

DENON

Hi-Fi Component

SERVICE MANUAL

MODEL AVP-5000

DIGITAL AV PRE-AMPLIFIER



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Please check that the following are included along with the amplifier in the box:

- ① Operating instructions
- ② Warranty
- ③ 2-pin pin plug audio cords
- ④ Remote control unit (RC-771)
- ⑤ R03/UN-4/AAA batteries

MULTI-VOLTAGE MODEL ONLY

Setting the line voltage

- The customer can set the VOLTAGE SELECTOR on the back panel for appropriate line voltage.
- Do not use excessive force in setting the VOLTAGE SELECTOR KNOB - you may damage it.
- If the VOLTAGE SELECTOR KNOB does not slide smoothly, call qualified service personnel.
- Be sure to set both voltage selectors to same position.

NOTE ON USE

- Avoid high temperatures. Allow for sufficient heat dispersion when installed on a rack.

- Keep the set free from moisture, water, and dust.

- Do not let foreign objects in the set.

- Do not let insecticides, benzene, and thinner come in contact with the set.

- Unplug the power cord when not using the set for long periods of time.

- Handle the power cord carefully. Hold the plug when unplugging the cord.

- Never disassemble or modify the set in any way.

BEFORE USING

Pay attention to the following before using the AVP-5000:

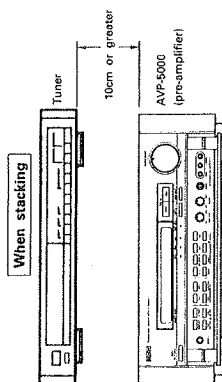
- Moving the set**
To prevent short circuits or damaged wires in the connection cords, always unplug the power cord and disconnect the connection cords between all other audio components when moving the set.
- Before turning the power switch on**
Check once again that all connections are proper and that there are not problems with the connection cords. Always set the power switch to the standby position before connecting and disconnecting connection cords.

CAUTIONS ON INSTALLATION

- Noise or disturbance of the picture may be generated if this pre-amplifier or any other electronic equipment using microprocessors is used near a tuner or TV. If this happens, take the following steps:
 - Install the pre-amplifier as far as possible from the tuner or TV.
 - Set the antenna wires from the tuner or TV away from the pre-amplifier's power cord and input/output connection cords.
 - Noise or disturbance tends to occur particularly when using indoor antennas or 300 ohms feeder wires. We recommend using outdoor antennas and 75 ohms coaxial cables.

CAUTIONS ON HANDLING

- Switching the input function when input jacks are not connected**
A clicking noise may be produced if the input function is switched when nothing is connected to the input jacks. If this happens, either turn down the MASTER VOLUME control or connect components to the input jacks.
- Muting of PRE OUT jacks**
The PRE OUT jacks include a muting circuit. Because of this, the output signals are greatly reduced for several seconds after the power switch is turned on. If the volume is turned up during this time, the output will be very high after the muting circuit stops functioning.



To allow the heat to be dispersed, do not set an AV component directly on the AVP-5000. Leave a space of at least 10cm.

Always wait until the muting circuit turns off before adjusting the volume.

- Opening and closing the door**
This set includes a door on the front panel. Press the "PUSH OPEN Δ" mark on the upper right side of the door to unlatch and open it. To close it, press it until a click is heard.

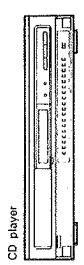
NOTE: The door opens out automatically once it is unlatched, but it may stop halfway. This is not a malfunction. Press on the door lightly to open it.

5 CONNECTIONS

• Analog

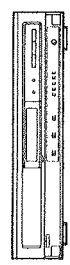
Connecting a CD player

Connect the CD player's analog output jacks (ANALOG OUTPUT) to the pre-amplifier's CD jacks using pin plug cords.



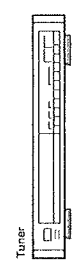
AUX jacks

The AUX jacks have the same electrical characteristics as the CD and playback jacks, so they can be used to connect a second CD player, a tape deck for playback, etc. Connect the output jacks (OUTPUT) of the audio component to the pre-amplifier's AUX jacks using pin plug cords.



Connecting a tuner

Connect the tuner's output jacks (OUTPUT) to the pre-amplifier's TUNER jacks using pin plug cords.

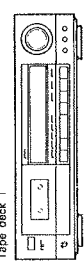


Tape deck 1

Connecting a tape deck

Connections for recording:
Connect the tape deck's recording input jacks (LINE IN or REC) to the pre-amplifier's tape recording (REC) jacks using pin plug cords.

Connections for playback:
Connect the tape deck's playback output jacks (LINE OUT or PB) to the pre-amplifier's tape playback (PB) jacks using pin plug cords.



Audio Section

AC OUTLETS

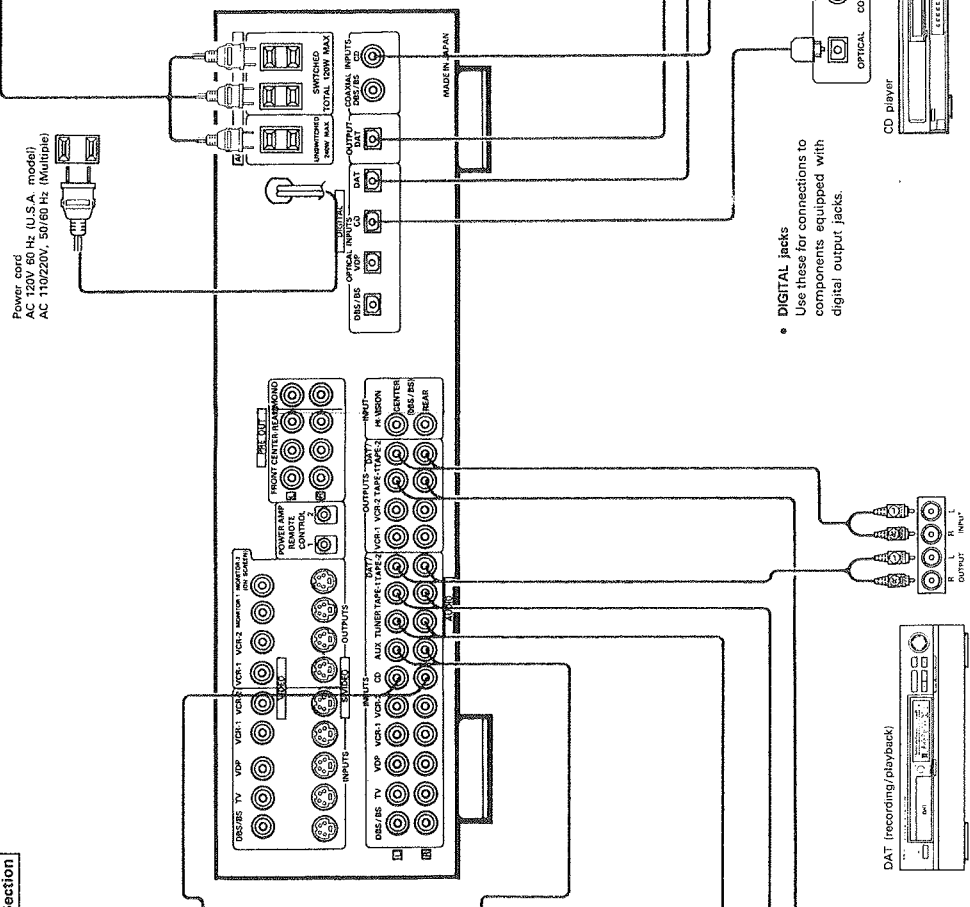
About the AC outlets
Plug the power cords of components used with this amplifier, such as a TV, tuner, CD player, tape deck, etc., into these outlets for convenience.

• SWITCHED outlets (total capacity - 120W)
The power to these outlets is turned on and off with the amplifier's POWER switch.

The power of the main unit is also turned on and off when the remote control unit's POWER button is switched between on and standby.

• UNswitched outlet (capacity - 240W)
The power from this outlet is supplied regardless of the position of the amplifier's POWER switch.

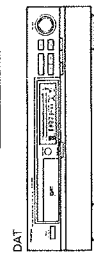
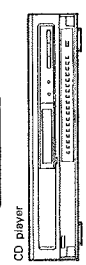
- Do not plug in power cords until all other connections are completed.
- Be sure to connect the channels properly, L (left) to L, R (right) to R.
- Plug the cords in securely. Incomplete connections can lead to noise.
- Only use the AC outlets for audio components. Never use them for hair dryers or other equipment.
- Note that grouping pin plug cords and power cords together or setting pin plug cords near power transformers can lead to humming or noise.
- Precautions when connecting speakers
If a speaker is placed near a TV or video monitor, the colors on the screen may be disturbed by the speaker's magnetism. If this should happen, move the speaker away to a position where it does not have this effect.



• DIGITAL jacks

Use these for connections to components equipped with digital output jacks.

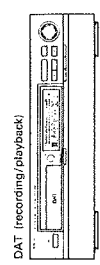
* If both the coaxial and optical jacks are connected, the coaxial jacks have priority.



Connecting a DAT (digital audio tape recorder)

Connections for recording:
Connect the DAT's analog recording input jacks (LINE IN or REC) to the pre-amplifier's tape recording (REC) jacks using pin plug cords.

Connections for playback:
Connect the DAT's analog playback output jacks (LINE OUT or PB) to the pre-amplifier's tape playback (PB) jacks using pin plug cords.



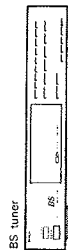
- Use 75 ohms cable pin cords for coaxial connections.
- Use optical cables for optical connections, removing the cap before connecting.

Video Section

Video and analog audio

Connecting a BS tuner

- Connect the BS tuner's S output jack (S-OUT) to the [S-VIDEO] VDP IN jack using an S jack connection cord.
- Connect the BS tuner's video output jack (VIDEO OUTPUT) to the [VIDEO] (yellow) DBS/BS-IN jack using a 75 ohms video coaxial pin plug cord.
- Connect the BS tuner's analog audio output jacks (AUDIO OUTPUT) to the [AUDIO] DBS/BS-IN jacks using pin plug cords.



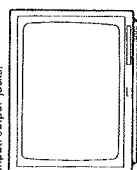
Connecting a video disc player VDP

- Connect the video disc player's S output jack (S-OUT) to the [S-VIDEO] VDP IN jack using an S jack connection cord.
- Connect the video disc player's video output jack (VIDEO OUTPUT) to the [VIDEO] (yellow) VDP jack using a 75 ohms video coaxial pin plug cord.
- Connect the video disc player's analog audio output jacks (ANALOG AUDIO OUTPUT) to the [AUDIO] VDP jacks using pin plug cords.



This amplifier includes VIDEO AUX jacks on the front panel for playback of video components, so video movie cameras equipped with a playback function can be used on it. Connections are done in the same way as for a video disc player.

TV (equipped with video input/output jacks)



Connecting a TV

- Connect the TV's video output jack (VIDEO OUTPUT) to the [VIDEO] (yellow) TV IN jack using a 75 ohms video coaxial pin plug cord.
- Connect the TV's S-VIDEO output jack (S-VIDEO OUTPUT) to the [S-VIDEO] TV IN jack using an S jack connection cord.
- Connect the TV's audio output jacks (AUDIO OUTPUT) to the [AUDIO] TV IN jacks using pin plug cords.

MONITOR OUT 1 and 2

- Connect the TV's S-VIDEO input (S-VIDEO INPUT) to the [S-VIDEO] MONITOR OUT jack using a S jack connection cord.
- Connect the TV's video input jack (VIDEO INPUT) to the [VIDEO] MONITOR OUT jack using a 75 ohms video coaxial pin plug cord.

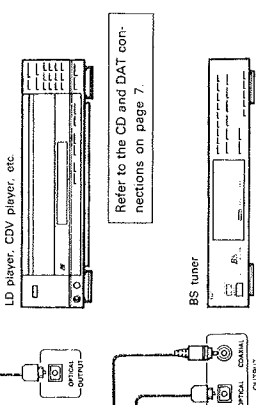
MONITOR OUT jacks

- The same signals are output from both the MONITOR OUT 1 and MONITOR OUT 2 jacks, but as the MONITOR OUT 1 jack is designed with priority on picture quality, on-screen signals are not output from this jack. Use the MONITOR OUT 2 jack if information on operation is necessary with the on-screen instructions.

S jacks

- The input selectors for the S input and pin jack input are linked. If a source with no S jack input is selected, no signals are output from the S-video MONITOR OUT jacks.
- The S jack circuitry includes a circuit for converting the input to the S jack into a pin-jack output. The MONITOR OUT 1 jacks do not include a conversion circuit, so the S-jack input signals are not output to the pin jacks. The signals from the S jacks are output to the pin jacks with priority over the signals from the pin jack inputs. For example, if both the VCR-1 S jack and pin jack are connected and VCR-1 is selected with the input selector, the S jack input signals are output from the pin jack output jack. The signals input to the S jacks are also output from the S output jacks.

Digital sound

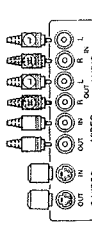


Connecting the S jacks

- Connect the video deck's S output jack (S-OUT) to the [S-VIDEO] IN jack and the video deck's S input jack (S-IN) to the [S-VIDEO] OUT jack using S jack connection cords.

Connecting the audio output jacks

- Connect the video deck's audio output jacks (AUDIO OUT) to the [AUDIO] VCR-1 IN jacks and the video deck's audio input jacks (AUDIO IN) to the [AUDIO] VCR-1 OUT jacks using pin plug cords.
- Connect the second video deck to the VCR-2 jacks in the same way.



Video deck 2 with S jacks

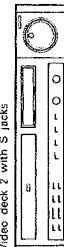
Connect to the VCR-2 jacks in the same way as for video deck 1.

Video deck 1 with S jacks

- There are two sets of video deck (VCR) jacks, so two video decks can be connected for simultaneous recording or video copying.

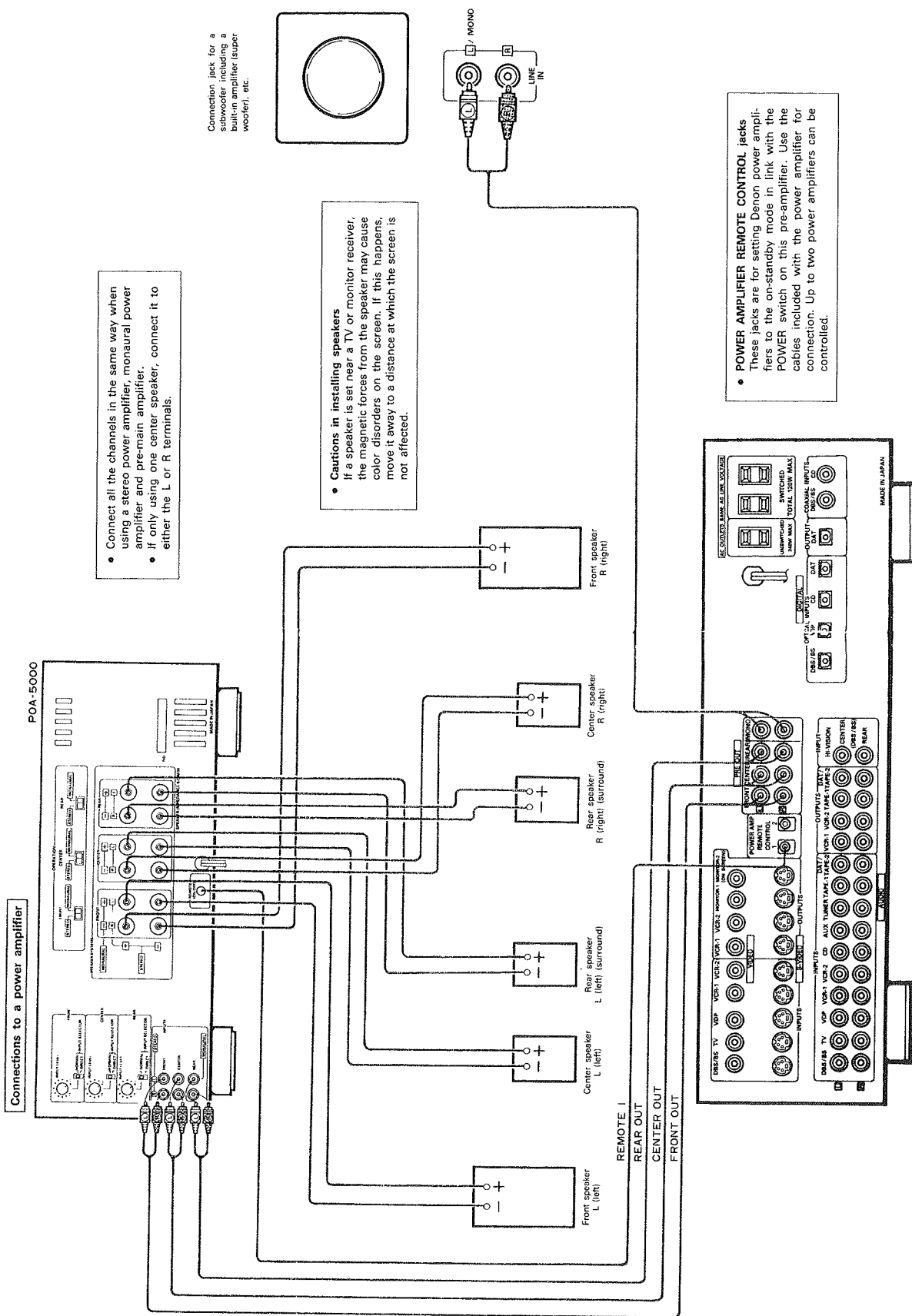
Video input/output connections

- Connect the video deck's video output jack (VIDEO OUT) to the [VIDEO] (yellow) VCR-1 IN jack, and the video deck's video input jack (VIDEO IN) to the [VIDEO] (yellow) VCR-1 OUT jack using 75 ohms video coaxial pin plug cords.



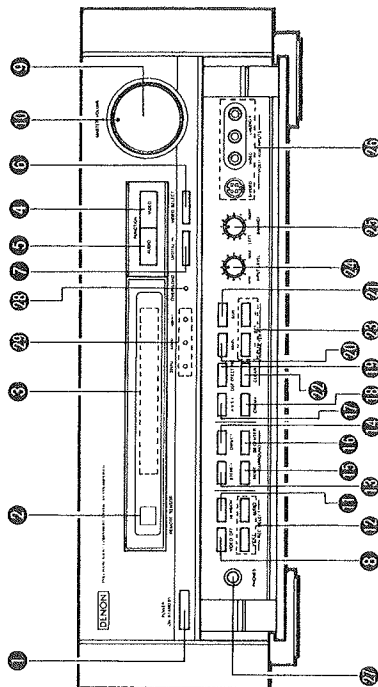
Connect to the VCR-2 jacks in the same way as for video deck 1.



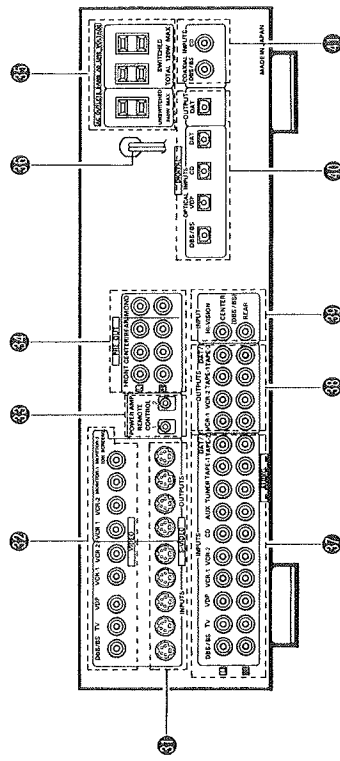


6 PART NAMES AND FUNCTIONS

Front Panel



Rear Panel



1 POWER switch

ON

When this switch is pressed once, the power is turned on and the MASTER VOLUME LED flashes. (The muting circuit is activated while the LED is flashing, preventing noise when the power switch is switched between on and standby). After a few seconds, the LED stops flashing, the muting circuit turns off and normal operation is now possible.

STANDBY

When the POWER switch is pressed once again, the standby mode is set. The MASTER VOLUME LED remains lit (darker than in the ON mode.)

2 REMOTE SENSOR

This is where the signals from the wireless remote control unit are received. Point the wireless remote control unit at this sensor when operating it.

3 Multi-function display (MFD)

The surround mode and information on the inputs and outputs are displayed when the power is turned on.

Normally the surround mode is displayed. When any other button is pressed, a message concerning that button is displayed for approximately 5 seconds, after which the surround mode display reappears. For details on the MFD, refer to pages 17 and 18.

4 VIDEO FUNCTION button (Video input signal selector button)

This button is used to select the video input signal. The input switches as shown below when the button is pressed repeatedly or held in:

DBS/BS-TV→VDP→VCR-1→VCR-2→AUX

5 AUDIO FUNCTION button (Audio input signal selector button)

This button is used to select the audio input signal.

The input switches as shown below when the button is pressed repeatedly or held in:

CD→TUNER-AUX→TAPE 1→DAT/TAPE 2

(All video outputs are off unless the VIDEO SELECT or VIDEO RECORD SELECT button is on).

6 VIDEO SELECT button (Video signal independent selector button)

This button is used to select the video signal independently from the audio signal. When this button is held in, the video input signal switches in the order shown below. Release the button when the desired video input signal is displayed on the MFD. Afterwards, the video signal remains the same even if the audio signal is changed with the AUDIO FUNCTION selector button 9. Either press the VIDEO SELECT button again or press the VIDEO FUNCTION selector button 4 to cancel this mode.

7 DIGITAL IN button (Digital input signal selector button)

The digital input switches as shown below when the button is pressed repeatedly or held in:

DBS/BS→VDP→CD→DAT

(● When DBS/BS or VDP is selected, the video signal also changes.)

8 VIDEO OFF button

Press this button to turn the video circuitry off. Use this when you want better sound quality, for example when playing a CD.

Press the button again to turn the video circuitry back on.

* When the VIDEO OFF button is pressed, all video functions, including recording, on-screen signals, etc., stop working.

9 MASTER VOLUME control

Turn this control clockwise (↻) to increase the volume, counterclockwise (↺) to decrease it.

10 MASTER VOLUME LED

This lights when the unit is in the operating mode, and flashes during the muting mode. In the standby mode, the LED is darker than when in the operating mode.

11 HI-VISION switch (Satellite broadcast Hi-Vision input switch)

This is a function for future satellite broadcasts. When this button is pressed, the signals connected to the DBS/BS HI-VISION CENTER and REAR jacks on the rear panel are sent directly to the center and rear speakers, without passing through the surround circuitry. This switch will only function when the function is set to DBS/BS.

* This button will not function in the direct mode.

REC SELECT buttons (Recording output independent selector buttons)

These buttons make it possible to select the recording mode (both audio and video) independently from the function selected with the FUNCTION selector buttons.

• **AUDIO button**

This button is used to select the audio recording output jacks, TAPE1, DAT/TAPE2, VCR-1 or VCR-2.

The recording output signal is normally the input signal selected with the AUDIO FUNCTION selector button which is output from the recording output side. When this button is used, however, it is possible to select the signals from input jacks other than the ones selected with FUNCTION selector button.

• **VIDEO button**

This button is used to select the signals to be sent to the video recording output jacks, VCR-1 or VCR-2.

The video (audio) recording output signal is normally the input signal (video and audio) selected with the VIDEO FUNCTION selector button. When this button is used, however, it is possible to select the signals from input jacks other than the ones selected with FUNCTION selector button.

STEREO button (DSP mode stereo button)

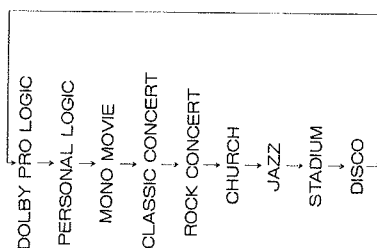
When this button is pressed, the two-channel DSP mode is set. This makes it possible to use the EQ1 and DYNAMICS functions (see pages 34 and 37). (No signals are output to the rear and center speakers.)

DIRECT button

When this button is pressed, the audio signals bypass the DSP circuit and are sent directly to the master volume control. This is the front two-channel playback mode. (No signals are output to the rear and center speakers.)

