	O	-	-	-
66	P127	P127	CPNTD	Component DVD signal detect	I	I	I	OL
67	P126	P126	SVIDD	S video signal detect	I	I	I	OL
68	P125	P125	/FMTS	Full mute SBL / SBR	O	O	OL	OL
69	P47/CS0/A23	CS0	CS0	Flash ROM CE	O	O	OL	OL
70	P46/CS1/A22	CS1	CS1	Open	OPEN	OPEN	OPEN	OPEN
71	P45/CS2/A21	CS2	CS2	Open	OPEN	OPEN	OPEN	OPEN
72	P44/CS3/A20(MA12)	CS3	CS3	Open	OPEN	OPEN	OPEN	OPEN
73	P43/A19(MA11)	A19	A19	External ROM address	-	-	-	-
74	Vcc	Vcc	VCC	+5V	VCC	VCC	VCC	VCC
75	P42/A18(MA10)	A18	A18	External ROM address	-	-	-	-
76	Vss	Vss	VSS	Ground	VSS	VSS	VSS	VSS
77	P41/A17(MA9)	A17	A17	External ROM address	-	-	-	-
78	P40/A16(MA8)	A16	A16	External ROM address	-	-	-	-
79	P37/A15(MA7)(D15)	A15	A15	External ROM address	-	-	-	-
80	P36/A14(MA6)(D14)	A14	A14	External ROM address	-	-	-	-
81	P35/A13(MA5)(D13)	A13	A13	External ROM address	-	-	-	-
82	P34/A12(MA4)(D12)	A12	A12	External ROM address	-	-	-	-
83	P33/A11(MA3)(D11)	A11	A11	External ROM address	-	-	-	-
84	P32/A10(MA2)(D10)	A10	A10	External ROM address	-	-	-	-
85	P31/A9(MA1)(D9)	A9	A9	External ROM address	-	-	-	-
86	P124	P124	/Z2MT	Zone2 mute	O	O	OL	OL
87	P123	P123	/HPMT	Headphone mute	O	O	OL	OL
88	P122	P122	/FMTSW	Full mute SW L / SW R / SW MONO	O	O	OL	OL
89	P121	P121	/FMTC	Full mute CENTER	O	O	OL	OL
90	P120	P120	/FMTC	Full mute MAIN L/R / RL / RR	O	O	OL	OL
91	Vcc	Vcc	VCC	+5V	VCC	VCC	VCC	VCC
92	P30/A8(MA0)(D8)	A8	A8	External ROM address	-	-	-	-
93	Vss	Vss	VSS	Ground	VSS	VSS	VSS	VSS
94	P27/A7(D7)	A7	A7	External ROM address	-	-	-	-
95	P26/A6(D6)	A6	A6	External ROM address	-	-	-	-
96	P25/A5(D5)	A5	A5	External ROM address	-	-	-	-
97	P24/A4(D4)	A4	A4	External ROM address	-	-	-	-
98	P23/A3(D3)	A3	A3	External ROM address	-	-	-	-
99	P22/A2(D2)	A2	A2	External ROM address	-	-	-	-
100	P21/A1(D1)	A1	A1	External ROM address	-	-	-	-
101	P20/A0(D0)	A0	A0	External ROM address	-	-	-	-
102	P17/D15/INT5	D15	D15	External ROM data	-	-	-	-
103	P16/D14/INT4	D14	D14	External ROM data	-	-	-	-
104	P15/D13/INT3	D13	D13	External ROM data	-	-	-	-
105	P14/D12	D12	D12	External ROM data	-	-	-	-
106	P13/D11	D11	D11	External ROM data	-	-	-	-
107	P12/D10	D10	D10	External ROM data	-	-	-	-
108	P11/D9	D9	D9	External ROM data	-	-	-	-
109	P10/D8	D8	D8	External ROM data	-	-	-	-
110	P07/D7	D7	D7	External ROM data	-	-	-	-
111	P06/D6	D6	D6	External ROM data	-	-	-	-
112	P05/D5	D5	D5	External ROM data	-	-	-	-
113	P04/D4	D4	D4	External ROM data	-	-	-	-
114	P114	P114	PRI	I protection detect	I	I	I	OL
115	P113	P113	PRY	Power relay	O	O	OL	OL
116	P112	P112	/Z3MT	Zone3 mute	O	O	OL	OL
117	P111	P111	PGB	Program selector B	I	I	I	OL
118	P110	P110	PGA	Program selector A	I	I	I	OL
119	P03/D3	D3	D3	External ROM data	-	-	-	-
120	P02/D2	D2	D2	External ROM data	-	-	-	-
121	P01/D1	D1	D1	External ROM data	-	-	-	-
122	P00/D0	D0	D0	External ROM data	-	-	-	-

IC520 : M30805SGP (FUNCTION P.C.B)  
16bit  $\mu$ -COM (Main CPU)

Pin	Pin function	Function	Name	Detail of function	I/O	On	Off	Backup
123	P157	P157	VRB	Volume encoder B	I	I	I	OL
124	P156	P156	VRA	Volume encoder A	I	I	I	OL
125	P155	P155	ISB	Input selector B	I	I	I	OL
126	P154	P154	ISA	Input selector A	I	I	I	OL
127	P153	P153	SCKA	Audio IC clock	SCK	SCK	OL	OL
128	P152	P152	SDTA	Audio IC TX data	SO	SO	OL	OL
129	P151	P151	CEL	SANYO IC CE	O	O	OL	OL
130	Vss	Vss	VSS	Ground	VSS	VSS	VSS	VSS
131	P150	P150	/ICTI	IC TI (DA601)	O	O	OL	OL
132	Vcc	Vcc	VCC	+5V	VCC	VCC	VCC	VCC
133	P107/AN7/KI3	P107	/HP	Headphone detect	I	I	I	OL
134	P106/AN6/KI2	AN6	REC	Recout selector	AD	I	I	I
135	P105/AN5/KI1	AN5	PLMT	Power limiter detect	AD	I	I	I
136	P104/AN4/KI0	AN4	KY1	Key SW line 1	AD	I	I	I
137	P103/AN3	AN3	KY0	Key SW line 0	AD	I	I	I
138	P102/AN2	AN2	THM	Temperature detect	AD	I	I	I
139	P101/AN1	AN1	PRD	DC protection	AD	I	I	I
140	AVss	AVss	AVSS	AD ground	AVSS	AVSS	AVSS	AVSS
141	P100/AN0	AN0	PRV	PS protection	AD	I	I	I
142	Vref	Vref	VREF	AD reference	AVCC	AVCC	AVCC	AVCC
143	AVcc	AVcc	AVCC	AD +5V	AVCC	AVCC	AVCC	AVCC
144	P97/Adtrg/RxD4/SCL4/STxD4	RxD4	RXDR	232C / YDC RX data	SI	I	I	OL

Key Input(A-D) Pull-Up Resistance 10 k-Ohms

Ohm	0 k	+ 1.2 k	+ 1.2 k	+ 1.8 k	+ 2.7 k	+ 3.3 k	+ 4.7 k	+ 8.2 k
V	~ 0.27	~ 0.75	~ 1.22	~ 1.76	~ 2.28	~ 2.76	~ 3.24	~ 3.76
KEY0	PRESET/TUNING <	PRESET/TUNING >	PRESET/TUNING EDIT	FM/AM	MEMORY	TUNING MODE	-	-
KEY1	-	SPEAKERS A	SPEAKERS B	INPUT MODE	A/B/C/D/E	PURE DIRECT	TONE CONTROL	STRAIGHT EFFECT