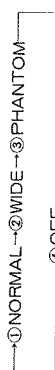
SURROUND MODE selector button

This button is used to select the surround mode. The surround mode switches as follows when the button is pressed repeatedly or held in:



(For details on the surround modes, refer to pages 43 to 45.)

□ CENTER (Center mode selector button)
This button is used when the Dolby Pro Logic or Personal Logic functions are selected. The center mode changes in the order shown below. Select according to the speaker systems being used.



① NORMAL: Select this position when playing in Dolby Surround Pro Logic.

This position is effective when the speakers for the center channel are smaller than the left and right speakers.

② WIDE: This mode is used when the speakers for the center channel are of the same size as the left and right speakers. Select this position when playing in Dolby Surround Pro Logic without using center speakers.

③ PHANTOM: Use this position when adjusting the input balance manually.

④ OFF: Use this position when adjusting the level of the input signals. The level increases when turned clockwise (↻), and decreases when turned counterclockwise (↺).

* With the Personal Logic function, the center mode is only selected when the adaptive matrix is on.

* The Dolby Pro Logic mode is set if this button is pressed when a surround mode other than Dolby Pro Logic or Personal Logic is set.

A.V.S.E button (Low range correction button)

Use this button to emphasize the low frequency sounds. With video software, etc., when this switch is turned on the sound becomes more powerful. Set it to suit your tastes. (This can be used when using the Dolby Pro Logic and Personal Logic functions.)

CINEMA button (High range correction button)

Use this if the dialogues do not seem natural when watching video movies. Set to "CINEMA 2" when the center speakers are set behind the screen, or to "CINEMA 1" when the area in front of the center speakers is clear. (This can be used when using the Dolby Pro Logic and Personal Logic functions.)

DSP EFFECT REC button (DSP recording button)

Use this when you want to output signals to which the DSP effect is added from the REC OUT jacks. For details, refer to page 32. (This cannot be used in the direct and audio recording modes.)

MAIN button (DSP main parameter selector button)

Use this to select the main parameter. For details, refer to pages 33 to 51.

SUB button (DSP sub parameter selector button)

Use this to select the sub parameter. For details, refer to pages 33 to 51.

CLEAR button (User preset clear button)

When this button is pressed, the selected surround mode parameter is reset to the initial value (the value set upon shipment from the factory).

SET (- and +) buttons (Parameter setting buttons)

Use these to change the parameters set with the MAIN and SUB buttons. For details, refer to pages 33 to 51.

INPUT LEVEL control

Use this control to adjust the level of the input signals. The level increases when turned clockwise (↻), and decreases when turned counterclockwise (↺).

BALANCE control (Input balance control)

Use this to adjust the left/right input balance for more effective surround sound.

Buttons 23 and 24 can only be used when the audio input signal is selected with button 25. For instructions on adjustments, refer to page 42.

VIDEO AUX INPUTS (External video input jacks)

These are spare input jacks for connecting a video movie camera or other AV equipment. **S-VIDEO:** Connect to the S output jack of the other component.

VIDEO: Connect to the video output jack of the other component.

AUDIO L and R: Connect the audio output jacks of the other component.

PHONES (Headphones jack)

Use this jack to connect headphones. To listen to the source through the headphones only, turn the output off from the remote control unit.

OVERLOAD indicator

This indicator lights when the input signals are too strong. If this lights, refer to page 42.

Sampling frequency indicators

These indicate the sampling frequency of the digital signals input to the DIGITAL input jacks.

- 32kHz: BS-A mode
- 44kHz: DAT 32kHz mode, etc.
- 48kHz: CDs and DATs (when playing on store-bought tapes)
- BS-B mode
- DAT 48kHz mode, etc.

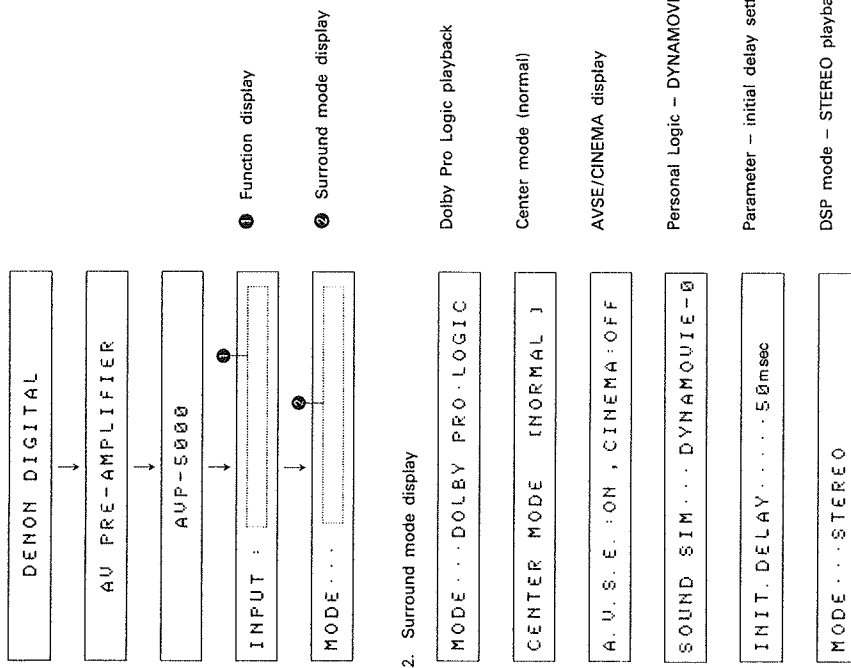
- 31 S-VIDEO jacks (Input/output jacks)
- 32 VIDEO jacks (Video input/output jacks)
- 33 POWER AMPLIFIER REMOTE CONTROL jacks
Refer to page 11.
- 34 PRE OUT (FRONT, CENTER, REAR and MONO) jacks
Connect the MONO jacks to the monaural audio input jacks on a separately sold sub woofer or TV.
- 35 AC OUTLETS
Refer to page 7.
- 36 AC power cord
- 37 INPUTS (Analog audio input jacks)
- 38 OUTPUTS (Analog audio output jacks)
- 39 HI-VISION INPUT jacks
Refer to pages 8 and 9.
- 40 OPTICAL INPUTS and OUTPUT jacks (Digital optical input and output jacks)
- 41 COAXIAL INPUTS (Digital coaxial input jacks)

Multi-function display (MFD)

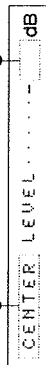
This indicates the modes set when buttons on the front panel or remote control unit are operated.

Examples of display patterns

1. When power turned on:



3. Level display



- 1 Displayed when volume of center speakers is being adjusted.
- 2 0 dB (maximum) to MIN (minimum) (Displayed in steps of 1 dB from 0 to -20 dB, steps of 2 dB from -22 to -40 dB)
- When volume of center speakers is being adjusted - "CENTER" 0 dB (maximum) to MIN (minimum)
- When volume of rear speakers is being adjusted - "REAR" 0 dB (maximum) to MIN (minimum)

4. Output display



- 1 When FRONT PRE OUT is "ON"
- 2 When CENTER PRE OUT is "ON"
- 3 When REAR PRE OUT is "ON"
- *When all are "OFF", nothing is displayed.

5. Muting display

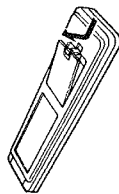


Displayed when muting circuit is on.

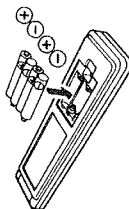
7 REMOTE CONTROL UNIT

Follow the procedure described below to insert the batteries before using the remote control unit (RC-771).

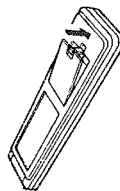
1. Open the back lid of the remote control unit and remove the battery cover.



2. Insert four R03/UM-4/AAA batteries into the battery case in the proper direction, following the ⊕ and ⊖ marks.



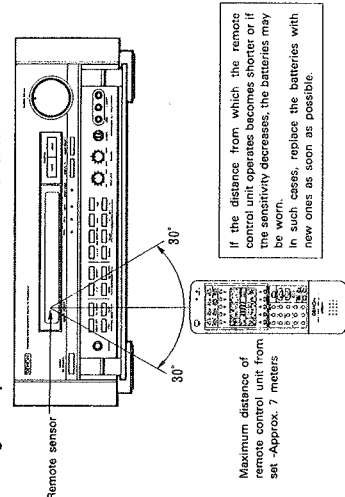
3. Shut the back lid, making sure you hear a click.



■ Cautions on batteries

- Be sure to insert the batteries in the proper direction, following the ⊕ and ⊖ marks on the remote control unit's battery case.
- Replace batteries as soon as they start getting weak.
- Do not mix used batteries with new ones.
- Do not use different types of batteries together. The performance may differ even if the batteries are of the same size and capacity.
- Some batteries are rechargeable. Do not use rechargeable batteries in this remote control unit. Read the notes on the batteries carefully.
- Do not directly connect the ⊕ and ⊖ sides of the battery with a piece of metal, etc. (do not short-circuit the battery).
- Do not take batteries apart, heat them, or expose them to flames. If the battery fluid should leak, carefully wipe any fluid off the battery case then insert new batteries.

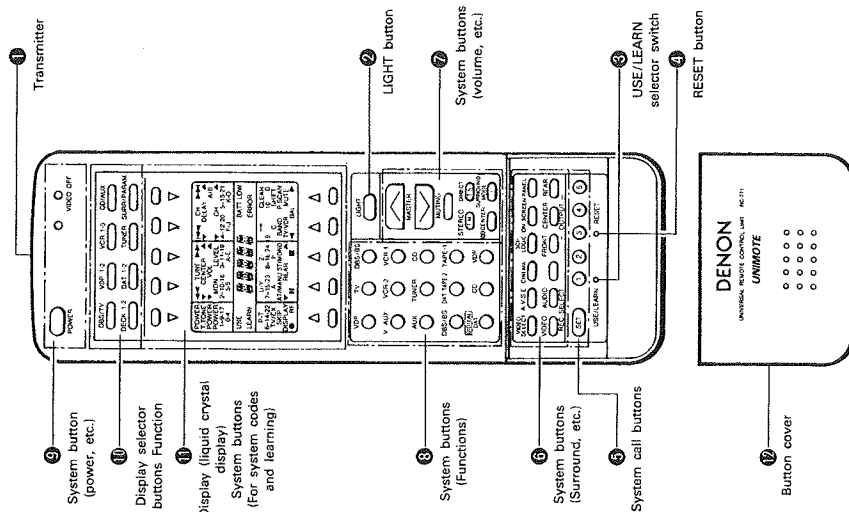
■ Range of operation of remote control unit



■ Cautions on replacing batteries

When replacing batteries, first prepare the new ones, and insert them as soon as possible. The codes which you have stored in the remote control unit are cleared after approximately five minutes if no batteries are inserted.

Remote Control Unit Part Names and Functions



1 Transmitter The remote control signals (infrared signals) are transmitted from here.

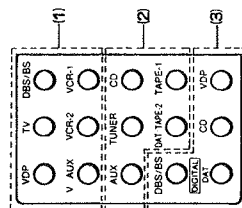
Description of AVP-5000 Exclusive Codes

- These are used to turn the pre-out output on and off.
- 2 **LIGHT button**
This is used to turn on the light of parts 10 and 11.
The light turns off 5 seconds after any button is pressed.
 - 3 **System buttons (volume, etc.)**
• **MASTER volume adjustment buttons**
[Master volume adjustment buttons]
: Press this button to turn the MASTER VOLUME control on the main unit clockwise and increase the volume.
: Press this button to turn the MASTER VOLUME control on the main unit counterclockwise and decrease the volume.
 - 4 **MUTING button**
Use this button to turn the pre-out output and headphones output on and off. The LED on the MASTER VOLUME control flashes when the muting mode is set.
 - 5 **STEREO [T.M.] button**
[DSP mode stereo button]
[Same as corresponding button on main unit.]
*This button is used as the T.M. (test tone, main parameter) button when in the test tone mode.
Use it to switch the test tone main parameter.
 - 6 **DIRECT [T.S.] button**
[Same as corresponding button on main unit.]
*This button is used as the T.S. (test tone, sub parameter) button when in the test tone mode.
Use it to switch the test tone sub parameter.
(For details, refer to page 39.)
 - 7 **CENTER button [-]**
[Center mode selector button]
[Same as corresponding button on main unit.]
*This button is used as the [-] (parameter setting) button when in the test tone mode.
(For details, refer to page 39.)
 - 8 **SURROUND MODE button [+]**
[Surround mode selector button]
[Same as corresponding button on main unit.]
*This button is used as the [+]
(parameter setting) button when in the test tone mode.
(For details, refer to page 39.)
 - 9 **USE/LEARN selector switch**
 - 10 **RESET button**
Buttons 10 and 11 are learning buttons.
For details, refer to page 27.
 - 11 **System call buttons**
Refer to page 23.
 - 12 **System buttons (Surround, etc.)**
• **VIDEO SELECT button**
[Video signal independent selector button]
[Same as corresponding button on main unit.]
• **A.V.S.E button**
[Low range correction button]
[Same as corresponding button on main unit.]
• **CINEMA button**
[High range correction button]
[Same as corresponding button on main unit.]
• **3CH LOGIC button**
[Three-channel logic button]
Use this when playing video sources recorded in Dolby Surround without using a rear speaker.
When pressed again, the three-channel logic mode is turned off and the normal Pro Logic mode is set. (For details, refer to page 42.)
 - 13 **ON SCREEN button**
This is used to switch the screen display.
(For details, refer to page 52.)
 - 14 **PANEL button**
This is used to switch the MFD display.
 - 15 **REC SELECT buttons**
[Recording output independent selector buttons]
*AUDIO
*VIDEO
[Same as corresponding buttons on main unit.]
 - 16 **OUTPUT buttons**
(Audio output on/off buttons)
*FRONT
*CENTER
*REAR

Display System buttons

The output, center level, rear, and other parameters are stored for each of the surround modes. When switching the surround mode, some time is required before returning to the position at which the center (rear) level was stored. In addition, the "s" mark is displayed inverted at the upper right of the screen during this operation.

⑧ System buttons (functions)



- (1) **Video input selector buttons**
Use these to select the video component input signals.
 - (2) **Audio input selector buttons**
Use these to select the audio component input signals.
 - (3) **Digital input selector buttons**
Use these to select the digital input.
- ⑤ **System buttons (power, etc.)**
- **POWER button**
[Same as corresponding button on main unit.]
 - **VIDEO OFF button**
[Same as corresponding button on main unit.]

10 Display selector buttons

Display selector buttons
Use these to select the display function.
(For details, refer to page 24.)

"ERROR" message

"ERROR" appears on the display in the following instances:

1. in the transmitting mode:
 - When a button at which no code is stored is pressed.
 - When two or more buttons are pressed simultaneously.
2. in the learning mode:
 - When a code cannot be stored (Approximately five seconds after "ERROR" is displayed, "USE" and "LEARN" flash and the remote control unit is set to the learning standby mode.)
3. during system call setting
 - When you have attempted to set the operations of more than 15 buttons.

"BATT.LOW" message

If "BATT.LOW" appears on the display, the batteries are worn. Replace them with new batteries immediately.

The remote control unit's power and the display turn off automatically if no buttons are pressed for 10 seconds. The power turns back on when a button is pressed.

System Call Buttons

- The system call function allows you to store the operations of up to 15 buttons at a single button, and automatically transmit these operations to the main unit successively. Other remote control codes must be stored at these buttons in advance in order to use them. For instructions, refer to page 27.

System Call Setting

1. Press the **SET** button.
 2. Press the buttons whose operations are to be stored in the proper order. The operations for up to 15 buttons can be stored. "LEARN" appears momentarily on the display each time a button is pressed.
 3. Once the buttons whose operations are to be stored have been pressed, press one of buttons 1 to 5.
 4. The operations are stored at that button.
 5. "LEARN" turns off and the operations are stored.
 5. Up to 15 codes can be stored at each of buttons 1 to 5.
- Repeat steps 1 to 4 to store other codes.

NOTE:

The codes are sent from the remote control unit to the main unit even while the system call buttons are being set, so cover the remote sensor to prevent undesired operation.

System Call Clearing

1. Press the **SET** button. "LEARN" flashes.
2. Press the system call button you want to clear (1 to 5).
3. "LEARN" turns off and the button is reset.
4. Repeat steps 1 to 3 to reset other buttons.

Using the System Call Buttons

1. Press the desired system call button once.
2. The remote control codes stored at the button are transmitted in order. "USE" appears on the display each time a code is sent.
3. "USE" turns off, and all the codes have been transmitted.

Switching the Display Function

No codes are set when the buttons in section ⑩ are pressed.
These buttons are used when it is necessary to switch the function, for learning, etc.
The function on the display changes as follows when the buttons in section ⑩ are pressed:

Buttons	Function
DBS/TV	DBS ↔ TV
VDP1-2	VDP-1 ↔ VDP-2
VCR1-3	VCR-1 → VCR-2 → VCR-3
CD/AUX	→ CD → AUX → V-AUX
DECK1-2	DECK 1 → DECK 2
DAT1-2	DAT-1 → DAT-2
TUNER	TUNER → RECEIVER (RECV)
SURR/PARAM	SURROUND → PARAMETER (PARAM)

The display also changes in the same way when codes are sent using the buttons in section ⑩.
The surround patterns are displayed when the buttons in sections ⑩ and ⑪ are pressed.
The display turns off approximately 10 seconds after buttons are pressed.

Functions and Denon System Codes

The Denon component system codes have been preset for the VDP-1, CD, DECK-1, DAT-1, TUNER, and REC-V functions. This makes it possible to operate other Denon brand components from this remote control unit.

Display and System Code Transmission Buttons

DBS function (No system codes set.)

DBS/TV	VDP-1	VDP-2	CD	AUX	DECK-1	DECK-2	DAT-1	DAT-2	TUNER	RECV	PARAM
POWER	MAN	LEVEL	ON								
DISPLAY											

TV function (No system codes set.)

DBS/TV	VDP-1	VDP-2	CD	AUX	DECK-1	DECK-2	DAT-1	DAT-2	TUNER	RECV	PARAM
POWER	MAN	LEVEL	ON								
DISPLAY											

VDP-1 and VDP-2 functions (System codes set for VDP-1.)

DBS/TV	VDP-1	VDP-2	CD	AUX	DECK-1	DECK-2	DAT-1	DAT-2	TUNER	RECV	PARAM
POWER	MAN	LEVEL	ON								
DISPLAY											

AUX function (No system codes set.)

DBS/TV	VDP-1	VDP-2	CD	AUX	DECK-1	DECK-2	DAT-1	DAT-2	TUNER	RECV	PARAM
POWER	MAN	LEVEL	ON								
DISPLAY											

* Operation may not be possible for some models. In such cases, use the learning function.

VCR-1, VCR-2 and VCR-3 functions (No system codes set.)

VCR-1	VCR-2	VCR-3	CD	AUX	DECK-1	DECK-2	DAT-1	DAT-2	TUNER	RECV	PARAM
POWER	MAN	LEVEL	ON								
DISPLAY											

V-AUX function (No system codes set.)

VCR-1	VCR-2	VCR-3	CD	AUX	DECK-1	DECK-2	DAT-1	DAT-2	TUNER	RECV	PARAM
POWER	MAN	LEVEL	ON								
DISPLAY											

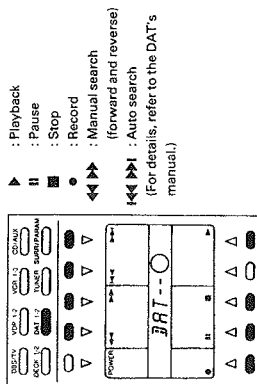
CD function (System codes set.)

DBS/TV	VDP-1	VDP-2	CD	AUX	DECK-1	DECK-2	DAT-1	DAT-2	TUNER	RECV	PARAM
POWER	MAN	LEVEL	ON								
DISPLAY											

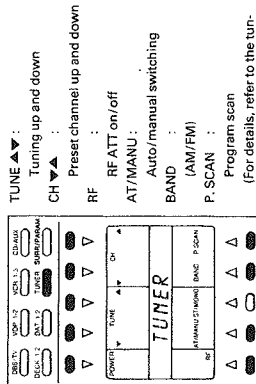
DECK 1 and DECK 2 functions (System codes set for DECK 1.)

DBS/TV	VDP-1	VDP-2	CD	AUX	DECK-1	DECK-2	DAT-1	DAT-2	TUNER	RECV	PARAM
POWER	MAN	LEVEL	ON								
DISPLAY											

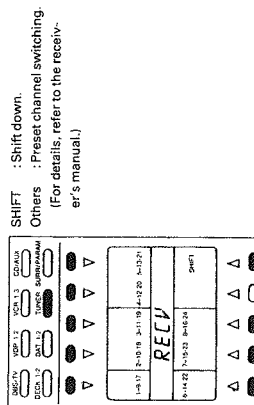
• **DAT 1 and DAT 2 functions**
(System codes set for DAT 1.)



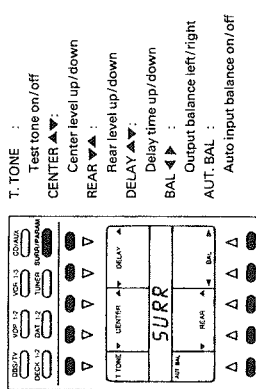
• **TUNER function**
(System codes set.)



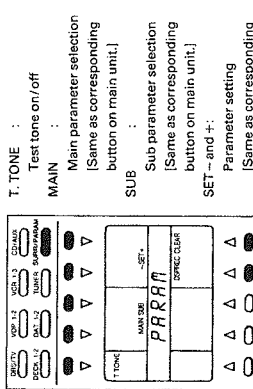
• **RECEIVER function**
(System codes set.)



• **SURROUND function**
(AVP-5000 codes set. Learning is not possible.)



• **PARAMETER function**
(AVP-5000 codes set. Learning is not possible for buttons at which codes are stored.)



• For details on parameters, refer to page 34~38.

Procedure for using the remote control unit's learning function

Codes can be stored at a total of 165 buttons, including the two unmarked buttons in sections 5 and 9, the three buttons in section 11 at which nothing is displayed when in the parameter mode, and all the buttons in section 11 (16 functions X 10 buttons), for a total of 165 buttons.

NOTE:
Depending on the type and length of the codes which are stored, it may not be possible to store codes at all 165 buttons.

Clearing

For functions (buttons in section 11)

1. Use a ballpoint pen or other object with a sharp tip to press the USE/LEARN switch 3 and set the learning mode.
2. Press the button in section 11 for the function to be cleared (for example, VDP-1).
3. Hold in the RESET button 4 with the tip of a pen, etc., and press the button in section 11 for the function to be cleared (in this case, VDP-1).
4. All the stored codes for that function (in this case, VDP-1) are cleared when "CLEAR" appears on the display 11.

For the buttons in sections 5 and 9

1. Use a ballpoint pen or other object with a sharp tip to press the USE/LEARN switch 3 and set the learning mode.
2. Press the RESET button 4 then press the POWER button 5.
3. All the stored codes for the buttons in sections 5 and 9 are cleared when "CLEAR" appears on the display 11.
- Once the codes are cleared, press the USE/LEARN switch 3 and set the normal use mode.
- If codes are stored at a button at which a system code is stored, the system code is once again stored in the button when the other codes are cleared.

Remote control operation

1. If "USE" and "LEARN" are flashing or "LEARN" is lit, press the USE/LEARN switch 3 to turn the indicators off and set the normal use mode.
2. Press the desired button on the remote control unit. "USE" appears and the remote control code is transmitted.

- If "ERROR" appears, refer to page 22.

Operation

1. Press the USE/LEARN (normal use/learning mode) switch 3.

Use a ballpoint pen or other object with a sharp tip to press this switch and set the learning mode. Both "USE" and "LEARN" flash on the display 11 and the learning mode is set.

2. Hold the other remote control unit approximately 5 cm from the top (transmitter) of the RC-771, pointing the two at one another.

3. Check the function for learning on the display 11 (for example, VDP-1).

If the function currently set is not the desired function, press the desired button in section 11 to set the new function.

Press the buttons located above and below the display 11 to select the buttons at which codes are to be stored.

Codes can also be stored at the unmarked buttons in sections 5 and 9. In this case it is not necessary to set the function. Just press the desired button directly.

4. Check that only "LEARN" is shown on the display 11, then press and hold in the button on the other remote control unit whose code you want to store.

5. Once "USE" and "LEARN" flash, the code has been stored. Now release the button.

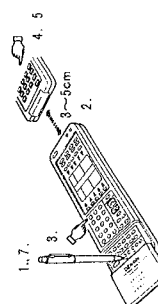
NOTES:

- "ERROR" appears if the code could not be stored. It may not be possible to store codes for a limited number of models.
- The memory is full if "LEARN" and "USE" flash rapidly.
- In this case, it is not possible to store the code you are currently attempting to store. To start over, first follow the instructions under "Clearing".

6. Repeat steps 3 to 5 above to store codes at other buttons.

7. Once you have completed the learning operation, press the USE/LEARN switch 3 again. The two flashing indicators turn off and the normal use mode is set.

Check that the stored code works properly.



8 OPERATION

- 1. Preparations for Playback**
- Check the connections diagrams (on pages 6 to 11) to make sure that all connections are correct.
 - Check that the speaker systems are properly connected, left (L) to left, right (R) to right, $\oplus$ to $\oplus$ and $\ominus$ to $\ominus$.
 - Check that the pin plug cords are properly connected, left (L) to left and right (R) to right.
 - Check that all cords are connected securely.
 - Check that the proper types of cords have been used.

- 2. Check the positions of the various controls.**
(The numbers in parentheses refer to the numbers on pages 12 to 15).
- Turn the MASTER VOLUME control fully counterclockwise (minimum).
 - Set the INPUT BALANCE control Ⓢ to the center position, and the INPUT LEVEL control Ⓢ fully clockwise (maximum).

After checking, press the POWER switch Ⓢ and turn on the power.
Once the LED on the MASTER VOLUME control stops flashing during the several seconds while the sound is being muted, the set is in the normal operating mode.

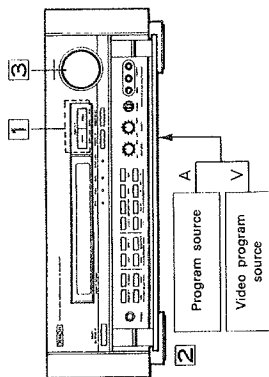
Note on Playback

The sound may be interrupted if buttons are pressed during playback. This is because the muting circuit has been activated to prevent switching noise, as is not a malfunction.

- When using the included remote control unit, press the corresponding buttons. For details, refer to Ⓢ REMOTE CONTROL UNIT on pages 19 to 27.

Playback

- 1. Playing Program Sources**
(When the video and audio source is the same)



- 1** Select the program source to be played using the AUDIO FUNCTION or VIDEO FUNCTION selector.

AUDIO FUNCTION selector (Setting the program source)

	MFD display
To listen to CDs	CD
To listen to AM or FM broadcasts	TUNER
To listen to the component connected to the AUX jacks	AUX
To listen to the tape deck connected to the TAPE-1 jacks	TAPE-1
To listen to the DAT or tape deck connected to the DAT/TAPE-2 jacks	DAT/TAPE-2

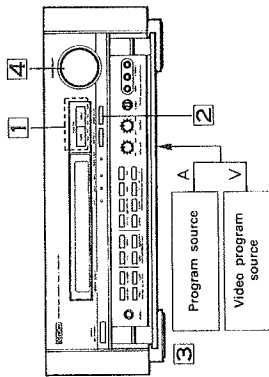
VIDEO FUNCTION selector (Setting the video program source)

	MFD display
To watch satellite broadcasts	DBS/BS
To watch TV	TV
To watch the picture of the video disc player connected to the VDP jacks	VDP
To watch the picture of the video deck connected to the VCR-1 jacks	VCR-1
To watch the picture of the video deck connected to the VCR-2 jacks	VCR-2
To watch the picture of a video movie camera equipped with a playback function connected to the VIDEO-AUX jacks (front panel)	V-AUX

< MFD display >

INPUT : ANALOG

- 2. Simulcast Playback**
(When the video and audio sources are different)



- 1** Select the audio program source using the AUDIO FUNCTION or VIDEO FUNCTION selector.
< MFD display >

INPUT : ANALOG

- 2** Press the VIDEO SELECT button and select the video program source.
< MFD display >

VIDEO SELECT : VCR-1

- 3** Start playback of both the program sources. For instructions on operations, refer to the manuals of the respective components.

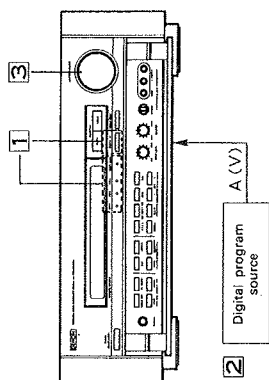
- 4** Adjust the volume.

*Simulcast playback is cancelled if the VIDEO FUNCTION selector button is pressed and a new video program source is selected during simulcast playback.

- 2** Start playback of the program source. For instructions on operations, refer to the manuals of the respective components.

- 3** Adjust the volume.

3. Playing Digital Sources



- 1 Press the DIGITAL IN selector button to select the digital program source to be played.
< MFD display >

INPUT :

*The sampling frequency indicators indicate the sampling frequency.

- 2 Start playback of the digital source.
For instructions on operations, refer to the manuals of the respective components.

- 3 Adjust the volume.
*If DBS/BS or VDP is selected with the DIGITAL IN selector button, the DBS/BS or VDP video input is automatically selected.

Recording

1. Recording Program Sources
(Recording the program source which is currently playing)

Follow steps 1 to 3 under "Playback".

• Simultaneous recording

The signals of the source selected with the FUNCTION selector buttons are output simultaneously from the TAPE-1, DAT/TAPE-2, VCR-1 and VCR-2 REC OUT jacks. When two tape decks and two video decks are connected and set to the recording mode, the same source can be recorded simultaneously onto all four decks.

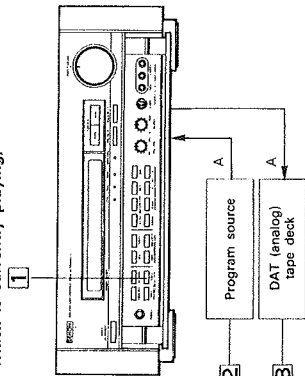
The source selected with the DIGITAL IN selector button is output unchanged from the digital DAT OUTPUT jacks.

These signals are not output from the analog REC OUT jacks.

To output signals from the analog REC OUT jacks, set the DSP effect recording mode (digital → analog).

For details, refer to page 32.

2. Independent Recording of Program Sources and Tape Copying
(Recording a program source other than the one which is currently playing)



- 1 Press the AUDIO REC SELECT button, and release it once the program source to be recorded independently is displayed.
The display changes in the following order:
CD → TUNER → AUX → TAPE-1 → DAT/TAPE-2
V.AUX → VCR-2 → VCR-1 → VDP → TV → VDP → BS/BS

< MFD display >

REC AUDIO :

*When this is done, no signals are output from the video REC OUT jacks.

To fix the signals output from the video REC OUT jacks, first follow the procedure in "3. Independent Recording of Video Program Sources", then perform the above operation.

- 2 Start playback of the program source to be recorded.

- 3 Start recording on the tape deck or DAT (analog).

For instructions on operations, refer to the manuals of the respective components.

*This mode is cancelled if the AUDIO REC SELECT button is pressed again.

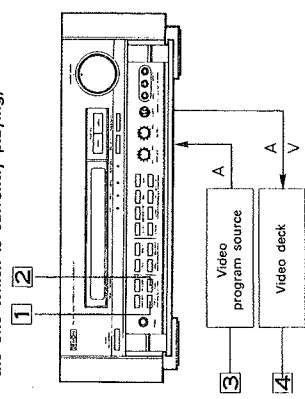
*DBS/BS, VDP or CD is selected, the digital input signals are output from the digital DAT OUTPUT jacks and the analog input signals are output from the analog REC OUT jacks.

Monitoring the Recording

The actual sound being recorded can be monitored when using a three-head tape deck.

To monitor the sound, first perform the above settings, then select the position at which the three-head deck is connected, TAPE-1 or DAT/TAPE-2.

- 3 Independent Recording of Video Program Sources and Independent Video Copying - 1
(Recording a video program source other than the one which is currently playing)



- 1 Press the VIDEO REC SELECT button, and release it once the program source to be recorded independently is displayed.
The display changes in the following order:
DBS/BS → TV → VDP → VCR-1 → VCR-2 → V.AUX

< MFD display >

REC VIDEO :

- 2 Start playback of the video program source to be recorded.

- 3 Start recording on the video deck.
For instructions on operations, refer to the manuals of the respective components.

*This mode is cancelled if the VIDEO REC SELECT button is pressed again.

4. Independent Recording of Video Program Sources and Independent Video Copying - 2
(Simulcast recording)

It is also possible to record the video program of one source and the audio program of another source onto one tape. This is called simulcast recording.

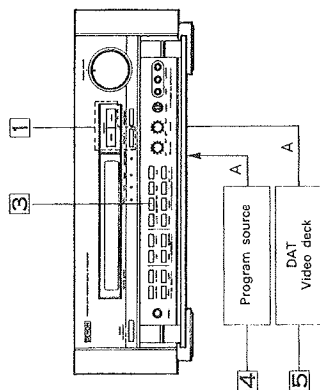
- 1 Press the VIDEO REC SELECT button, and release it once the video program source to be recorded is displayed.

- 2 Now press the AUDIO REC SELECT button, and release it once the audio program source to be recorded is displayed.

- 3 Start playback of the program sources.

- 4 Start recording on the video deck.

4. DSP Effect Recording (Recording signals with the DSP effect)



1 Select the program source to be recorded with the FUNCTION selector buttons (for analog recording) or the DIGITAL IN selector button (for digital recording).

2 Set the DSP mode and adjust the sound quality as desired.
(Refer to pages 33 to 51)

3 Press the DSP EFFECT REC button.
< INFO display >

DSP EFFECT REC

4 Start playback of the program source to be recorded.

5 Start recording on the tape deck (DAT) or video deck.

*This mode is cancelled when the DSP EFFECT REC button is pressed again or when the DIRECT button is pressed.

*The recording signals are output from both the analog REC OUT and the digital DAT OUTPUT jacks.

*DSP effect recording is not possible in the audio recording select mode or direct mode.
*When the input signals are the digital signals from a DAT, the recording signals are not output to the DAT OUTPUT jacks.

*The recording signals output from the digital DAT OUTPUT jacks can only be recorded once, and only on SCMS-compatible DATs.

9 DSP (Digital Signal Processor) FUNCTIONS

• DSP Modes

The AVP-5000 is equipped with a DSP (digital signal processor) for processing the sound field using digital signals. This DSP offers excellent performance (sound/noise ratio, channel separation, distortion, etc.). The parameters can be set according to the conditions in the listening room to recreate a more authentic listening atmosphere.

The AVP-5000 includes the following sound field modes:

1. Without DSP processing

(1) Direct

Front two-channel playback mode (no signals are output to the rear and center speakers)

When the input function is set to CD or VDP:
The CD direct or VDP direct (audio only) mode is set, and the input and output are linked directly.
For other input functions, the direct mode is set and the signals bypass the DSP.

2. DSP modes

(1) STEREO

Front two-channel playback mode (no signals are output to the rear and center speakers)

(2) SURROUND

Four- or six-channel playback mode using the center and rear speakers

— The surround modes are as follows: —

① DOLBY PRO LOGIC

② PERSONAL LOGIC

③ MONO MOVIE

④ CLASSIC CONCERT

Use this when playing video sources recorded in Dolby Surround. With this mode it is possible to create your own sound field, based on Directional Enhancement but adding various parameters. This mode is for playing monaural audio sources, adding a sense of expansion.

This mode creates a sound field simulating a large concert hall, rich in reverberation.

This mode is characterized by composed acoustics, and is perfect for playing classical music, etc.

The powerful reverberations of this mode produce a sound field which recreates the excitement of live concerts. This mode is effective for rock, popular music, etc.

This mode recreates the atmosphere of a church, with long reverberations and sound seeming to fade up towards the high ceiling.

This mode creates the sound field of a live house with a low ceiling and hard reverberations. The result is that the artist seems to be performing right before your eyes.

This mode simulates the sound in a vast stadium. Heavily delayed echoes are heard from all around you.

This mode produces the unique atmosphere of disco music, characterized by leaping bass. Various effects enhance the sense of rhythm.

* The effect may not be very strong for some sources. If this is the case, try other surround modes, not paying too much attention to their names, to find one which suits your tastes.

• Parameters

The parameters are important data for using the DSP, and the parameters which can be used differ according to the DSP mode.
(For the usable parameters, refer to the "Parameter Table" on page 38.)
The parameters are preset upon shipment from the factory, but can be changed to suit your tastes.

1. Independent functions

The functions which can be used depend on the DSP mode.

- (1) **Center modes (on main unit and remote control unit)**
(Normal, phantom, wide, and center off)
Select according to the speaker system.
(For details, refer to pages 41 and 42.)
- (2) **3-channel Logic (on remote control unit)**
(3-channel Logic and Pro Logic)
Use this to play video sources recorded in Dolby Surround without rear speakers.
(For details, refer to page 42.)
- (3) **A.V.S.E. (on main unit and remote control unit)**
(On/off)
Use this to emphasize the bass.
- (4) **Cinema (on main unit and remote control unit)**
(1, 2 and off)
This compensates the treble.
This mode is effective when the dialogues do not sound natural when watching movies.
(For details, refer to page 15.)
- (5) **Auto balance (on remote control unit) (On/off)**
This automatically corrects the difference in level between the input signals for the left and right channels.
- (6) **(Rear) Balance (on remote control unit)**
(Left channel up/right channel up ▸)
This corrects the output balance.
- (7) **Delay (on remote control unit)**
(▲ Up/down ▼)
This adjusts the delay time of the rear channel signals.
- (8) **Test tone (on remote control unit) (On/off)**
When on, a test tone is emitted to regulate the level, balance, delay time, etc., of the channels.
The tone output differs according to the DSP mode.
(For details, refer to pages 39 through 45.)
This does not function in the direct and stereo modes.

2. Main parameters (on main unit and remote control unit)

Select the main parameter.
Normally, the parameters are set by using the [MAIN] button to select the main parameter, the [SUB] button to select the sub parameter, then the [] and [] buttons to set the parameters.
The parameter setting mode is cancelled automatically if no button is pressed for approximately 4 seconds.

(1) EQ1 (Equalizer 1)

EQ1: FRONT & CENTER CHANNEL
< MFD display >
This is a tone control for adjusting the intermediate frequency (MID FREQ), the slope (Q) and the level (GAIN). (Parametric equalizer)
This parameter can be set for the front and center channels.

SUB parameters	
BASS GAIN	-10 ~ +10
(bass level adjustment)	2 dB STEP
MID FREQ (fo)	250, 500, 1K, 2K, 4K Hz
(intermediate frequency setting)	
MID Q (Q)	0.7, 1.5, 3.0
(slope of intermediate frequency)	
MID GAIN (G)	-5 ~ +5
(level of intermediate frequency)	1 dB STEP
TREBLE GAIN	-10 ~ +10
(treble level adjustment)	2 dB STEP

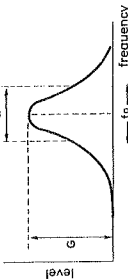
*The bass gain parameter cannot be adjusted when A.V.S.E. is on. In addition, the bass gain is 0 dB when A.V.S.E. is on.
*If the sound is distorted, either lower the input level control or lower the gain parameter.

(2) EQ2 (Equalizer 2)

< MFD display >
This parametric equalizer is only for the center channel.

SUB parameters	
FREQUENCY (fo)	250, 500, 1K, 2K, 4K
(frequency setting)	
Q (Q)	0.7, 1.5, 3.0
(slope of frequency)	
GAIN (G)	-5 ~ +5
(level of frequency)	1 dB STEP

*EQ2 can be adjusted with test tone pattern ④.
For details, refer to page 39.



(3) Initial delay

This parameter sets the distance between the sound source and reflecting walls (delay time).
The higher the value, the greater the distance seems.

SUB parameters	
INIT DELAY	0 ~ 50 msec
(0.2 STEP)	10 msec STEP

(4) Room size

This parameter sets the time interval between the early reflected sounds.
The higher the value, the larger the room seems, and the greater the sense of expansion.

SUB parameters	
ROOM SIZE	0.4 ~ 2.0
(0.2 STEP)	

(5) L.P.F. (low pass filter)

This filter decreases the high frequency component of the reverberations.
All frequencies above the set frequency are cut.
Set to a value at which the sound seems natural.
If set to "THROUGH", the filter is turned off.

SUB parameters	
L.P.F.	1, 2, 3, 5, 10 kHz, THROUGH

(6) ER (early reflection) level

This parameter adjusts the level of the early reflected sounds.
The higher the value, the greater the level of the early reflected sounds.
Use this to adjust the balance between the direct sound and the reflected sound.

SUB parameters	
ER LEVEL	0 ~ 15

(7) Reverberation level

This parameter adjusts the level of the reverberations.
The higher the value, the higher the level of the reverberations.
Use this together with the liveness and L.P.F. parameters to adjust to the desired level.

SUB parameters	
REVERB LEVEL	0 ~ 15

Parameter Table

Mode	Parameter	DOLBY PRO LOGIC	PERSONAL LOGIC	MONO MOVIE	CLASSIC CONCERT	ROCK CONCERT	CHURCH	JAZZ	STADIUM	DISCO	STEREO
Independent functions	(1) CENTER MODE	×	×	×	×	×	×	×	×	×	×
	(2) A. V. S. E	×	×	×	×	×	×	×	×	×	×
	(3) CINEMA	×	×	×	×	×	×	×	×	×	×
	(4) AUTO BALANCE	×	×	×	×	×	×	×	×	×	×
	(5) (REAR) BALANCE	×	×	×	×	×	×	×	×	×	×
	(6) DELAY	×	×	×	×	×	×	×	×	×	×
	(7) TEST TONE *	×	×	×	×	×	×	×	×	×	×
MAIN PARAMETER	(1) EQ 1	×	×	×	×	×	×	×	×	×	×
	(2) EQ 2	×	×	×	×	×	×	×	×	×	×
	(3) INIT. DELAY	×	×	×	×	×	×	×	×	×	×
	(4) ROOM SIZE	×	×	×	×	×	×	×	×	×	×
	(5) L. P. F.	×	×	×	×	×	×	×	×	×	×
	(6) ER LEVEL	×	×	×	×	×	×	×	×	×	×
	(7) REVERB LEVEL	×	×	×	×	×	×	×	×	×	×
	(8) LIVENESS	×	×	×	×	×	×	×	×	×	×
	(9) EFFECT	×	×	×	×	×	×	×	×	×	×
	(10) SURROUND SIGNAL	×	×	×	×	×	×	×	×	×	×
	(11) ADAPTIVE MATRIX	×	×	×	×	×	×	×	×	×	×
	(12) SEPARATION	×	×	×	×	×	×	×	×	×	×
	(13) SURR. LPF	×	×	×	×	×	×	×	×	×	×
	(14) MODIFIED B	×	×	×	×	×	×	×	×	×	×
	(15) SOUND SIM.	×	×	×	×	×	×	×	×	×	×
	(16) DELAY ON/OFF	×	×	×	×	×	×	×	×	×	×
	(17) DYNAMICS	×	×	×	×	×	×	×	×	×	×

*1 Refer to pages 39 and 40 for the test tone patterns.
 *2 These are [SUB] parameters of [MAIN] parameter "SOUND SIM".
 *3 Δ is for "DYNAMICS", and only the expander is valid.
 *4 Always on when digital input signals are selected.

Test Tones

When the **[T.TONE]** button on the remote control unit is pressed, test tones are emitted for regulating the level, balance and delay time for the various channels.
 Adjust the volume, etc., so that the levels and balance of the different channels are uniform for the listening position.
 Press the **[T.TONE]** button again to turn this function off. (The button will not function when in the direct or stereo mode.)
 There are ten test tone patterns. Press the **[T.M.]** button to switch the patterns.

Example of MFD display

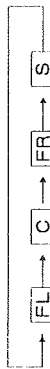
TEST TONE → FL C FR SR SL

[FL] : Front left channel
[C] : Center channel
[FR] : Front right channel
[SR] : Rear right channel
[SL] : Rear left channel
[S] : Both rear channels

1. Auto mode

The test tones are emitted at 4-second intervals for the first two times around, at 2-second intervals thereafter.

Pattern ①



- DSP modes
- DOLBY PRO LOGIC (3CH LOGIC)
- PERSONAL LOGIC
- For Dolby 3-channel Logic
- Output level and balance adjustment

Pattern ②



- DSP modes
- MONO MOVIE
- CLASSIC CONCERT
- ROCK CONCERT
- CHURCH
- JAZZ
- STADIUM
- DISCO
- Output level and balance adjustment

Pattern ③

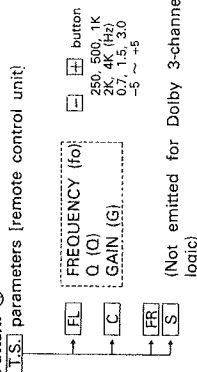


- DSP modes
- MONO MOVIE
- CLASSIC CONCERT
- ROCK CONCERT
- CHURCH
- JAZZ
- STADIUM
- DISCO
- Output level and balance adjustment

2. Manual mode

This mode is for manual switching.
 Press the **[T.S.]** button to switch.

Pattern ④



*EQ2 adjustments performed.

When the **[T.S.]** button is pressed, the test tone is emitted from the center three times:
 For the first time, adjust the frequency (fo) with the **[Q]** and **[G]** buttons.
 For the second time, adjust the slope (Q) with the **[Q]** and **[G]** buttons.
 For the third time, adjust the level (G) with the **[Q]** and **[G]** buttons.
 The fourth time, the test tone switches to the front right channel.
 Adjust the three parameters so that the tone of the sound from the center speakers is the same as for other channels.

• DSP modes

- DOLBY PRO LOGIC (3CH LOGIC)
- PERSONAL LOGIC
- EQ2 adjustment not performed.
- EQ2, output level and balance adjustment

Pattern ⑤

- **[FL] + [FR]**
- DSP modes
- All DSP modes
- Front left/right balance adjustment
- < MFD display >

TEST TONE → FL → FR

- Pattern ⑥**
T.S. Parameters
 → FL → C → FR → SR → SL
- Pattern ⑦**
T.S. Parameters
 → FL → C → FR → SR → SL
- DSP modes
 - MONO MOVIE
 - CLASSIC CONCERT
 - ROCK CONCERT
 - CHURCH
 - JAZZ
 - STADIUM
 - DISCO
 - Output level and balance adjustment

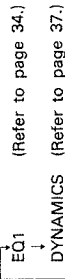
DSP Operating Instructions

1. Stereo - Front 2-channel playback mode

< MFD display >

MODE . . . STEREO

- ① **MAIN** button (on main unit and remote control unit)
 Select and set the parameter.

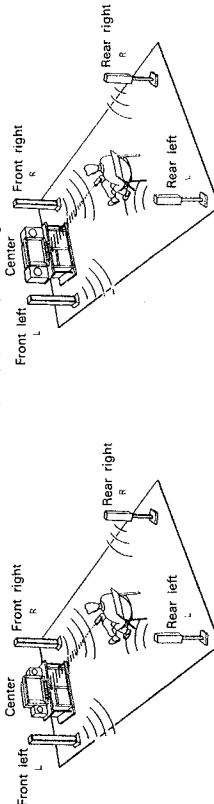


2. Surround - 4- and 6-channel playback mode

SURROUND MODE button (on main unit and remote control unit)
 The DSP surround mode changes in order each time this button is pressed.

Speaker arrangement and center mode

Ideally, center speakers should be used to fully enjoy Dolby Pro Logic Surround sound.



Normal mode

This mode is best when the center speakers are smaller than the left and right speakers. Signals of 100Hz or less, which have virtually no effect on directivity, are divided among the left and right channels, with signals of greater than 100Hz output from the center speakers, giving the left and right channels a richer bass.

Wide mode

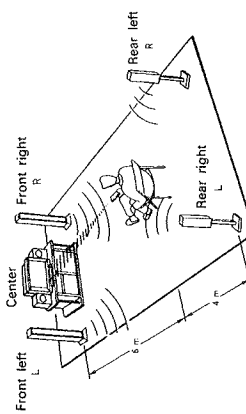
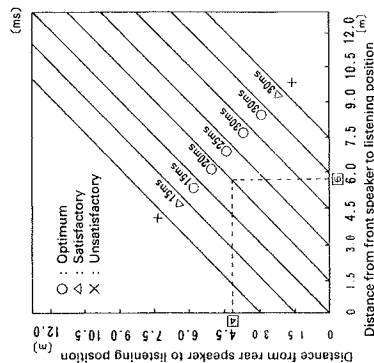
This mode is best when the center speakers are of the same grade as the left and right speakers. All frequency ranges, from low to high, are output from the center speakers, creating an even more exciting sound field.

- DSP modes
 - DOLBY PRO LOGIC (Not for 3-channel Logic)
 - PERSONAL LOGIC

< MFD display >

TEST TONE PULSE

Listening position and optimum delay time for Dolby Pro Logic Surround playback:



- Pattern ⑥**
C + S
- DSP modes
 - DOLBY PRO LOGIC (Not possible for 3-channel Logic)
 - PERSONAL LOGIC
 - For Dolby Pro Logic, EQ2 adjustment possible with the **C** and **S** buttons in the same way as for pattern ④.
 - (Not possible for Personal Logic)
 - The center/rear balance and output level can be adjusted more accurately than with pattern ④.

< MFD display >

TEST TONE → C → S

Pattern ⑦

All channels simultaneously

- DSP modes
 - All DSP modes
- For Dolby Pro Logic, EQ2 adjustment possible with the **C** and **S** buttons in the same way as for pattern ⑥.
- Total balance adjustment (not possible in the Personal Logic mode)

< MFD display >

TEST TONE → FL → C → FR → SL → SR

Pattern ⑧

Pulse tone - all channels simultaneously

- **T.S. Parameters**
 - DELAY - Left channel adjustment
 - DELAY - Right channel adjustment *

*The adjustable range differs according to the DSP mode. For details, refer to pages 43 and 44.

- Adjustment
 1. When this mode is set, pulses with a specific period are output from all channels. Perform the following adjustments referring to the diagram at the right.
 2. Make the delay time long enough that the output from the rear channels is not heard simultaneously with the output from the other channels.
 3. Gradually reduce the delay time, and stop at a point where it is almost hard to distinguish whether the outputs are simultaneous or not.
 4. This is the optimum delay time value. In this mode, the delay times for the left and right channels can be set separately. If the left and right rear speakers are different distances from the listening position, set the delay times separately.

• Adjusting the input balance

The input balance must be adjusted in order to use the Pro Logic function properly.

1. Auto balance mode

Usually turn the auto balance switch on when listening in the Dolby Pro Logic or Personal Logic mode.
Check that "AUTO BALANCE : ON" is displayed on the MFD.

For the Dolby Pro Logic mode, the auto balance mode is always turned on when a digital input signal is selected.

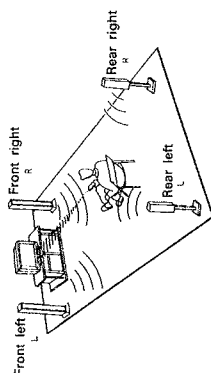
2. Manual mode

Adjust the input balance as follows when not using the auto balance mode when analog audio input signals are selected:

- ① Set the Dolby Pro Logic Surround mode.
- ② Turn the center mode off.
- ③ Play the dialogue of a movie, etc., and adjust the input balance control so that the sound leaking from the front and rear speakers is minimum.
- ④ The adjustment is now complete.
Set the center mode according to the speaker systems.

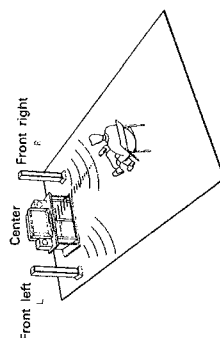
• Adjusting the input level

Set the input level control so that the OVERLOAD LED only lights occasionally when the input is maximum when an analog audio input signal is selected.
If the sound still seems distorted, lower the input level until it sounds normal.



Phantom mode

Phantom mode: Use this mode when there are no speakers for the center channel. The directivity enhancing circuit produces signals which are electrically positioned in the center, producing an exciting sound field even without using center speakers.



3-channel Logic mode

3-channel Logic mode: Use this mode when not using speakers for the rear channel.

(1) Dolby Pro (3-channel) Logic

This mode is for playing sources recorded in Dolby Surround.
< MFD display >

MODE . . . DOLBY PRO LOGIC

- ① ☒ **CENTER** button (on main unit and remote control unit) (Refer to page 41.)
Set the Dolby center mode according to the center speaker(s) being used.

< MFD display >

CENTER MODE [] Center mode

- ② **T.TONE** button (on remote control unit)
Adjust the level, balance, EQ2 parameters, and delay time balance of the various speakers.
• **T.M.** button (on remote control unit)
→ Pattern ① → Pattern ④ → Pattern ⑤ → Pattern ⑥ → Pattern ⑦ → Pattern ⑧

(Refer to pages 39 to 41.)

- ③ **MAIN** button (on main unit and remote control unit)
Select and set the parameters.
→ EQ1 → EQ2 (Refer to pages 34 and 35.)

- ④ **DELAY** button (on remote control unit)
Set the delay time (from 15 to 30msec.)
(Resetting is not necessary if test tone pattern ⑤ is used.)

- ⑤ Start playback on the source.

- ⑥ **AV.S.E.** button (on main unit and remote control unit)
CINEMA button (on main unit and remote control unit)
(Refer to page 34.)

< MFD display >

A. V. S. E. : CINEMA

- AUT. BAL.** button (on remote control unit)
(Refer to page 42.)
Use as desired.

AUTO BALANCE : []

(2) Personal Logic Directional Enhancement + various parameters

< MFD display >

MODE . . . PERSONAL LOGIC

- ① ☒ **CENTER** button (on main unit and remote control unit) (Refer to page 41.)
Same as for Dolby Pro Logic.

- ① **MAIN** button (on main unit and remote control unit)
Select and set the parameters.
→ INT. DELAY → ROOM SIZE → L.P.F. → ER LEVEL → REVERB LEVEL
EQ1 → EFFECT ← LIVENESS
(Refer to pages 35 and 36.)
- ② **T.TONE** button (on remote control unit)
Adjust the level and balance of the various speakers.
T.M. button (on remote control unit)
→ Pattern ② → Pattern ③ → Pattern ④ → Pattern ⑤ → Pattern ⑥
(Refer to pages 39 and 40.)

③ Start playback on the source.

(4) **Disco**
Disco sound field
< MFD display >

MODE...DISCO

- ① **MAIN** button (on main unit and remote control unit)
Select and set the parameter.
→ EQ1 → DYNAMICS → INIT. DELAY → ROOM SIZE → L.P.F.
REVERB LEVEL ← ER LEVEL
(Refer to pages 34 and 35.)

- ② **T.TONE** button (on remote control unit)
Same as (3), MONO MOVIE through STADIUM.

③ Start playback on the source.

- ② **MAIN** button (on main unit and remote control unit)
Select the parameter.
→ SURROUND SIGNAL → ADAPTIVE MATRIX → SEPARATION → DELAY ON/OFF
SOUND SIM → MODIFIED B. → SUR. L.P.F.
(Refer to pages 36 and 37.)
**"ADAPTIVE MATRIX" (on/off) can only be set when the surround signal is set to "L-R". If set to "L+R", the adaptive matrix is automatically set to "OFF". In addition, "SEPARATION" can only be set when the adaptive matrix is set to "ON". If the adaptive matrix is set to "OFF", no signals are output from the center speakers.
- ③ **T.TONE** button (on remote control unit)
Adjust the level, balance and delay time balance of the various speakers.
T.M. button (on remote control unit)
→ Pattern ① → Pattern ④ → Pattern ⑤ → Pattern ⑥ → Pattern ⑦ → Pattern ⑧
(Refer to pages 39 and 40.)

- ④ **DELAY** (on remote control unit)
Set the delay time (from 0.5 to 120msec.)
(Only when DELAY is turned on.)
Resetting is not necessary if test tone pattern ⑧ is used.)

⑤ Start playback on the source.

< MFD display >

A.V.S.E. : CINEMA

AUTO BALANCE :

< MFD display >

MODE...MONO MOVIE
MODE...CLASSIC CONCERT
MODE...ROCK CONCERT
MODE...CHURCH
MODE...JAZZ
MODE...STADIUM

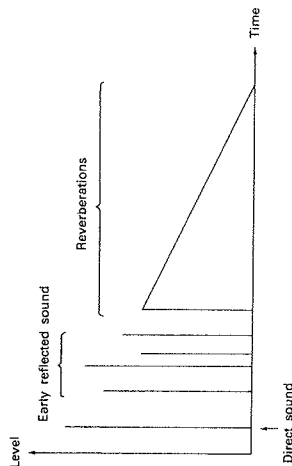
- (3) Mono movie - Sound field for monaural audio
Classic concert - Sound field of a classical music hall
Rock concert - Sound field of a rock concert
Church - Sound field of a church
Jazz - Sound field of a jazz club
Stadium - Sound field of an outdoor stadium

- The parameters which can be used for the above six DSP surround modes are the same.
- Set the parameters according to the DSP surround mode.
- The effect will not be the same for the different surround modes even if the same data are set, since each mode has specific internally set parameters.

Technical Advice

1. "Sound field"

The sound that we hear in concert halls or in everyday life does not only consist of sound coming directly from the sound source ("direct sound"). Sound scatters in all directions and is reflected off walls and ceilings, and this sound also reaches our ears as reflected sound with a time delay. There are two major types of reflected sound. One is called "early reflected sound". This is sound we hear after it has reflected off a wall, etc., once or several times. These sounds are like echoes, but since their time lag with respect to the direct sound is very short, they are not perceived as different sounds, but have the effect of making the direct sound seem more expansive and thicker. The other type of reflected sound is called "reverberation". This is sound which reaches our ears after a complex series of reflections off walls, etc. The reverberation particularly affects the richness of the sound. The following diagram shows these different types of sounds.



This diagram is only one example. Sound takes a particular form depending on the surrounding environment, that is the size of the room, the distance to the walls, the shape and materials of the walls, and the position in the room from which we are listening. We perceive the reflected sound accompanying the direct sound as the sound which is characteristic of that environment. This characteristic sound is called the "sound field". Normally we do not perceive this consciously. The AVP-5000 uses a new DSP (digital signal processor) to recreate various sound fields.

2. Sound fields created with the DSP

Music and movie sources are now available to us in a variety of forms, from LDs, CDs and videos, to satellite broadcasts. A certain sound field has already been added to most of these sound sources. For both live recordings and studio recordings, the environment in which the sound has been recorded influences the resulting recording, since for example reverberations are recorded along with the direct sound. However, in many cases we would like the sound to be richer, for example we want to recreate the exciting atmosphere of a live concert. By using the DSP, it is possible to create more real sound with a greater sense of atmosphere.

The DSP creates sound fields based on the source. Because of this, various adjustments are needed in order to create a sound field suited to the source, which already incorporates a certain sound field. The AVP-5000 offers various parameters so that the listener can make these adjustments. Values have already been preset at the factory for the different parameters of each mode, but you can change these parameters to achieve your own original sound fields.

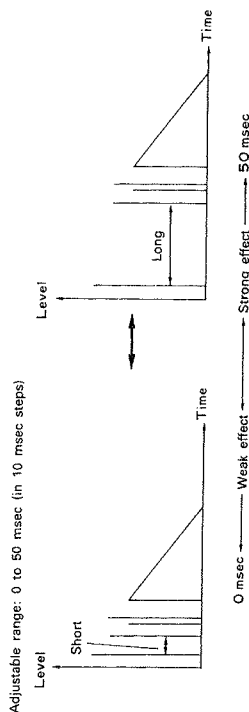
The AVP-5000 includes the following parameters for adjusting the sound field:

- (1) Initial delay
- (2) Room size
- (3) Low pass filter
- (4) Early reflection level
- (5) Reverberation level
- (6) Liveness
- (7) Effect

3. Description of parameters

(1) Initial delay

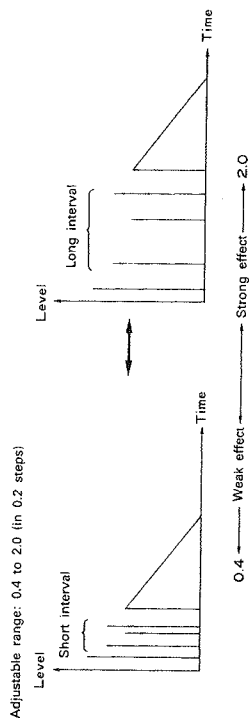
This parameter sets the distance between the sound source and reflecting walls (delay time).



This adjusts the time difference between the direct sound and the early reflected sound. This can be thought of as the distance from the sound source to the wall at the back of the stage. The higher the value, the greater the depth of the stage. However, if the initial delay is set too high when the ER level (4) is great, the direct sound and early reflected sound are heard separately, making the direct sound seem unclear. Normally set the initial delay between 0 and 30 msec.

(2) Room size

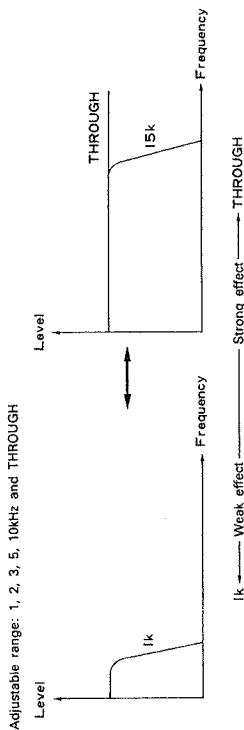
This parameter sets the time interval between the early reflected sounds.



This parameter controls the size of the room. The higher the value, the greater the interval between early reflected sounds and the greater the time difference between the direct sound and early reflected sounds. In other words, the time from which a certain sound reflects off the wall and reaches the listener's ear increases, as if the room were larger. If the value is low, the room seems smaller. With this parameter, the difference between the minimum and maximum values is quite pronounced. If the liveness parameter (6) is set high, this parameter can be used to recreate a vast hall more expansive than any of the preset modes.

(3) **Low pass filter**

This filter decreases the high frequency component of the reverberations. All frequencies above the set frequency are cut. If set to "THROUGH", the filter is turned off.

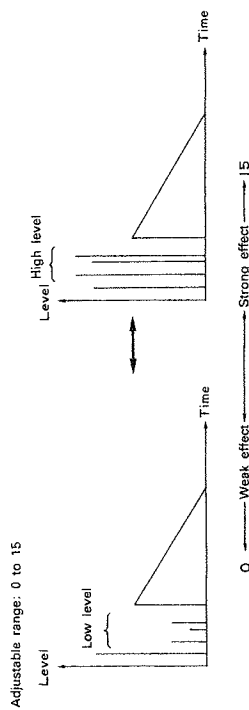


The quality of the reverberations can be varied by adjusting this parameter. When a higher value or "THROUGH" is set, the resulting sound is like the sound in a room with walls made of a hard material such as concrete, and if a smaller value is set, the sound is softer, as if the walls were made of an absorbent material.

This parameter seems similar to the liveness parameter (6), but it does not change the reverberation time. Balance these two parameters to achieve a sound suited to your tastes.

(4) **ER (early reflection) level**

This parameter adjusts the level of the early reflected sounds. The higher the value, the greater the level of the early reflected sounds.



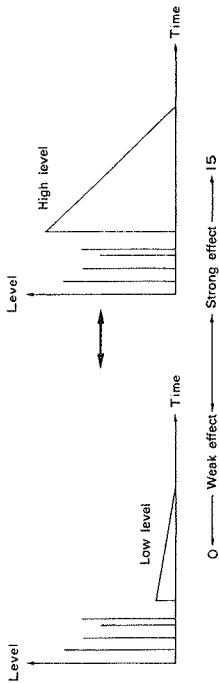
Normally the early reflected sound consists of anywhere from several sounds to several tens of sounds. Specific level data is set for each of the different modes. Depending on the sound source, the overall sound may seem unnatural if the early reflected sound level is too high, and if the level is too low, the effect is barely noticeable. In such cases, use this parameter to control the overall level of the early reflected sound while maintaining the balance between the different early reflected sounds, that is the specific character of the sound overall.

The sound may seem unnatural if this parameter is set too high or too low. In particular, if set to 0, no early reflected sound is produced at all. Avoid setting this parameter in such a way that only reverberations are heard.

(5) **Reverberation level**

This parameter adjusts the level of the reverberations. The higher the value, the higher the level of the reverberations.

Adjustable range: 0 to 15



The parameters used for controlling the reverberations are as follows:

Liveness (6) - Varies the length of the reverberations

L.P.F (3) - Varies the quality of the reverberations

Reverberation level (5) - Varies the level of the reverberations

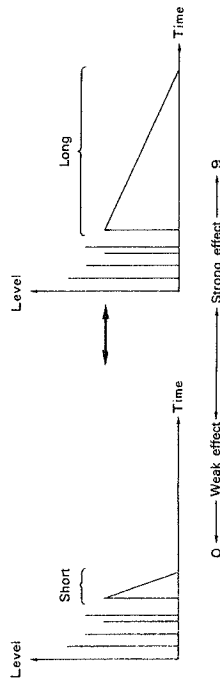
When creating your own original mode, it is important to achieve a good balance between these three parameters.

For the stadium mode, it is sometimes more effective to set the reverberation level to 0 (no reverberations).

(6) **Liveness**

This parameter simulates the materials of the walls in a hall and sets the way in which the sound reverberates.

Adjustable range: 0 to 9

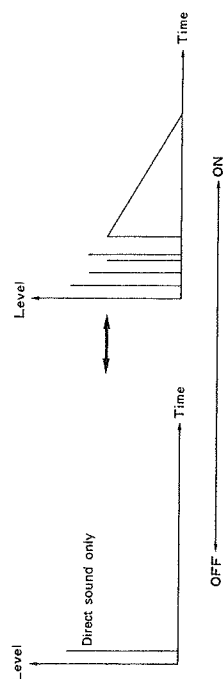


The liveness parameter controls the length of the reverberations. The higher the value, the harder the wall material, and the longer the reverberations. For some modes (church, classic concert, etc.), the effect is not to make the walls seem harder, but rather to make the ceiling seem higher. The quality of the reverberations differs according to the mode. Specific data affecting the quality of the reverberations are set for the different modes, so the effect may not be the same for two modes. Inversely, this sound quality greatly affects the characteristic sound of the different modes.

As stated previously, the reverberation is very much related to the richness of the sound. Use the liveness, low pass filter and reverberation level parameters to create your own original modes.

(7) Effect

This parameter turns the DSP sound field on and off. When set to "OFF", the sound is the same as in the direct mode, and only direct sound is produced.



Use this parameter to check the effect of the DSP sound field. Set to "OFF" to produce only direct sound. No early reflected sound or reverberation is produced, regardless of the settings of the different parameters. This parameter makes it easy to check the effect, since the DSP sound field can be turned on and off without changing other parameters. The effect parameter automatically turns back on if other parameters are changed when the effect parameter is turned off.

4. Creating your own original sound fields

Here we describe the procedures for creating your own original sound fields and some general examples. ① **Select the surround mode to be used as a base.**

Here, select the portions which cannot be varied with the parameters, such as the quality of the reverberations (this can be adjusted to a certain extent with the L.P.F. parameter, but includes certain elements which cannot be adjusted).

② Adjust the room size and initial delay parameters

First adjust the room size parameter. At this stage, the size of the sound field is determined to a certain extent. It may be best to set the reverberation level parameter to "0" here so as not to get confused. After roughly setting the room size, adjust the initial delay parameter.

③ Adjusting the L.P.F. parameter

Use the L.P.F. parameter to set the quality of the reverberations. Set the liveness and reverberation level parameters to somewhat high values at this time so that the reverberations are easy to hear.

④ Adjusting the liveness parameter

Use the liveness parameter to adjust the length of the reverberations. This parameter together with the room size parameter can be used to simulate the atmosphere of the sound field to a certain extent, such as the type of hall, the materials of the walls, etc. Normally, set the liveness parameter to a higher value when the room size parameter is high.

⑤ Overall adjustment

Use the ER level and reverberation level parameters to adjust the balance between the direct sound and the early reflected sounds and reverberations. The atmosphere changes quite a bit simply by adjusting this balance.

If you have trouble achieving the desired effect, try going back to the previous step. It is especially valuable to return from step ② to step ① and from step ④ to step ③, since these steps greatly affect one another. Certain combinations can produce unexpected results.

The factory-set modes have been given names according to the type of music the sound field is best suited for. When creating your own original sound fields, however, do not pay too much attention to these names — try different modes to find the one best suited for the effect you want to achieve.

5. Initial settings of parameters

The initial settings of the various parameters are as shown below. Press the [CLEAR] key to set the parameters back to these initial values.

PARAMETER	SURROUND MODE		PERSONAL LOGIC				CLASSIC CONCERT	ROCK CONCERT	CHURCH	JAZZ	STADIUM	DISCO	STEREO
	DOLBY PRO LOGIC		OFF	THEATER	LIVE	DYNAMOVIE							
(1) EQ1	BASS GAIN (dB)	0	-	-	-	0	+2	0	+4	0	+2	+4	0
	MID FREQ. (kHz)	1	-	-	-	1	2	1	2	1	1	1	1
	MID Q	1.5	-	-	-	1.5	1.5	1.5	0.7	1.5	1.5	1.5	1.5
	MID GAIN (dB)	0	-	-	-	0	-1	0	+2	0	0	0	0
(2) EQ2	TREBLE GAIN (dB)	0	-	-	-	0	0	0	-2	0	0	+2	0
	FREQUENCY (kHz)	1	-	-	-	-	-	-	-	-	-	-	-
	Q	1.5	-	-	-	-	-	-	-	-	-	-	-
	GAIN (dB)	0	-	-	-	-	-	-	-	-	-	-	-
(3) INT. DELAY	(ms)	-	-	0	0	-	0	0	0	0	0	0	-
(4) ROOM SIZE		-	-	1.0	1.0	-	1.0	1.0	1.0	1.0	1.6	1.0	-
(5) L.P.F. (kHz)		-	-	10	10	-	3	3	3	3	3	10	-
(6) ER LEVEL		-	-	10	10	-	10	10	10	10	10	10	-
(7) REVERB LEVEL		-	-	10	10	-	4	10	8	10	8	0	10
(8) LIVENESS		-	-	-	-	-	2	6	4	8	1	8	-
(9) EFFECT		-	-	-	-	-	ON	ON	ON	ON	ON	ON	-
(17) DYNAMICS		-	-	-	-	3	-	-	-	-	-	3	0

The following parameters are also available.

- (10) SURROUND SIGNAL _____ L-R
- (11) ADAPTIVE MATRIX _____ ON
- (12) SEPARATION _____ HIGH
- (13) SURROUND L.P.F. _____ 7 (kHz)
- (14) MODIFIED-B _____ ON
- (15) SOUND SIM _____ THEATER
- (16) DELAY ON/OFF _____ ON

* Disco mode set to "COMPRESSOR - 3". Stereo mode set to "LINEAR".

The "-" mark indicates that there is no such parameter.

10 ON-SCREEN DISPLAY

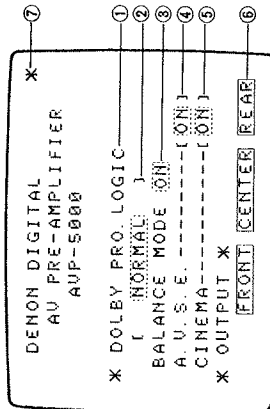
The operating modes are displayed on the monitor TV when the buttons are pressed (except for the PANEL button on the remote control unit). After the power is turned on, the display changes as follows each time the ON SCREEN button on the remote control unit is pressed:
 Screen 1 → Screen 2 → Screen 3 → Screen 4 → Screen 5 → Screen 6 → Off
 (The selected picture appears in the background, but if no video signals are being input, the background is an internally set color.)
 When the power is turned on, screens 1 and 2 appear for approximately 6 seconds, then turn off automatically. When buttons are pressed, a message corresponding to that button appears for approximately 4 seconds, then turns off automatically.

NOTES:

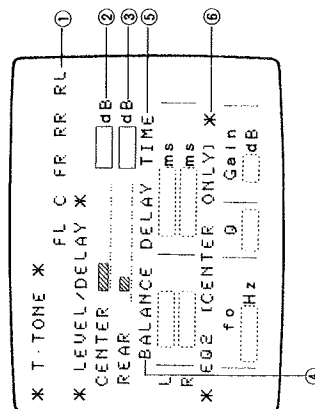
- The on-screen signals are only output from the MONITOR 2 output jacks (S-jack and video jack). These signals are not recorded onto the VCRs connected to the VCR-1 and VCR-2 jacks.
- When a video source is selected but no video signals are being input (color background), the color background turns off after the on-screen message turns off.

The following are examples of the on-screen display:

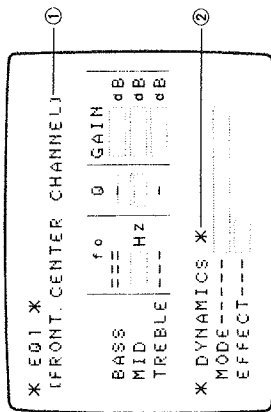
Screen 1 – Surround mode display



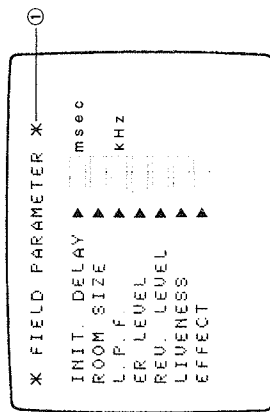
Screen 2 – Level display, etc.



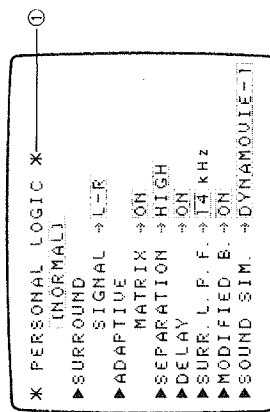
Screen 3 – EQ1 and dynamics display



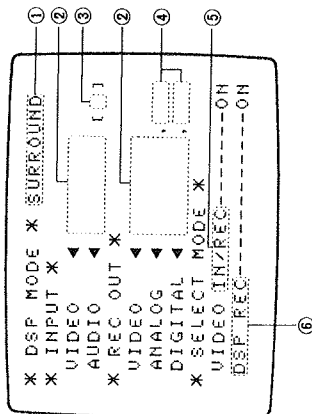
Screen 4 – Field parameter display



Screen 5 – Personal logic display

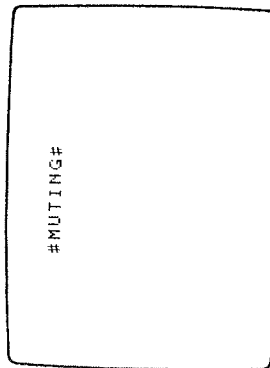


Screen 6 – Input/output display



- ① **DSP mode**
- ② **Input/output function**
Functions of input signals for pre-out output ("INPUT") and recording output ("REC OUT") indicated.
- ③ **Analog/digital indicators**
This indicates whether the pre-out output signals are analog or digital inputs.
- ④ **Analog/digital conversion indicators**
D → D : Digital → Digital
D → A : Digital → Analog
A → D : Analog → Digital
A → A : Analog → Analog
- ⑤ **Video select mode**
- ⑥ **Audio select mode**
Only indicated when select mode specified.

Screen 7 – Muting display



- ① **Muting**
Displayed during muting.

11 LAST FUNCTION MEMORY

- The AVP-5000 includes a last function memory, which stores the input and output modes set when the power is turned off.
- This function eliminates the need for making complex settings each time the power is turned back on.
- The AVP-5000 also includes a back-up memory function, which protects the memory for approximately 1 day when the power cord is unplugged.

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12 TROUBLESHOOTING

Check the following before deciding that the unit is malfunctioning

- Are connections proper?
- Are you operating according to instructions in the manual?
- Are the speakers and players operating properly?

Symptom	Cause	Measures	Page
LED does not light and no sound is produced when POWER switch turned on.	Power cord not plugged in securely.	Check that power cord is plugged in securely.	8-9
LED lights but no sound is produced.	- Incomplete speaker cord connections. - Output turned off. - Input selector not set at proper position. - Volume control turned to minimum. - Muting is on. - Digital signals not input Digital input selected.	- Connect securely. - Select FRONT, CENTER or REAR OUTPUT button on remote control unit. - Set to proper position. - Turn up to an appropriate level. - Press remote control unit MUTING button to turn muting off. - Input digital signals or select input jacks to which digital signals are being input.	12 23 26-29 18-20 35 13
No sound produced from one side.	- Incomplete speaker cord connections. - Incomplete input/output cord connections. - Poor left/right balance setting.	- Connect securely. - Connect securely. - Adjust balance.	12 8-13 20
Position of instruments reversed for stereo mode.	Left and right speakers or left and right input/output cords connected inversely.	Check left/right connections.	8-13
Unit does not operate properly when remote control unit operated (when USE lit).	- Batteries are worn. - Remote control unit too far from main unit. - Obstacle between remote control unit and main unit. - Codes not properly stored at that button. - Wrong button being pressed.	- Replace batteries with new ones. - Move remote control unit closer. - Remove obstacle. - Store codes again. - Press desired button.	30 30 30 32 31-38
Unit does not operate properly when remote control unit operated (when USE not lit).	- Codes not properly stored at that button. - No codes stored at that button. - Batteries are worn. - Batteries inserted backwards (⊖ and ⊕ sides inverted).	- Store codes again. - Store codes. - Replace with new batteries. - Insert batteries properly.	32 32 30 30

SPECIFICATIONS

● Audio section

(Analog)

Input sensitivity/input impedance:	150 mV/33 kohm (VDP, CD) 150 mV/47 kohm (others)
Frequency response:	10 ~ 100 kHz: +0, -3 dB (DIRECT mode)
S/N:	105 dB (DIRECT mode)
Distortion:	0.005% (20 Hz~20 kHz) (DIRECT mode)
Rated output/maximum output:	1 V/8 V
Maximum headphone output:	284 mW (8 ohms)

(Digital)

D/A output:	Rated output - 2 V (at 0 dB playback) Total harmonic distortion - 0.005% (1kHz, at 0 dB) S/N ratio - 102dB Dynamic range - 96dB Format - Digital audio interface
Digital input:	

● Video section

(Standard video jacks)

Input/output level and impedance:	1Vp-p, 75 ohms
Frequency response:	0.5 Hz ~ 20 MHz: +0, -3 dB (MONITOR OUT 1) 0.5 Hz ~ 15 MHz: +0, -3 dB (others)

(S-video jacks)

Input/output level and impedance:	Y (brightness) signal - 1 Vp-p, 75 ohms C (color) signal - 0.286 Vp-p, 75 ohms
Frequency response:	0.5 Hz ~ 20 MHz: +0, -3 dB (MONITOR OUT 1) 0.5 Hz ~ 15 MHz: +0, -3 dB (others)

● General

Power source:	120 VAC, 60 Hz (for U.S.A. model) 110/220 VAC, 50/60Hz (for multi-voltage model)
Power consumption:	65 W (for U.S.A. model), 50 W (for multi-voltage model)
Maximum external dimensions:	434 (W) × 140 (H) × 408 (D) mm (17-3/32") × (5-5/16") × (16-1/16")
Weight:	14 kg

● Remote control unit (RC-771)

System remote control with learning function

Learning function buttons

System call buttons:	5 (max, 15 codes per button)
Program:	Max. 165

Denon system codes

Video disc player:	8 buttons
CD player:	8 buttons
Cassette deck:	8 buttons
DAT:	8 buttons
Tuner:	9 buttons
Receiver:	9 buttons

Batteries:	R03/UM-4/AAA (four batteries)
External dimensions:	78 (W) × 235 (H) × 23 (D) mm
Weight:	285 g (including batteries)

* For improvement purposes, specifications and functions are subject to change without advanced notice.

DISASSEMBLY

(Apply the reverse steps when assembling)

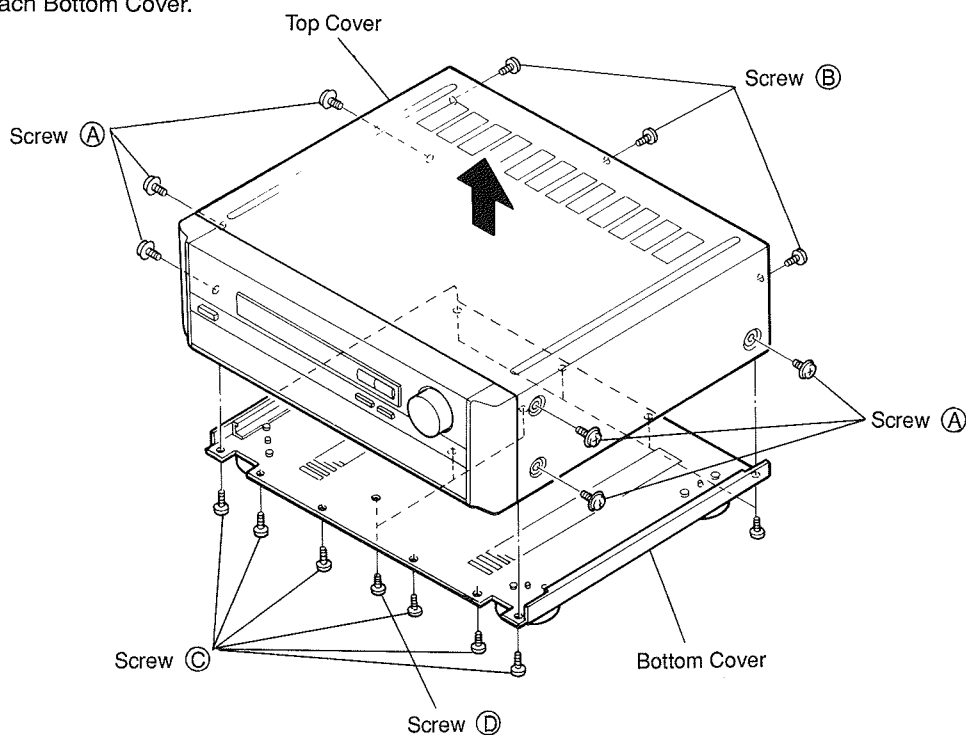
1. Top Cover and Bottom Cover

Top Cover

Remove 6 screws (A) on both sides and 3 screws (B) on rear panel side. Then while stretching both sides sidewise by little, detach Top Cover in arrow direction.

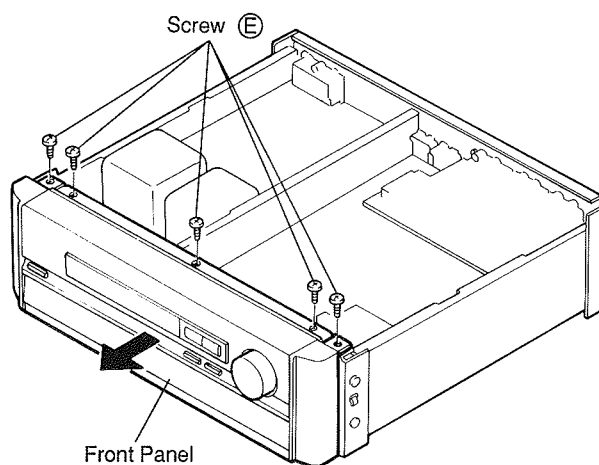
Bottom Cover

Remove 10 screws (C) as well as 3 screws (D) on front and rear sides, and detach Bottom Cover.



2. Front Panel

Remove 5 screws (E) on upper side of Front Panel and detach Front Panel.



3. Rear Panel

Remove 35 screws (F) and detach Rear Panel.

4. P.W.B.'s

a) P.W.B.'s detachable from Top Cover side:

How to detach Volume P.W.B..

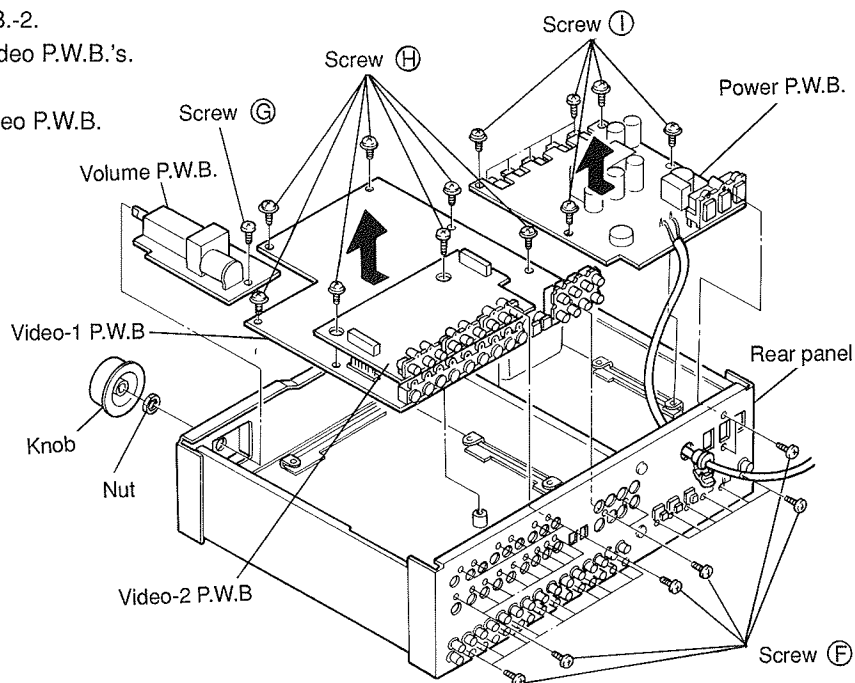
- 1) Remove knobs and nuts.
- 2) Remove screw (G) and pull out P.W.B. toward rear panel side.

How to detach Video P.W.B.-1 and P.W.B.-2.

Remove 7 screws (H) and detach Video P.W.B.'s.

How to detach Power P.W.B..

Remove 9 screws (I) and detach Video P.W.B.



b) P.W.B.'s detachable from Bottom Cover side:

How to detach Digital-2 FL PL P.W.B..

Remove P.W.B. holders at four places and detach Digital-2 FL P.W.B..

How to detach Digital-1 P.W.B.

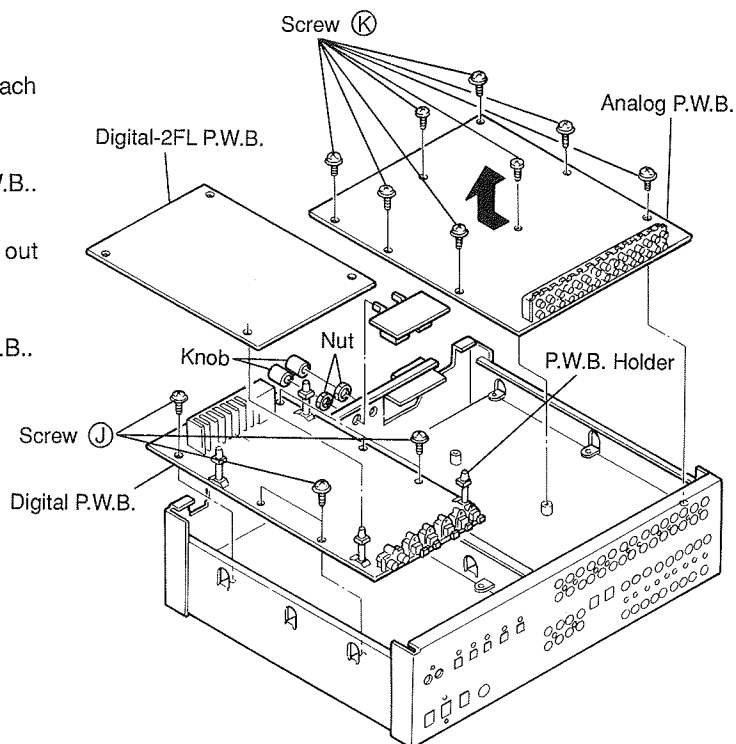
Remove 6 screws (J) and take out Digital-1 P.W.B..

How to detach Input Level Balance P.W.B..

Remove 2 knobs and nuts, and draw P.W.B. out from Front chassis.

How to detach analog P.W.B..

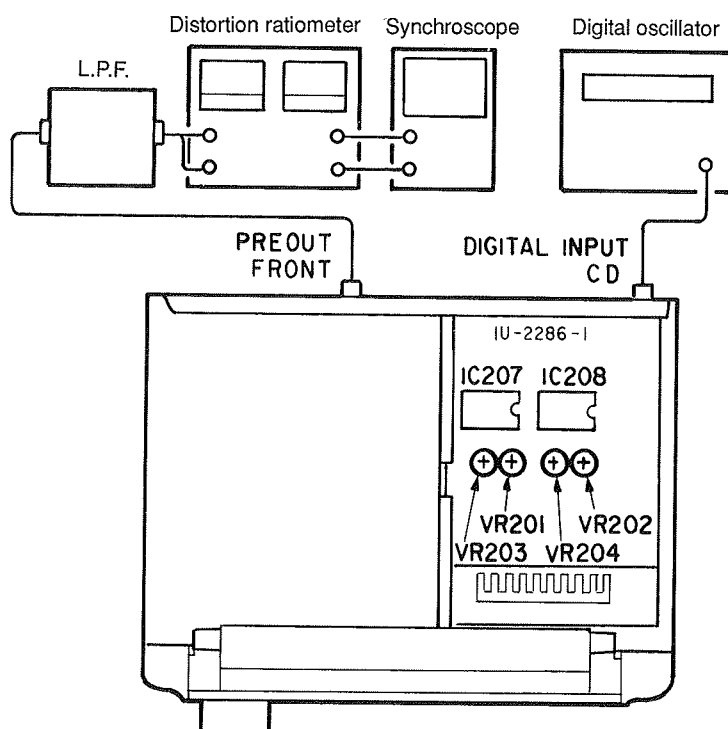
Remove 8 screws (K) and detach analog P.W.B..



ADJUSTMENT (DC CONVERTOR)

Necessary Conditions: Normal temperature, normal humidity and volume control knob at the minimum.

1. Connect AVP-5000 to digital oscillator, L.P.F., distortion ratio meter and synchroscope as per Fig 1.
2. Turn on AVP-5000 and push digital input signal switch button to shift function to [DIGITAL] and push direct button to shift mode to DIRECT. Secondly, input signals of 0dB, 1kHz and L/R from digital oscillator.
3. After 5 minutes elapsed, turn volume knob clockwise and adjust so that output volume becomes 2Vrms.
4. — Adjustment on L-Channel —
Observing volume of the distortion ratio meter and distorted waveform, turn VR201 to left and right to obtain the minimum distortion value. Secondly, turn VR203 to left or right to obtain the minimum distortion.
5. — Adjustment on R-Channel —
Adjust VR202, VR204 in similar ways such in step 4.



OPERATION

1. Synchronous signal discrimination and synchronous separation

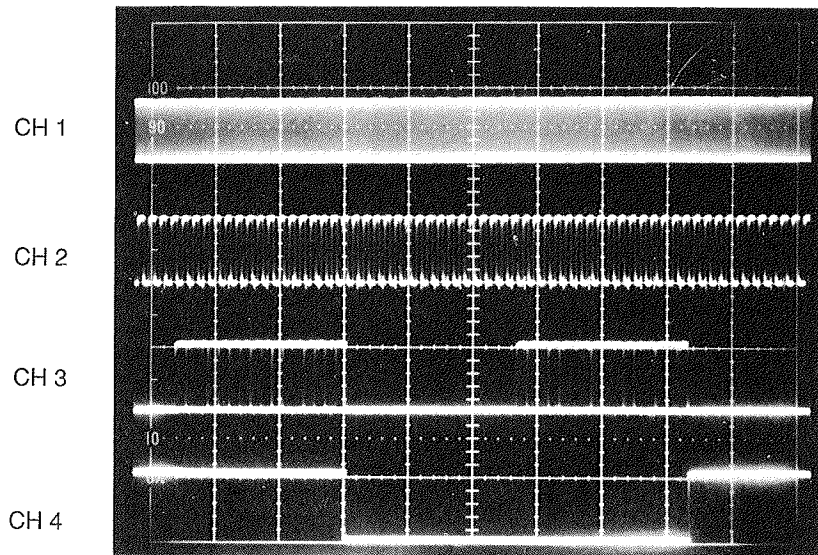
IC515 is an IC which makes discrimination on normality from abnormality of synchronous signals, and makes separation of synchronous signals as well.

When signal input to Pin ⑥ is normal, "High" outputs from Pin ⑬, and when in abnormal cases (where video signal is not input in or noises are mixed with Video signals), from Pin ⑬ "Low" outputs. If this "Low" output should be input to microcomputers (IC702, 116), IC517 (M50458-001SP) becomes for internal Video signal and causes blue back.

Also, when Video signal is input to Pin ⑥, vertical synchronously separated signals are input to Pin ⑯ for vertical separation and horizontal one to Pin ⑪ for horizontal separation irrespectively.

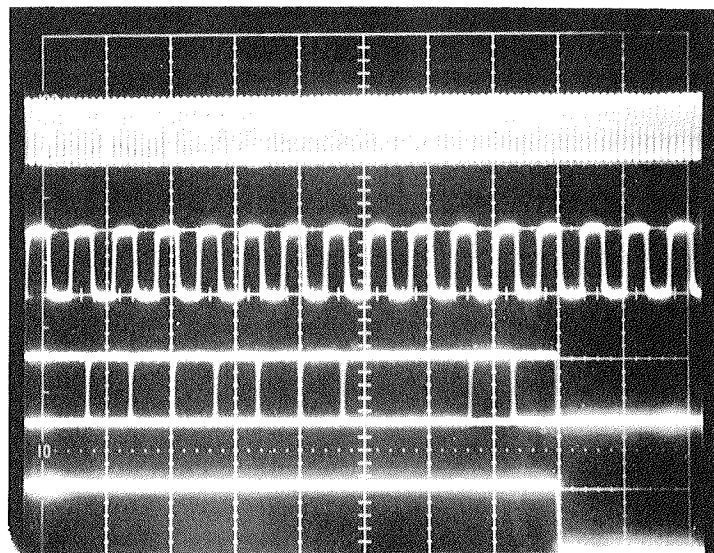
WAVEFORM OF EACH SECTION

● DSP DIGITAL INPUT



2μS/DIV

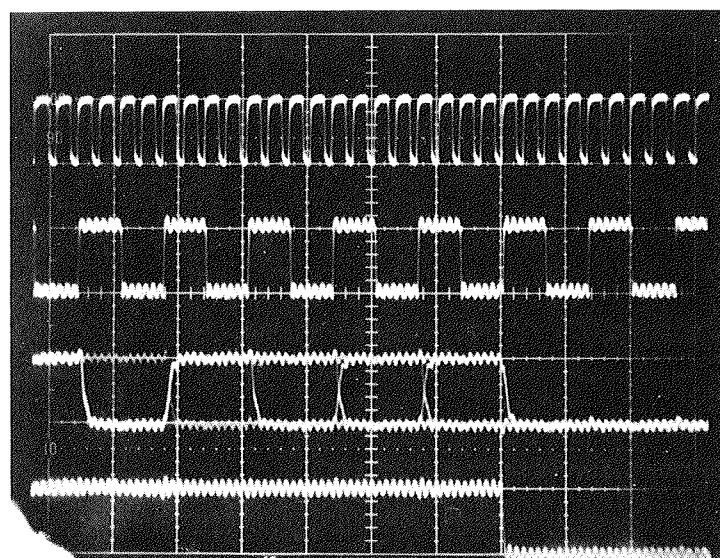
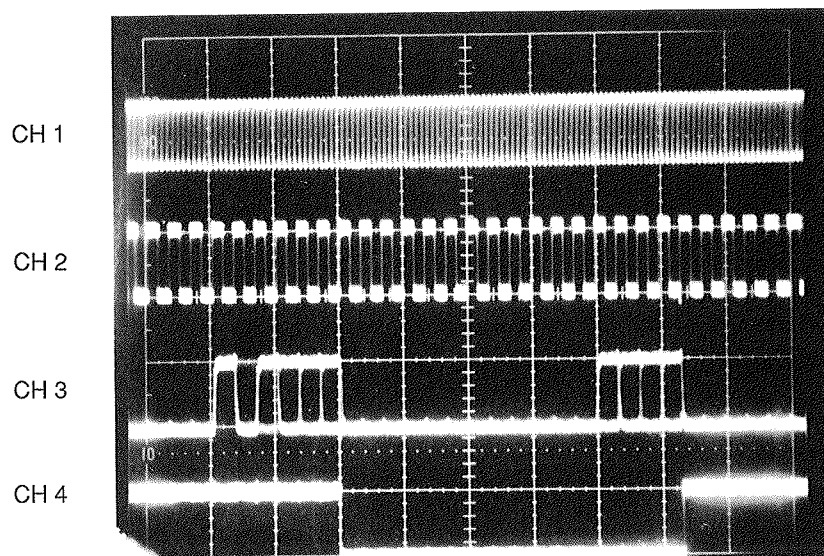
INPUT: CD (DIGITAL)
Fc=48K



0.5μS/DIV

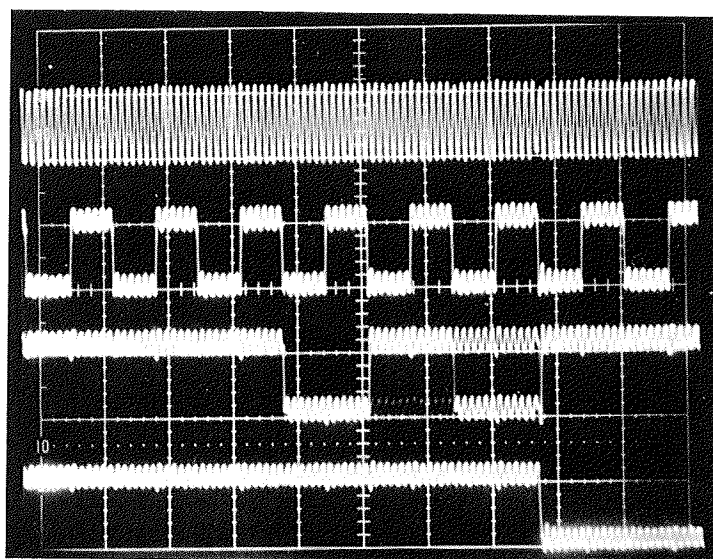
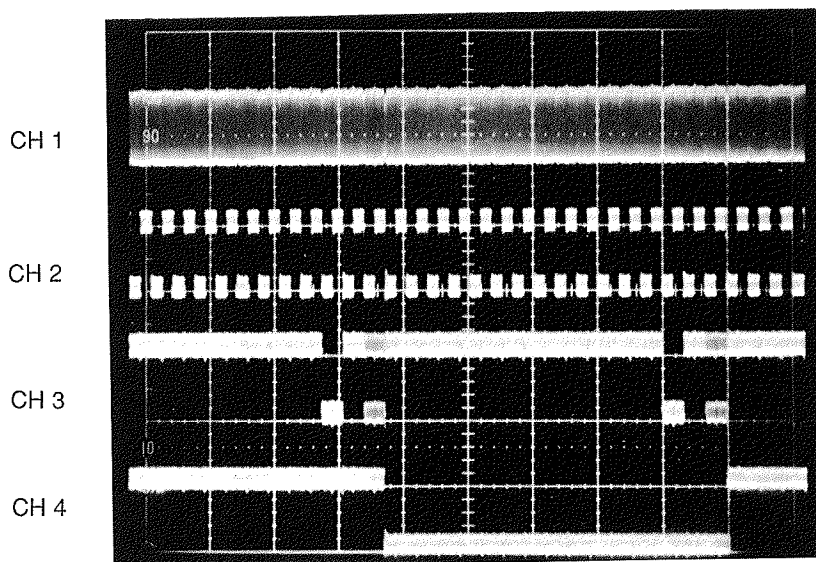
CH1	IC113	(16)	OSC1	5V/DIV
CH2	IC113	(37)	BCK1	5V/DIV
CH3	IC111	(17)	D0	5V/DIV
CH4	IC111	(15)	L/R	5V/DIV

● DSP A/D INPUT



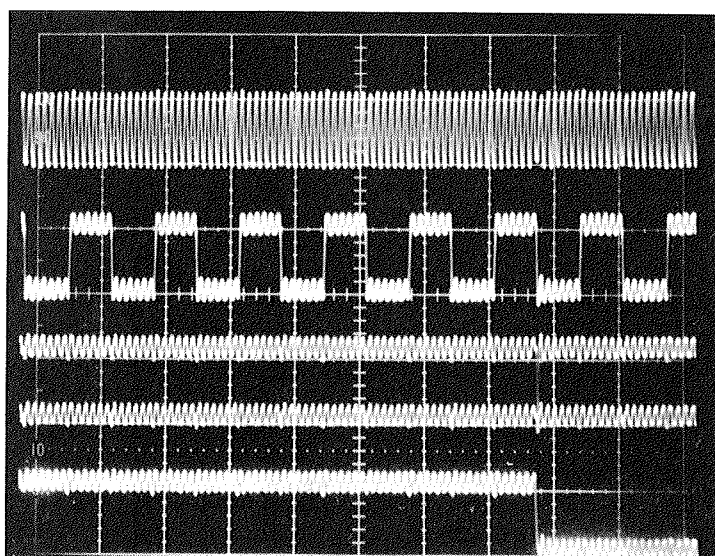
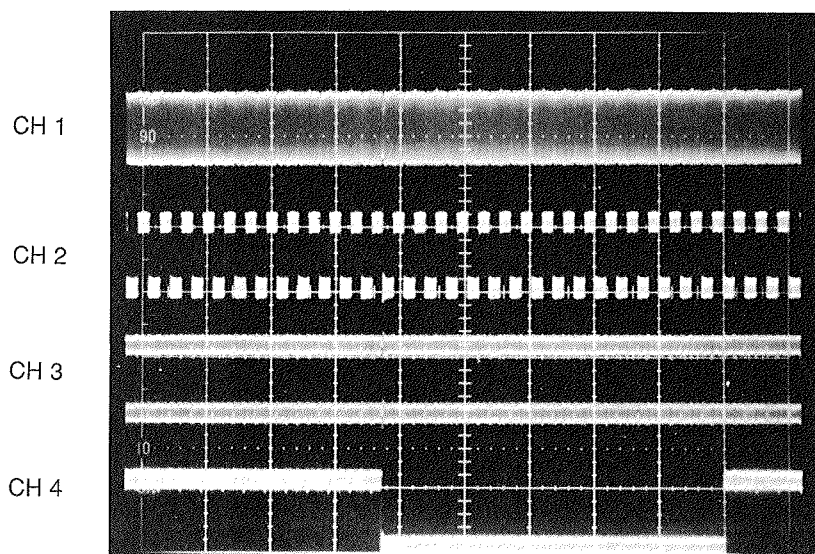
CH1	IC205	②③	CLK	5V/DIV
CH2	IC205	①⑤	BCK	5V/DIV
CH3	IC205	①⑥	DATA	5V/DIV
CH4	IC205	①④	L/R	5V/DIV

● DSP AUDIO OUT (1)



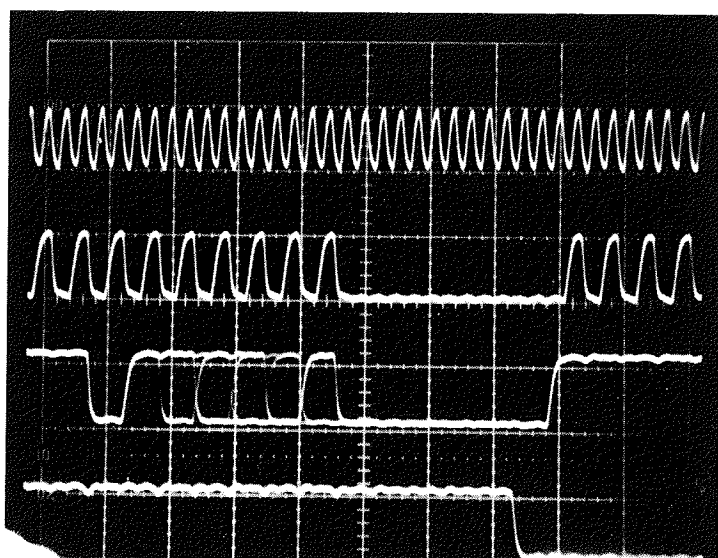
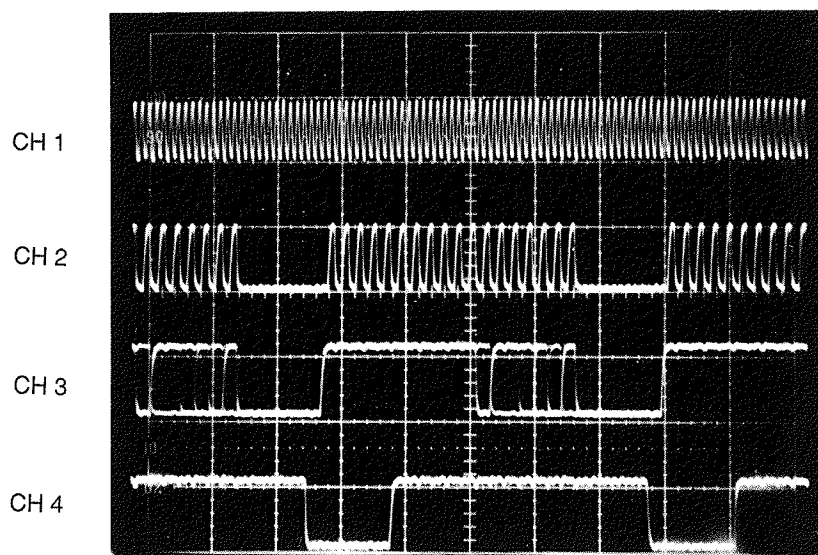
CH1	CN9A	①	384fs	5V/DIV
CH2	CN9A	②	BCKF	5V/DIV
CH3	CN9A	③	FOUT	5V/DIV
CH4	CN9A	⑦	LRCKO	5V/DIV

● DSP AUDIO OUT (2)



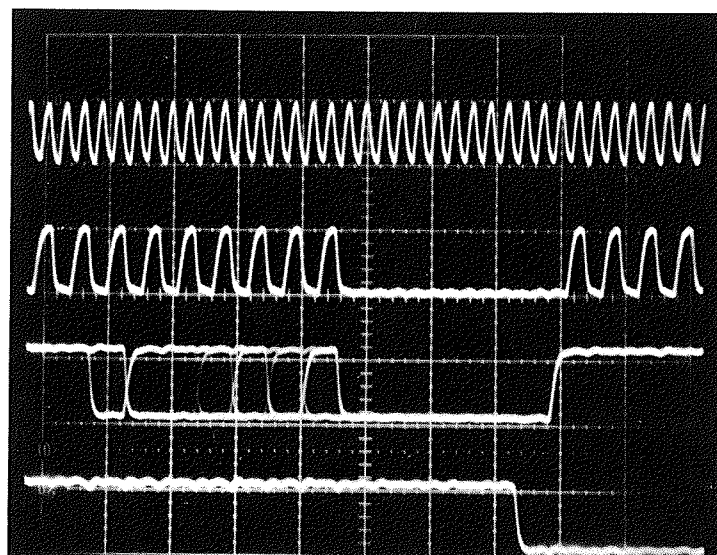
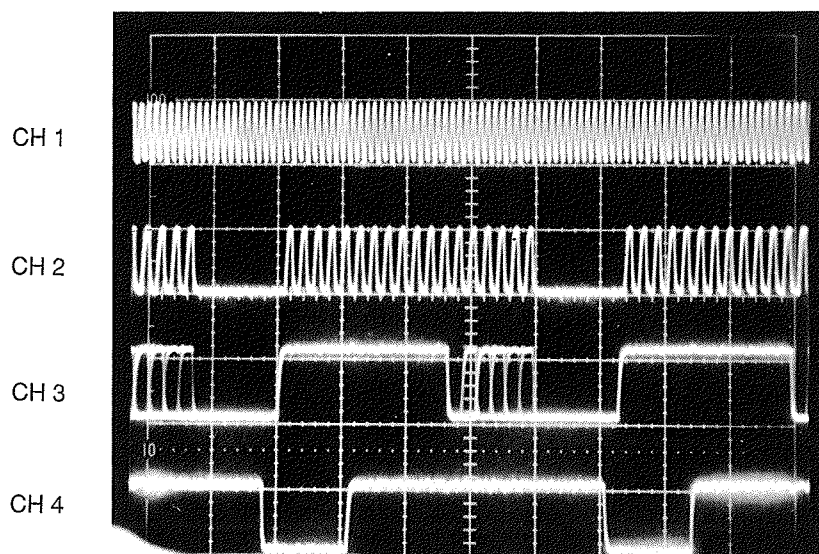
CH1	CN9A	①	384fs	5V/DIV
CH2	CN9A	④	BCKCR	5V/DIV
CH3	CN9A	⑤	COUT	5V/DIV
CH4	CN9A	⑦	LRCKO	5V/DIV

● PCM 67P-K (1)



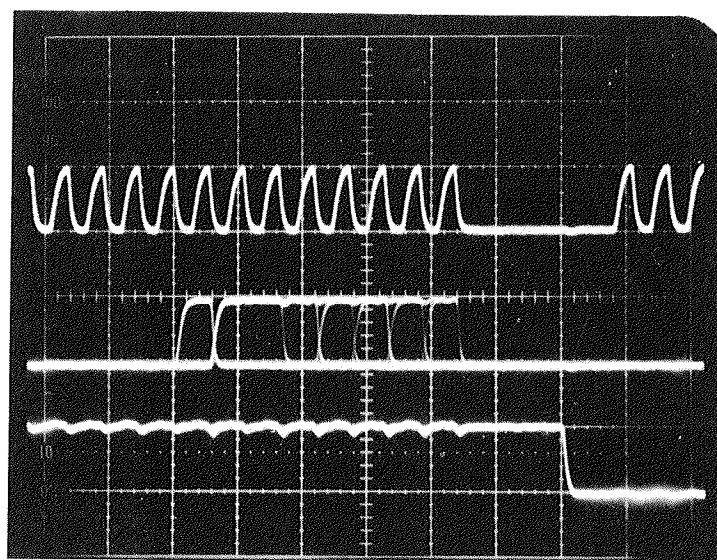
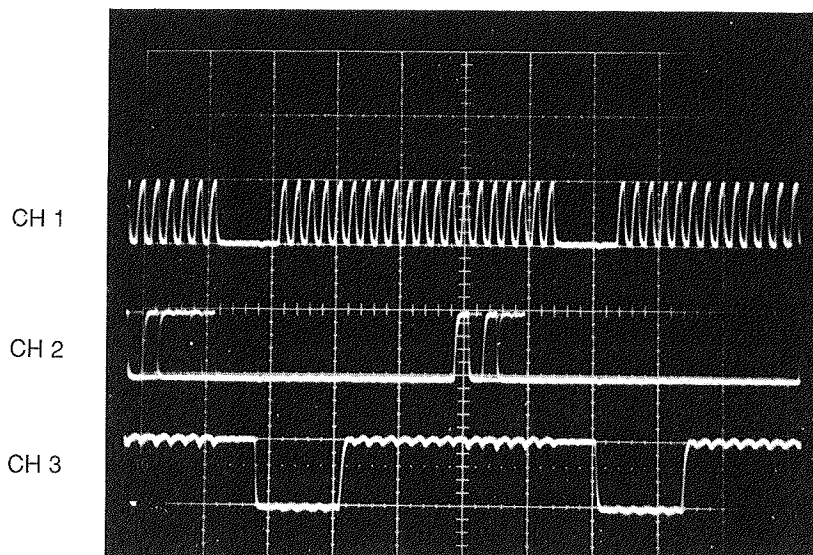
CH1	IC215	(12)	SCLK	5V/DIV
CH2	IC215	(11)	BCK	5V/DIV
CH3	IC215	(10)	DATA R	5V/DIV
CH4	IC215	(13)	WDCK	5V/DIV

● PCM 67P-K (2)



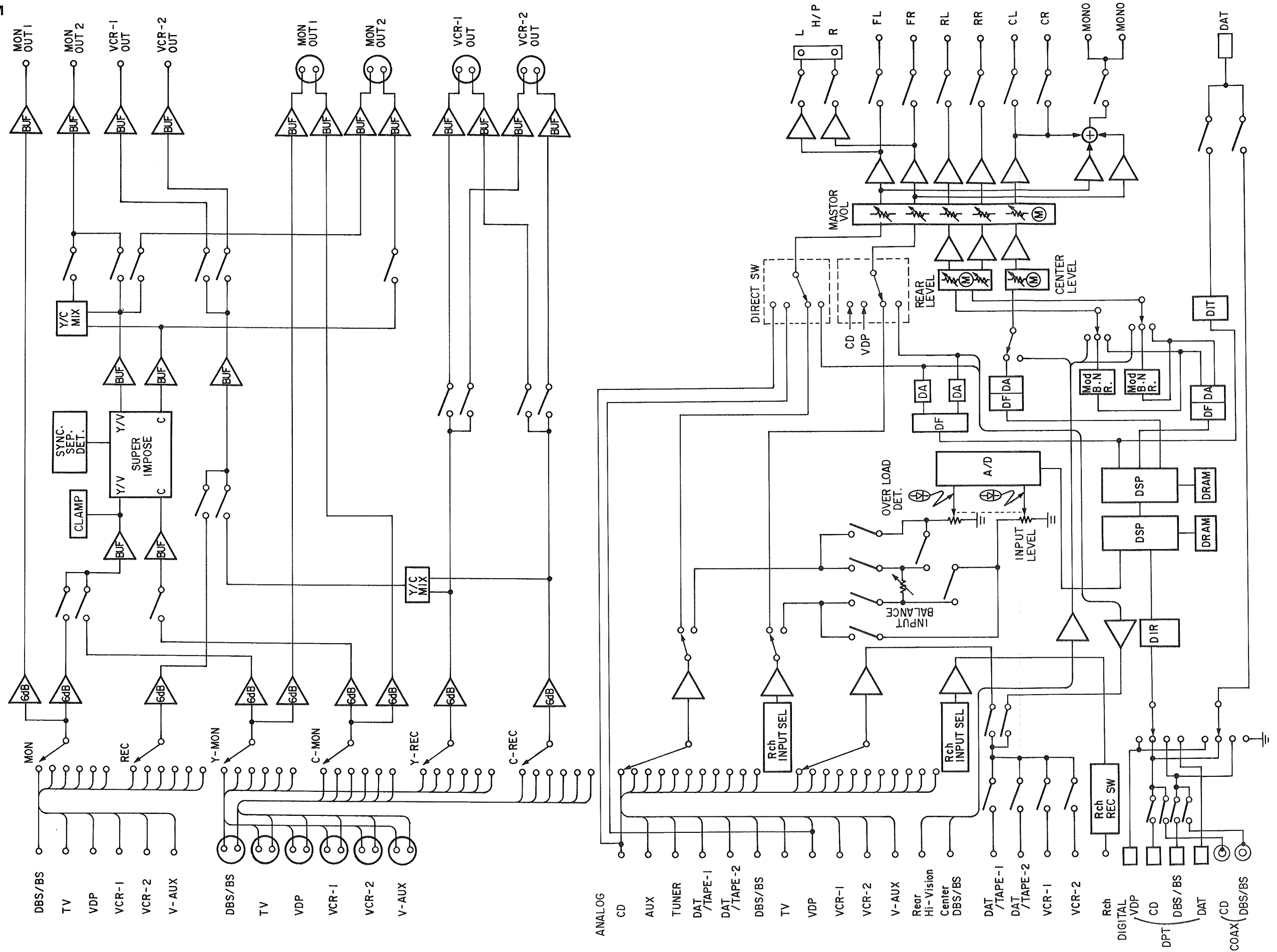
CH1	IC215	(12)	SCLK	5V/DIV
CH2	IC215	(11)	BCK	5V/DIV
CH3	IC215	(14)	DATA L	5V/DIV
CH4	IC215	(13)	WDCK	5V/DIV

● PCM 63P



CH1	IC207	(18)	CLK.	5V/DIV
CH2	IC207	(21)	DATA	5V/DIV
CH3	IC207	(20)	L.E.	5V/DIV

BLOCK DIAGRAM



NOTE FOR PARTS LIST

- Part indicated with the mark "⊗" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "I" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film $\pm 5\%$, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:

Parts marked with this symbol Δ $\square$ have critical characteristics.

Use ONLY replacement parts recommended by the manufacturer.

• Resistors

Ex.: $\frac{RN}{Type} \frac{14K}{Shape \text{ and performance}} \frac{2E}{Power} \frac{182}{Resistance} \frac{G}{Allowable error} \frac{FR}{Others}$

RD : Carbon	2B : 1/8W	F : $\pm 1\%$	P : Pulse-resistant type
RC : Composition	2E : 1/4W	G : $\pm 2\%$	NL : Low noise type
RS : Metallic film	2H : 1/2W	J : $\pm 5\%$	NB : Non-burning type
RW : Winding	3A : 1W	K : $\pm 10\%$	FR : Fuse-resistor
RN : Metal film	3D : 2W	M : $\pm 20\%$	F : Lead wire forming
RK : Metal mixture	3F : 3W		
	3H : 5W		

Resistance
 $\frac{1}{\uparrow} \frac{8}{\uparrow} \frac{2}{\uparrow} \Rightarrow 1800 \text{ ohm} = 1.8 \text{ kohm}$
 Indicates number of zeros after effective number
 2-digit effective number, decimal point indicated by R.
 • Units: ohm

• Capacitors

Ex.: $\frac{CE}{Type} \frac{04W}{Shape \text{ and performance}} \frac{1H}{Dielectric strength} \frac{2R2}{Capacity} \frac{M}{Allowable error} \frac{BP}{Others}$

CE : Aluminum foil electrolyte	0J : 6.3V	F : $\pm 1\%$	HS : High stability type
CA : Aluminum solid electrolyte	1A : 10V	G : $\pm 2\%$	BP : Non-polar type
CS : Tantalum electrolyte	1C : 16V	J : $\pm 5\%$	HR : Ripple-resistant type
CQ : Film	1E : 25V	K : $\pm 10\%$	DL : For charge and discharge
CK : Ceramic	1V : 35V	M : $\pm 20\%$	HF : For assuring high frequency
CC : Ceramic	1H : 50V	Z : $\pm 80\%$	U : UL part
CP : Oil	2A : 100V	Z : $\pm 20\%$	C : CSA part
CM : Mica	2B : 125V	P : $\pm 100\%$	W : UL-CSA type
CF : Metallized	2C : 160V	-0%	F : Lead wire forming
CH : Metallized	2D : 200V	C : $\pm 0.25pF$	
	2E : 250V	D : $\pm 0.5pF$	
	2H : 500V	= : Others	
	2J : 630V		

Capacity
 $\frac{2}{\uparrow} \frac{R}{\uparrow} \frac{2}{\uparrow} \Rightarrow 2.2\mu F$
 1-digit effective number, decimal point indicated by R.
 2-digit effective number, decimal point indicated by R.
 • Units: μF , (for P, pF (μF))
 • When the dielectric strength is indicated in AC, "AC" is included after

PARTS LIST OF P.W.B.

1U-2361 MICOM P.W.B. UNIT

Ref. No.	Part No.	Part name	Remarks
SEMICONDUCTORS			
IC101	262 1558 007	Micom HD4074729XXX	
TR101	269 0025 008	Digital Transistor RN1202 (10K-10K)T	
D101,102	276 0432 000	Diode 1SS270A TE	
CAPACITORS			
C101	253 1180 921	Ceramic 0.001 μF /50V	CK45B1H102KT
C102	254 4254 909	Electrolytic 10 μF /16V	CE04W1C100MT
OTHER PARTS			
XL101	399 9018 003	Ceramic Resonator X'tal (CST 4.00MGW)	

1U-2285 POWER SUPPLY P.W.B. UNIT

Ref. No.	Part No.	Part name	Remarks
SEMICONDUCTORS			
IC001	268 0073 905	IC Protector ICP-N15T	
IC002	268 0074 904	IC Protector ICP-N20T	
IC003	263 0560 002	IC NJM7815FA	
IC004	263 0561 001	IC NJM7915FA	
IC005,006	268 0073 905	IC Protector ICP-N15T	
IC007,008	262 1071 005	IC NJM7806FA	
IC009,010	263 0683 002	IC NJM7906FA	
IC011,012	268 0074 904	IC Protector ICP-N20T	
IC017	262 1071 005	IC NJM7806FA	
IC018	268 0073 905	IC Protector ICP-N15T	
IC351,352	262 1108 004	IC TC4051BP	
IC353,354	263 0764 002	IC MC14577AP	
IC355	262 0276 005	IC HD14066BP	
IC356,357	263 0764 002	IC MC14577AP	
IC358	262 0276 005	IC HD14066BP	
IC359,360	263 0764 002	IC MC14577AP	
TR001	271 0131 021	Transistor 2SA988-T(E/F)	
TR002	272 0093 010	Transistor 2SB1274(R/S)	
TR003	271 0191 906	Transistor 2SA1048(GR)TPE4	
TR004	274 0136 012	Transistor 2SD1913(R/S)	
TR005	269 0025 008	Digital Transistor RN1202(10K-10K)T	
TR006,007	273 0317 906	Transistor 2SC2458(BL)TPE4	
D001~004	276 0553 905	Diode 1SR35-200A(T93X)	
D005~008	276 0548 910	Diode DSM1D2(TYPE-3)	
D009~012	276 0548 910	Diode DSM1D2(TYPE-3)	
D013	276 0553 905	Diode 1SR35-200A(T93X)	
D013	276 0548 910	Diode DSM1D2(TYPE-3)	
D014	276 0548 910	Diode DSM1D2(TYPE-3)	
D014	276 0553 905	Diode 1SR35-200A(8T93X)	
D015	276 0553 905	Diode 1SR35-200A(T93X)	
D015	276 0548 910	Diode DSM1D2(TYPE-3)	
D016	276 0548 910	Diode DSM1D2(TYPE-3)	
D016	276 0553 905	Diode 1SR35-200A(TYPE-3)	
D017	276 0553 905	Diode 1SR35-200A(T93X)	
D018	276 0553 905	Diode 1SR35-200A(T93X)	
D019	276 0432 903	Diode 1SS270A TE	
D351,352	276 0432 903	Diode 1SS270A TE	
D355	276 0432 006	Diode 1SS270A TE	
ZD001	276 0465 925	Zener Diode HZS7B-3TD	
ZD002	276 0479 908	Zener Diode HZS20-1TD	
ZD003	276 0479 924	Zener Diode HZS20-3TD	
ZD004	276 0456 918	Zener Diode HZS4B-2TD	
RESISTORS (Not included Carbon Film $\pm 5\%$ 1/4W Type)			
Δ R001~004	241 2387 940	Carbon 4.7ohm 1/4W (N.B)	RD14B2E4R7JNBST
Δ R005,006	244 2055 912	Metallic Film 0.47ohm 1W(N.B)	RS14B3AR47JS(S)
Δ R012	244 2052 944	Metallic Film 1.5Kohm 1W(N.B)	RS14B3A152JS(S)

Ref. No.	Part No.	Part name	Remarks
Δ R018,009	241 2387 908	Carbon 1ohm 1/4W (N.B)	RD14B2E010JNBST
VR349	211 0717 003	Variable Resistor 100Kohm	V1860V25FA104R
CAPACITORS			
C001	254 4260 948	Electrolytic 1 μF /50V	CE04W1H010MT
C002	254 4060 980	Electrolytic 10 μF /50V	CE04W1H100MT
C003	254 4262 056	Electrolytic 100 μF /63V	CE04W1J101MT
C005	254 4416 705	Electrolytic 1000 μF /25V	CE04W1E103MC
C006	253 1181 904	Ceramic 0.01 μF /50V	CK45F1H103ZT
C009,010	253 1181 904	Ceramic 0.01 μF /50V	CK45F1H103ZT
C011,012	254 4258 918	Electrolytic 10 μF /35V	CE04W1V100MT
C013	253 1181 904	Ceramic 0.01 μF /50V	CK45F1H103ZT
C014	253 1181 904	Ceramic 0.01 μF /50V	CK45F1H103ZT
C015,016	254 4259 700	Electrolytic 2200 μF /35V	CE04W1V222MC
C019~022	253 1181 904	Ceramic 0.01 μF /50V	CK45F1H103ZT
C023~026	254 4254 938	Electrolytic 47 μF /16V	CE04W1C470MT
C027,028	256 1034 979	Metalized 0.1 μF /50V	CF93A1H104JT
C029,030	254 4416 705	Electrolytic 10000 μF /25V	CE04W1E103MC
C031~033	253 1181 904	Ceramic 0.01 μF /50V	CK45F1H103ZT
C034	254 4060 980	Electrolytic 10 μF /50V	CE04W1H100MT
C035	254 4260 948	Electrolytic 1 μF /50V	CE04W1H010MT
C036	253 1181 904	Ceramic 0.01 μF /50V	CK45F1H103ZT
C037	254 4403 734	Electrolytic 4700 μF /25V SMG	CE04W1E472MC
C038	254 4260 935	Electrolytic 0.47 μF /50V	CE04W1HR47MT
C039	253 1181 904	Ceramic 0.01 μF /50V	CK45F1H103ZT
Δ C040~044	253 8014 003	Ceramic 0.01 μF /400V(AC)	CK45F2GAC103MC
C045,046	254 4413 007	Electrolytic 2200 μF /35V ARS	CE04W1V222M
C339	253 9036 909	SEMICONDUCTORS 0.1 μF /25V	CK45=1E104ZT
C340	254 3056 917	Electrolytic 1 μF /50V Bypolar	CE04D1H010MBPT
C344	254 3052 937	Electrolytic 100 μF /10V Bypolar	CE04D1A101MBPT
C345	254 4252 930	Electrolytic 100 μF /10V	CE04W1A101MT
C348	254 3056 917	Electrolytic 1 μF /50V Bypolar	CE04D1H010MBPT
C349	254 4260 948	Electrolytic 1 μF /50V	CE04W1H010MT
C351	256 1034 937	Metalized 0.047 μF /50V	CF93A1H473JT
C352,353	254 3052 937	Electrolytic 100 μF /10V Bypolar	CE04D1A101MBPT
C354~357	253 1181 904	Ceramic 0.01 μF /50V	CK45F1H103ZT
C358, 359	254 4252 930	Electrolytic 100 μF /10V	CE04W1A101MT
C362~365	254 4254 938	Electrolytic 47 μF /16V	CE04W1C470MT
C368	253 1181 904	Ceramic 0.01 μF /50V	CK45F1H103ZT
C369	253 1181 904	Ceramic 0.01 μF /50V	CK45F1H103ZT
C372,373	254 4254 938	Electrolytic 47 μF /16V	CE04W1C470MT
C375,376	254 4254 938	Electrolytic 47 μF /16V	CE04W1C470MT
C377	253 4536 909	Ceramic 10p/50V	CC45SL1H100CT
C378,379	253 1181 904	Ceramic 0.01 μF /50V	CK45F1H103ZT
C381,382	254 4254 938	Electrolytic 47 μF /16V	CE04W1C470MT
C384,385	254 4254 938	Electrolytic 47 μF /16V	CE04W1C470MT
C387,388	254 4254 938	Electrolytic 47 μF /16V	CE04W1C470MT
C389	253 4535 939	Ceramic 3pF/50V	CC45SL1H030CT
C390	254 4252 930	Electrolytic 100 μF /10V	CE04W1A101MT

1U-2286 Digital-2 & FL P.W.B. UNIT

Ref. No.	Part No.	Part name	Remarks
C392	253 4536 970	Ceramic 20pF/50V	CC45SL1H200CT
C004	253 1151 905	Ceramic 0.0047μF/500V	CK45E2H472PT
C017,018	253 1151 905	Ceramic 0.0047μF/500V	CK45E2H472PT
OTHER PARTS			
△ LF001,002	239 8019 002	Line Filter Coil	Time Lag(AType)Mini Time Lag(AType)Mini Time Lag(AType)Mini
△ F001,002	206 1035 025	Fuse 0.25A(T)	
△ F003,004	206 1035 054	Fuse 1.6A(T)	
△ F005,006	206 1035 007	Fuse 1.0A	
△	202 0022 008	Fuse Holder	
△	203 3946 003	AC Outlet	TV-8
RL001	214 0120 000	Relay	
	204 8394 006	3P PinJack	
	204 8342 003	3P PinJack	
	204 8341 004	Headphone Jack	
CN3B	205 0233 032	3P EH Connector Base	
CN3C	205 0277 030	3P EH Connector Base(RD)	
CN3G	203 4778 034	3P EH-SCN Connector Cord	
CN3H	205 0233 032	3P EH Connector Base	
CN3I	205 0278 039	3P EH Connector Base(BK)	
CN3J	205 0277 030	3P EH Connector Base(RD)	
CN5B	205 0233 058	5P EH Connector Base	
CN5C	205 0343 058	5P Connector Base(KR-PH)	
CN5D	205 0277 056	5P EH Connector Base(RD)	
CN5G	205 0278 055	5P EH Connector Base(BK)	
CN5H	205 0277 056	5P EH Connector Base(RD)	
CN5I	205 0343 058	5P Connector Base(KR-PH)	
CN7A	204 2490 003	7P EH-SCN Connector Cord	
CN8C	205 0277 085	8P EH Connector Base(RD)	
CN10B	204 2492 001	10P KRDS Connector Cord	
CN15A,15B	205 0704 053	15P Pin Header (9133)	

Ref. No.	Part No.	Part name	Remarks
SEMICONDUCTORS			
IC201	262 1270 000	IC HD74HC107P	
IC202	262 0594 004	IC HD74HC74P	
IC203,204	263 0773 006	IC RC5532DD(RAY)	
IC205	262 1492 008	IC AK5326-VP	
IC206	262 1450 008	IC SM5840CP	
IC207,208	262 1497 003	IC PCM63P	
IC209,210	263 0773 006	IC RC5532DD(RAY)	
IC211	262 1450 008	IC SM5840CP	
IC212	263 0760 006	IC PCM67P	
IC213	263 0594 007	IC NJM2068DAC	
IC214	262 1450 008	IC SM5840CP	
IC215	263 0760 006	IC PCM67P	
IC216,217	263 0594 007	IC NJM2068DAC	
IC652,653	262 1418 008	IC MSC7128-03SS	
IC654	499 0150 008	Remocon Sensor SBX1610-52	
TR651	269 0773 006	DigitalTransistor DTA143ES(4.7K-4.7K)T	
LD651	393 0022 904	LED SEL-2210R(TP2)	Red
LD652-654	393 9417 907	LED SEL-2410G(TP2)	Grn
RESISTORS (Not included Carbon Film ±5% 1/4W Type)			
△ R228	241 2375 907	Carbon 10ohm 1/4W (N.B)	RD14B2E100JNBST
VR201-204	211 6064 022	Semi Fixed Resistor	100KohmV06PB104
CAPACITORS			
C201,202	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C203,204	255 6178 921	Polystyrene Film 470pF/50V	CQ09S1H471JT
C205-210	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C211,212	255 4199 986	Mylar 0.001μF/50V	CQ92M1H102JT
C213-216	255 4199 973	Mylar 0.01μF/50V	CQ92M1H103JT
C217	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C218	256 1034 979	Metalized 0.1μF/50V	CF93A1H104JT
C219	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C220	253 9036 909	SEMICONDUCTORS 0.1μF/25V	CK45-1E104ZT
C221	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C222	256 1034 979	Metalized 0.1μF/50V	CF93A1H104JT
C223	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C224	256 1034 979	Metalized 0.1μF/50V	CF93A1H104JT
C226	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C227	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C229	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C230	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C231	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C232	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C233,234	256 1034 979	Metalized 0.1μF/50V	CF93A1H104JT
C235	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C236	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C237,238	256 1034 979	Metalized 0.1μF/50V	CF93A1H104JT

1U-2287 VIDEO P.W.B. UNIT

Ref. No.	Part No.	Part name	Remarks
C239,240	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C241-244	255 6177 948	Polystyrene Film 100pF/50V	CQ09S1H101JT
C245-248	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C249,250	255 6178 950	Polystyrene Film 820pF/50V	CQ09S1H821JT
C251-253	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C254,255	255 6177 948	Polystyrene Film 100pF/50V	CQ09S1H101JT
C256,527	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C258	255 6178 905	Polystyrene Film 330pF/50V	CQ09S1H331JT
C259	255 6178 950	Polystyrene Film 820pF/50V	CQ09S1H821JT
C260	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C261	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C262	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C265-268	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C269-274	254 4254 941	Electrolytic 100μF/16V	CE04W1C101MT
C275-278	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C279,280	255 6177 948	Polystyrene Film 100pF/50V	CQ09S1H101JT
C281-284	254 4356 739	Electrolytic 47μF/50V	CE04W1H470MC
C285,286	255 6178 905	Polystyrene Film 330pF/50V	CQ09S1H331JT
C287,288	255 6178 950	Polystyrene Film 820pF/50V	CQ09S1H821JT
C289,290	254 4254 954	Electrolytic 220μF/16V	CE04W1C221MT
C291,292	255 6178 905	Polystyrene Film 330pF/50V	CQ09S1H331JT
C293	256 1034 979	Metalized 0.1μF/50V	CF93A1H104JT
C294	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C297,298	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C299,300	255 1251 908	Mylar 0.0015μF/50V	CQ92M1H152JT
C301-303	255 1251 937	Mylar 0.0033μF/50V	CQ92M1H332JT
C325	253 4537 908	Ceramic 27pF/50V	CC45SL1H270JT
C651,652	253 1180 921	Ceramic 0.001μF/50V	CK45B1H102KT
C653	254 4260 980	Electrolytic 10μF/50V	CE04W1C100MT
C654,655	253 4538 949	Ceramic 100pF/50V	CC45SL1H101JT
C656,657	253 1180 921	Ceramic 0.001μF/50V	CK45B1H102KT
C658	253 4538 949	Ceramic 100pF/50V	CC45SL1H101JT

OTHER PARTS

L201-211	235 0060 918	Inductor	(4R7)ST
L215,216	235 9006 009	Inductor	BL02RN1-R62
L651	235 0060 989	Inductor	(121)ST
S651-654	212 4388 907	Tact Switch	
	393 4125 003	FL Tube	FIP24XMICA
CN3A	205 0277 030	3P EH Connector Base(RD)	
CN3B	205 0233 032	3P EH Connector Base	
CN3C	203 4673 061	3P EH-SCN	
		Connector Cord(RD)	
CN3D	203 4777 019	3P EH-SCN Connector Cord	
CN3E	205 0343 032	3P Connector Base(KR-PH)	
CN5A	205 0277 056	5P EH Connector Base(RD)	
CN6B	205 0343 061	6P Connector Base(KR-PH)	
CN8A	205 0343 087	8P Connector Base(KR-PH)	
CN8B	205 0233 087	8P EH Connector Base	
CN10A	204 2340 001	10P KRDA	
		Connector Cord(RD)	
CN10B	205 0375 000	10P Connector Base(KR-PH)	
CN11B	204 6161 066	11P KRDA	
		Connector Cord(RD)	

Ref. No.	Part No.	Part name	Remarks
SEMICONDUCTORS			
IC401	262 1505 005	IC HD4074308S	
IC501-503	263 0764 002	IC MC14577AP	
IC504-507	262 1108 002	IC TC4051BP	
IC508	262 0276 005	IC HD14066BP	
IC509-513	263 0764 002	IC MC14577AP	
IC514	262 0276 005	IC HD14066BP	
IC515	263 0682 003	IC NJM2229S	
IC516	262 0698 007	IC TC9163N	
IC517	262 1506 004	IC M50458-001SP	
IC701	263 0423 000	IC M51953B	
IC702	262 1504 006	IC HD6473258S	
TR501	273 0198 918	Transistor 2SC1815(BL)TPE2	
TR502,503	273 0317 906	Transistor 2SC2458(BL)TPE4	
TR701,702	273 0317 906	Transistor 2SC2458(BL)TPE4	
TR703	269 0025 008	Digital Transistor RN1202(10K-10K)T	
TR704	273 0317 906	Transistor 2SC2458(BL)TPE4	
TR706	273 0317 906	Transistor 2SC2458(BL)TPE4	
TR707	269 0025 008	Digital Transistor RN1202(10K-10K)T	
TR710	269 0025 008	Digital Transistor RN1202(10K-10K)T	
D401-406	276 0432 000	Diode 1SS270A TE	
D501,502	276 0432 000	Diode 1SS270A TE	
D701,702	276 0432 000	Diode 1SS270A TE	
D704	276 0432 000	Diode 1SS270A TE	
D706,707	276 0432 000	Diode 1SS270A TE	
LD701	393 9401 900	LED SEL-2210R(TP1)	Red

RESISTORS (Not included Carbon Film $\pm 5\%$ 1/4W Type)

R699,700	241 2387 940	Carbon 4.7ohm 1/4W (N.B)	RD14B2E4R7JNBST
RA401	246 2052 021	Array 47Kohm $\times 4$	RK99==473JP4
RA402	246 2044 013	Array 47Kohm $\times 6$	RK99==473JP6
RA403	246 2054 016	Array 100Kohm $\times 7$	RK99==104JP7
RA701	246 2052 021	Array 47Kohm $\times 4$	RK99==473JP4
RA702,703	246 2044 013	Array 47Kohm $\times 6$	RK99==473JP6
VR347	211 0720 003	Variable 100Kohm(BALANCE)	V1820V25FW104K
VR348	211 0716 004	Variable 100Kohm(INPUT)	V1820V25FB104

CAPACITORS

C346,347	254 4260 948	Electrolytic 1μF/50V	CE04W1H010MT
C401-404	254 4254 925	Electrolytic 33μF/16V	CE04W1C330MT
C406	255 1204 900	Mylar 0.0022μF/50V	CQ93M1H222JT
C407	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C408	254 4250 932	Electrolytic 220μF/6.3V	CE04W0J221MT
C501-503	254 3052 937	Electrolytic 100μF/10V (Bypolar)	CE04D1A101MBPT
C506,507	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C509,510	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C513,514	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C516-523	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT

Ref. No.	Part No.	Part name	Remarks
C524	254 4252 930	Electrolytic 100μF/10V	CE04W1A101MT
C525,526	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C527	254 4252 930	Electrolytic 100μF/10V	CE04W1A101MT
C530	253 4535 939	Ceramic 3pF/50V	CC45SL1H030CT
C531,532	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C533	254 4252 930	Electrolytic 100μF/10V	CE04W1A101MT
C534	253 4536 909	Ceramic 10pF/50V	CC45SL1H100DT
C536	253 4535 939	Ceramic 3pF/50V	CC45SL1H030CT
C537,538	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C540	253 4536 970	Ceramic 20pF/50V	CC45SL1H200JT
C541	254 4252 930	Electrolytic 100μF/10V	CE04W1A101MT
C543	253 4536 970	Ceramic 20pF/50V	CC45SL1H200JT
C544	253 4537 940	Ceramic 39pF/50V	CC45SL1H390JT
C546,547	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C549,550	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C551	254 4252 930	Electrolytic 100μF/10V	CE04W1A101MT
C553,554	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C555	254 4252 930	Electrolytic 100μF/10V	CE04W1A101MT
C556	254 3056 917	Electrolytic 1μF/50V (Bypolar)	CE04D1H010MBPT
C557	254 4252 930	Electrolytic 100μF/10V	CE04W1A101MT
C558,559	253 4536 909	Ceramic 10pF/50V	CC45SL1H100DT
C560	254 4252 930	Electrolytic 100μF/10V	CE04W1A101MT
C561	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C562	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C563	253 4537 966	Ceramic 47pF/50V	CC45SL1H470JT
C564	253 4537 911	Ceramic 30pF/50V	CC45SL1H300JT
C565	254 4252 930	Electrolytic 100μF/10V	CE04W1A101MT
C567,568	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C569	255 1216 901	Mylar 0.022μF/50V	CQ93M1H223JT
C570	253 4538 949	Ceramic 100pF/50V	CC45SL1H101JT
C571	254 4260 977	Electrolytic 4.7μF/50V	CE04W1H4R7MT
C572	253 4447 904	Ceramic 300pF/50V	CC45SL1H301JT
C573	254 4260 948	Electrolytic 1μF/50V	CE04W1H010MT
C574	255 1206 908	Mylar 0.0033μF/50V	CQ93M1H332JT
C575	253 1179 987	Ceramic 470pF/50V	CK45B1H471KT
C576	256 1034 953	Metalized 0.068μF/50V	CF93A1H683JT
C577	254 4260 948	Electrolytic 1μF/50V	CE04W1H010MT
C578	253 1179 929	Ceramic 150pF/50V	CK45B1H151KT
C579	255 1201 903	Mylar 0.0012μF/50V	CQ93M1H122JT
C580	255 1212 905	Mylar 0.01μF/50V	CQ93M1H103JT
C581	254 4252 930	Electrolytic 100μF/10V	CE04W1A101MT
C582	255 1200 904	Mylar 0.001μF/50V	CQ93M1H102JT
C583	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C584,585	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C587-594	253 4538 949	Ceramic 100pF/50V	CC45SL1H101JT
C595	254 4260 948	Electrolytic 1μF/50V	CE04W1H010MT
C597,598	254 4260 948	Electrolytic 1μF/50V	CE04W1H010MT
C601	254 4252 930	Electrolytic 100μF/10V	CE04W1A101MT
C602	254 4250 945	Electrolytic 330μF/6.3V	CE04W0J331MT
C603	254 4252 930	Electrolytic 100μF/10V	CE04W1A101MT
C701	254 4260 948	Electrolytic 1μF/50V	CE04W1H010MT
C702	255 1212 905	Mylar 0.01μF/50V	CQ93M1H103JT
C703	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C704	254 4260 948	Electrolytic 1μF/50V	CE04W1H010MT
C705	254 4260 922	Electrolytic 0.33μF/50V	CE04W1HR33MT
C706	254 4260 951	Electrolytic 2.2μF/50V	CE04W1H2R2MT

Ref. No.	Part No.	Part name	Remarks
C707,708	255 1212 905	Mylar 0.01μF/50V	CQ93M1H103JT
C709	259 0007 702	Electrolytic 8200μF	SB CAP==822=C
C710,711	254 4250 932	Electrolytic 220μF/6.3V	CE04W0J221MT
C712714	254 4260 948	Electrolytic 1μF/50V	CE04W1H010MT
OTHER PARTS			
L501,502	235 0060 989	Inductor	(121)ST
L503	235 0060 963	Inductor	(150)ST
XL401	399 0034 008	Ceramic X'tal	CST 4.00 MG
XL501	399 0153 006	X'tal Resonator	14.32MHz12PF
XL502	399 0105 009	Ceramic X'tal	CSB503F2
XL701	399 0148 008	Ceramic X'tal	CSA20.00MX040
S349	212 4388 004	Tact Switch	
	204 8393 007	4P PinJack	
	204 8289 001	DC Power Jack	
CN3L	205 0343 032	3P Connector Base(KR-PH)	
CN3D	205 0233 032	3P EH Connector Base	
CN3F	205 0321 038	3P Connector Base(RED)	
CN5C	205 0343 058	5P Connector Base(KR-PH)	
CN5D	205 0277 056	5P EH Connector Base(RD)	
CN5E	205 0233 058	5P EH Connector Base	
CN5J	205 0321 054	5P Connector Base(RED)	
CN6C	205 0233 061	6P EH Connector Base	
CN7A	205 0233 074	7P EH Connector Base	
CN8D	204 2421 069	8P KR-DA Connector Cord	
CN9A	204 2339 041	9P KR-DA Connector Cord	
CN10A	205 0321 009	10P Connector Base(RED)	
CN11B	205 0375 013	11P Connector Base(KR-PH)	
CN12A	205 0375 026	12P Connector Base(KR-PH)	
CN13B	205 0375 039	13P Connector Base(KR-PH)	
CN15A	205 0703 054	15P Pin Header	
CN15B	205 0703 054	15P Pin Header	
CN15C	205 0375 055	15P Connector Base(KR-PH)	
CN3A	203 4705 023	3P EH-SCN Connector Cord(RD)	
CN3E	203 4808 001	3P KR-DA Connector Cord	
CN3K	203 4778 047	3P EH-SCN Connector Cord	
CN3L	203 4764 019	3P PH-SAN Connector Cord	
CN6D	204 0352 004	6P EH-SCN Connector Cord(RD)	

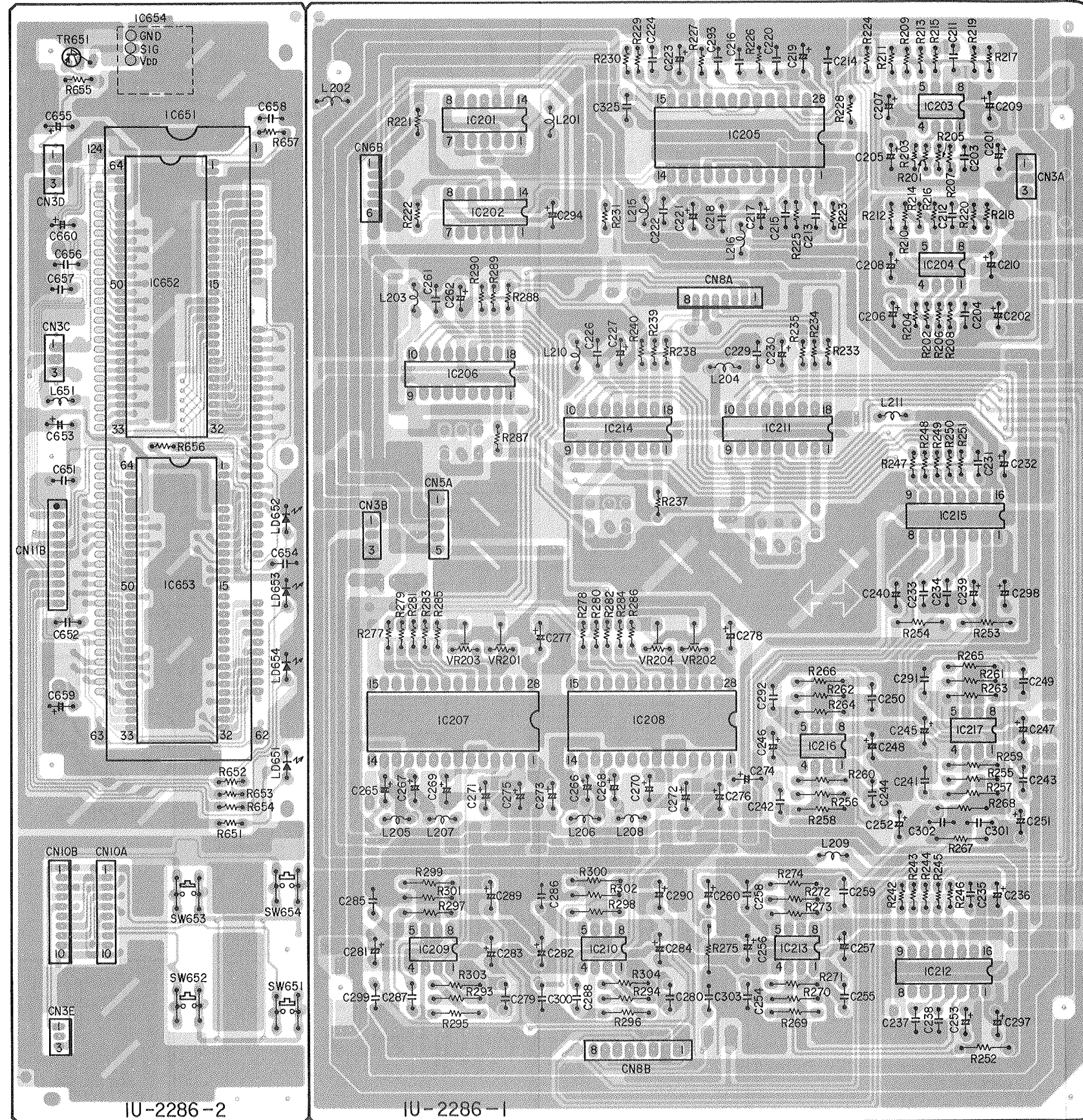
1U-2288 Digital1Unit-1 P.W.B. UNIT

Ref. No.	Part No.	Part name	Remarks
SEMICONDUCTORS			
IC101~104	269 0116 001	IC TORX176	
IC105	269 0117 000	IC TOTX176	
IC106,107	262 0903 006	IC HD74HC153P	
IC108	262 0591 007	IC HD74HC00P	
IC109	262 1265 002	IC TC74HCU04AP	
IC111	262 0910 002	IC YM3623B	
IC112	262 1517 006	IC TC923IN	
IC113,114	262 1498 002	IC LC83010N	
IC115	262 0651 002	IC HD74HC245P	
IC116	262 1333 002	IC HD74HC374P	
IC117	262 0651 002	IC HD74HC245P	
IC118~121	262 1499 001	IC HM50464-12	
IC122~125	263 0553 006	IC NJM7805FA	
IC126	263 0554 005	IC NJM7905FA	
IC127	262 1265 002	IC TC74HCU04AP	
IC128,129	262 0591 007	IC HD74HC00P	
IC130	262 1265 002	IC TC74HCU04AP	
TR101	269 0025 008	Digital Transistor RN1202(10K-10K)T	
TR103,104	269 0025 008	Digital Transistor RN1202(10K-10K)T	
D101~106	276 0432 000	Diode 1SS270A TE	
CAPACITORS			
C101~104	256 1034 979	Metalized 0.1μF/50V	CF93A1H104JT
C105~108	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C109	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C110	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C111	253 1179 987	Ceramic 470pF/50V	CK45B1H471KT
C112	253 9031 991	SEMICONDUCTORS 0.0082μF/25V	CK45=1E822KT
C113,114	253 4536 909	Ceramic 10pF/50V	CC45SL1H100DT
C115	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C118	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C119	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C120	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C121	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C122	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C123	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C124	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C125	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C126	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C127	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C128,129	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C130	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C131	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C132	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C133	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C134	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C135	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C136	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C137	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C138	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C139	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C140	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT

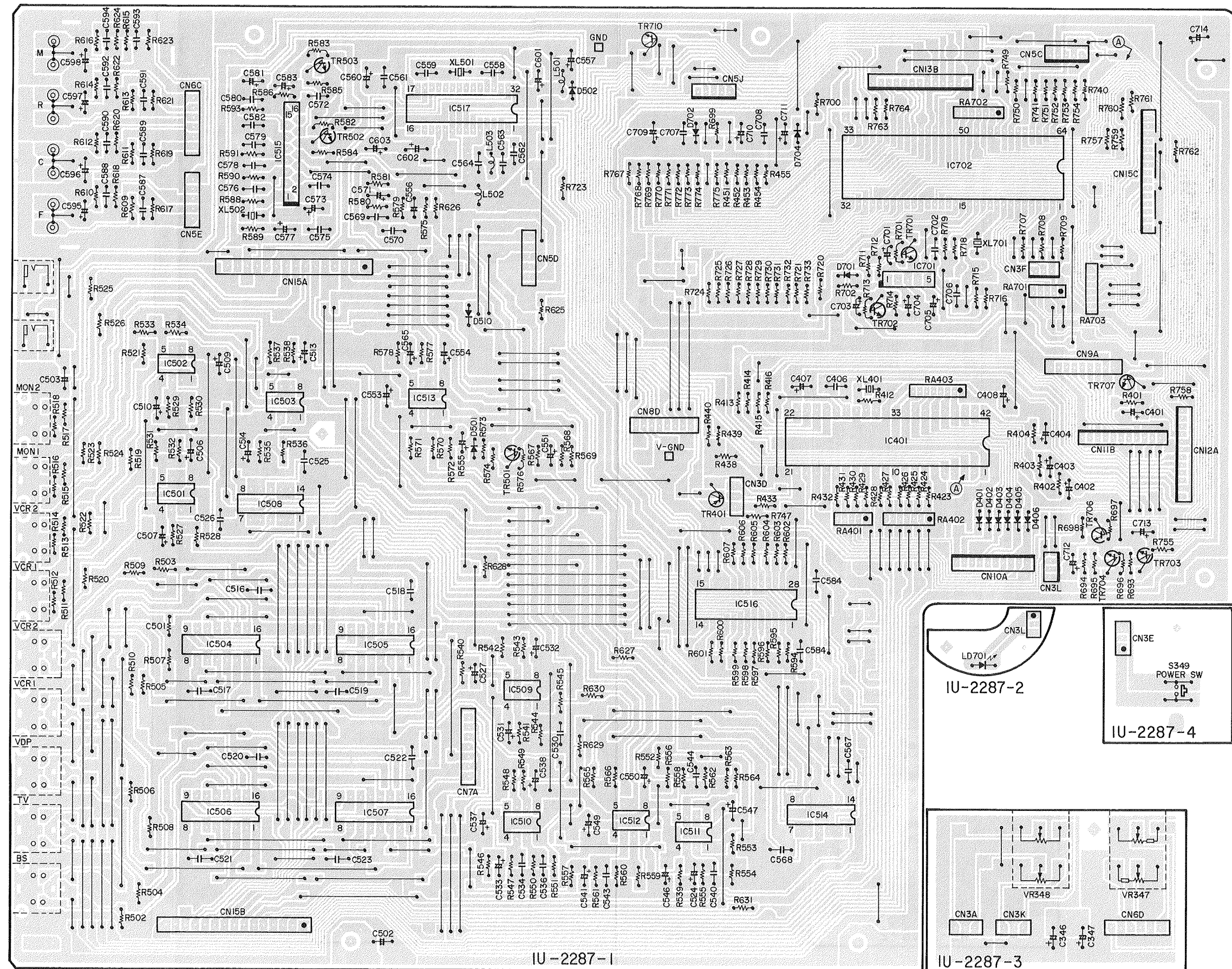
Ref. No.	Part No.	Part name	Remarks
C141	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C142	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C143	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C144	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C145	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C146	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C147	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C148,149	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C150	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C151,152	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C153,154	254 4254 938	Electrolytic 47μF/16V	CE04W1C470MT
C155,156	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C157,158	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
C159,160	253 9030 905	SEMICONDUCTORS 0.001μF/25V	CK45=1E102KT
C161~163	253 9030 989	SEMICONDUCTORS 0.022μF/25V	CK45=1E223KT
C164	254 4260 948	Electrolytic 1μF/50V	CE04W1H010MT
C165,166	253 4538 949	Ceramic 100pF/50V	CC45SL1H101JT
C167,168	255 1212 905	Mylar 0.01μF/50V	CQ93M1H103JT
C169,170	254 4256 923	Electrolytic 33μF/25V	CE04W1E330MT
C171,172	253 4420 905	Ceramic 22pF/50V	C45SL1H220JT
C173,174	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C175,176	254 4260 948	Electrolytic 1μF/50V	CE04W1H010MT
C177~179	253 1181 904	Ceramic 0.01μF/50V	CK45F1H103ZT
C180	253 1181 917	Ceramic 0.022μF/50V	CK45F1H223ZT
C181	254 4254 909	Electrolytic 10μF/16V	CE04W1C100MT
OTHER PARTS			
L101~104	235 0060 934	Inductor	(470)ST
L105,106	235 0060 918	Inductor	(4R7)ST
L108,109	235 9006 009	Inductor	BL02N1-R62
L111	235 9006 009	Inductor	BL02N1-R62
L113,114	235 0060 905	Inductor	(2R2)ST
LF101,102	235 0048 008	EMI Filter	
LF104~112	235 0048 008	EMI Filter	
XL101	399 0146 000	X'tal Resonator 8.432MHz	
	204 8357 027	2P Pin Jack	
CN5B	205 0233 058	5P EH Connector Base	
CN6A	205 0343 061	6P Connector Base(KR-PH)	
CN13B	205 0375 039	13P Connector Base(KR-PH)	
CN15C	205 0375 055	15P Connector Base(KR-PH)	
CN5A	203 8312 001	5P EH-SCN Connector Cord(RD)	
CN6B	204 0301 026	6P KR-DA Connector Cord	
CN8A	204 2421 043	8P KR-DA Connector Cord	



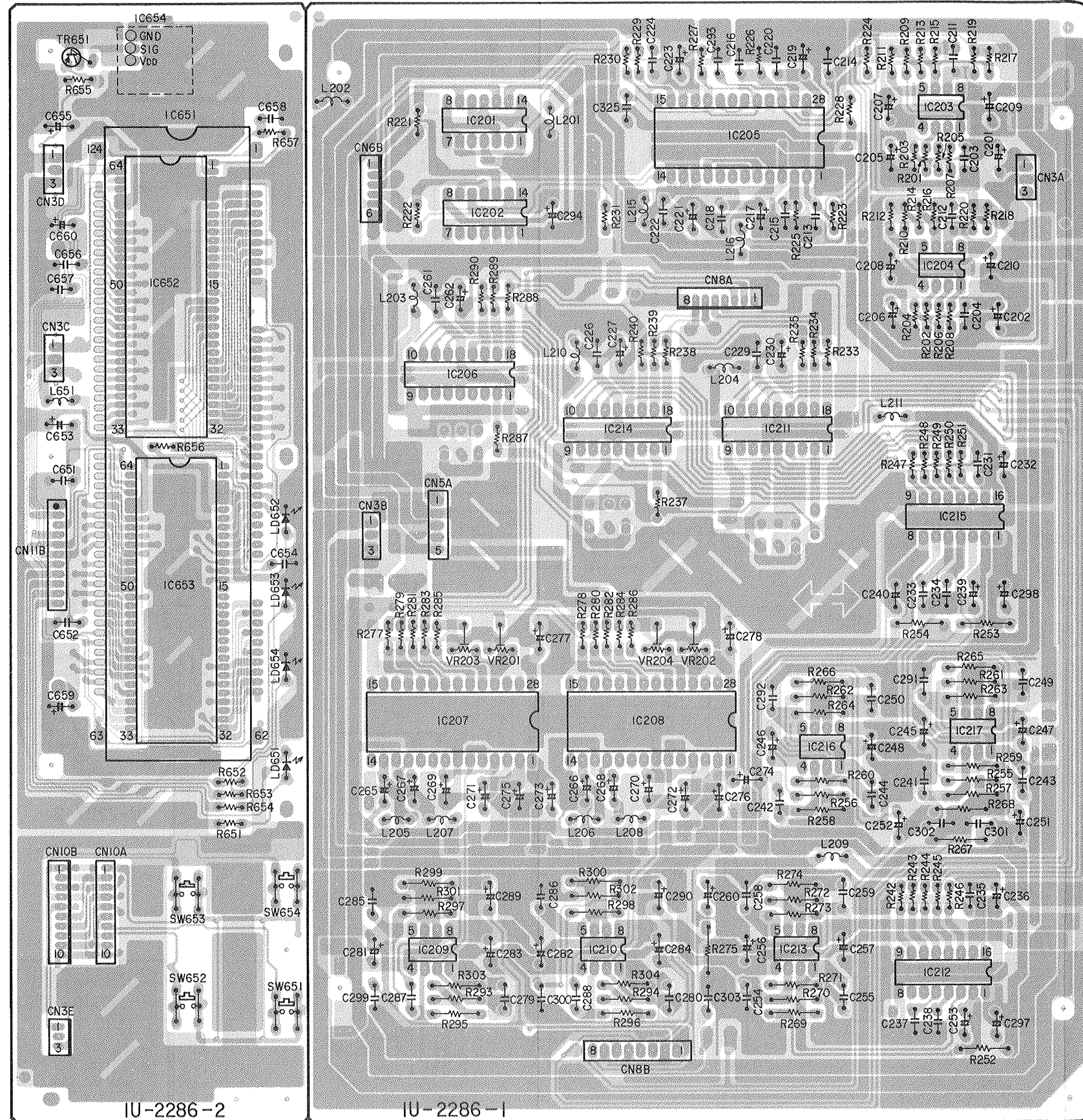
1U-2286



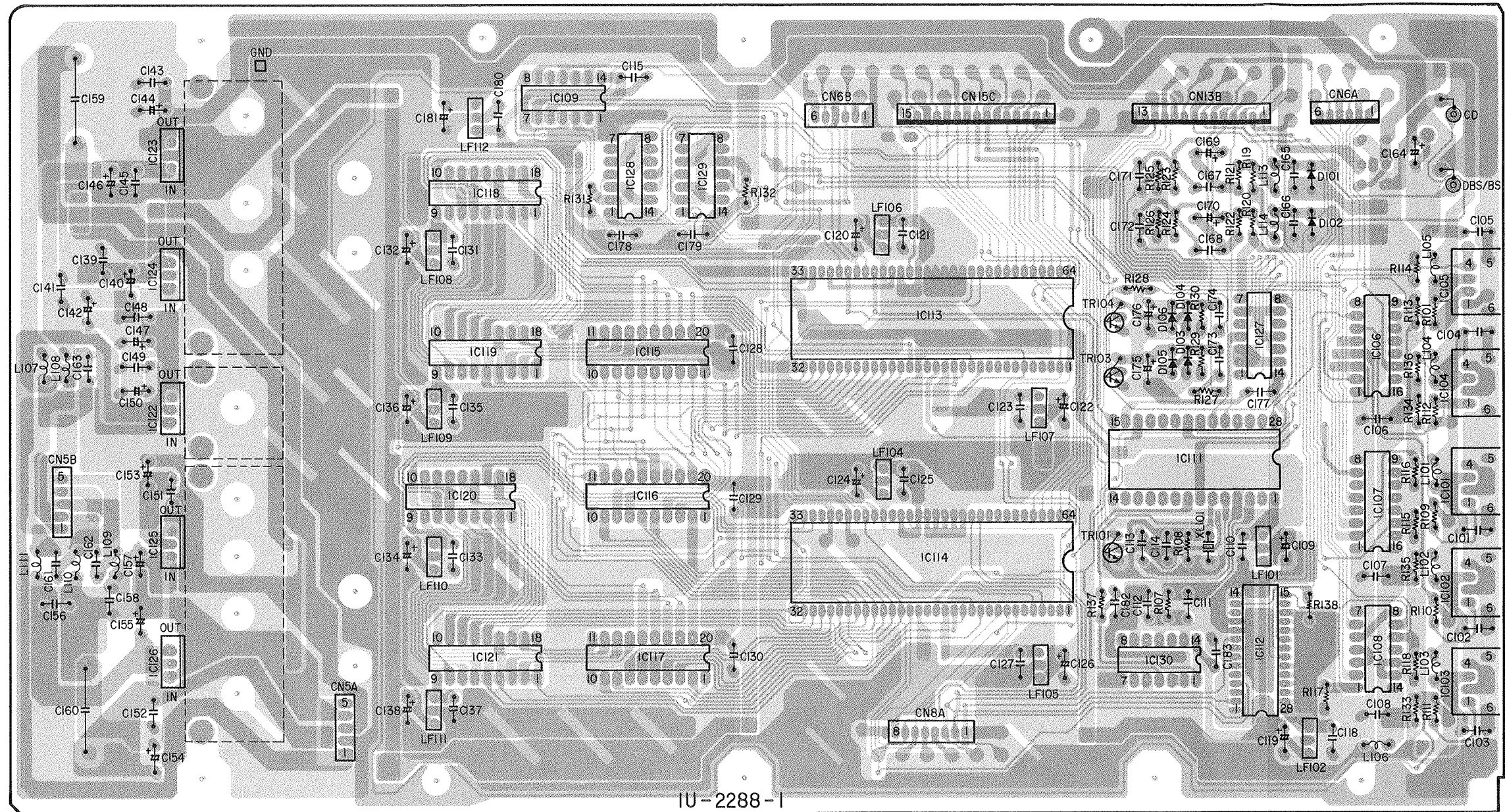
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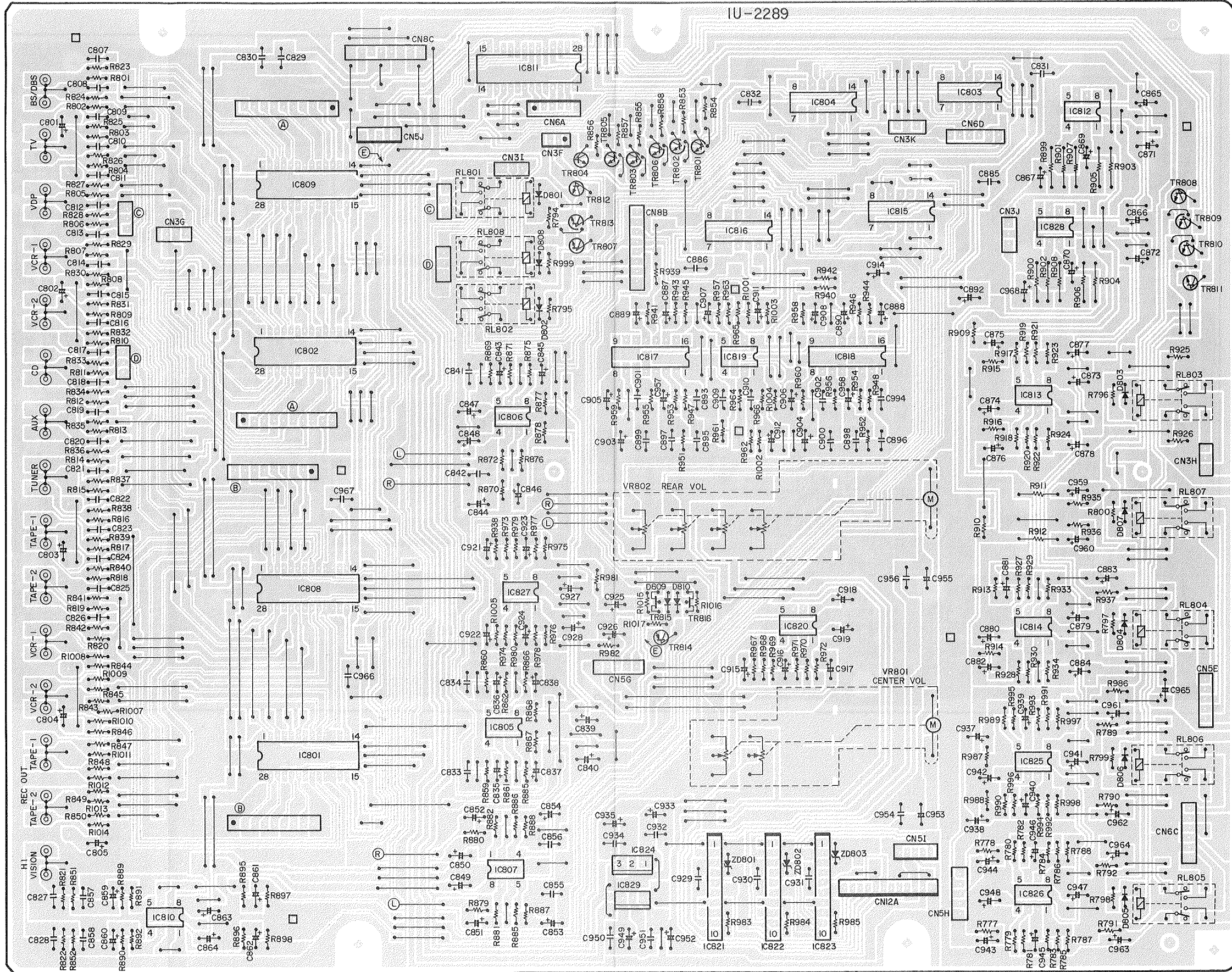
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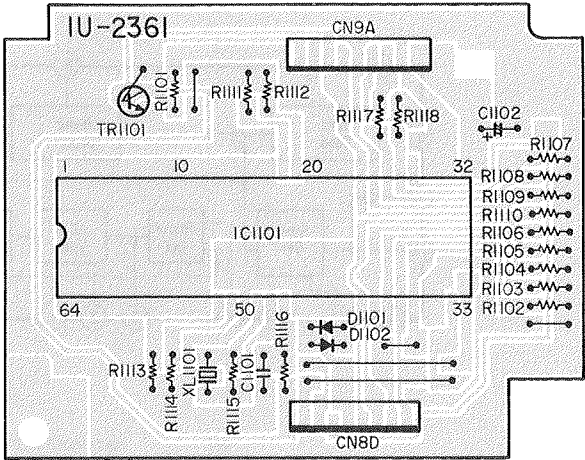
1U-2288



1U-2289



1U-2361



SEMICONDUCTORS

● IC's

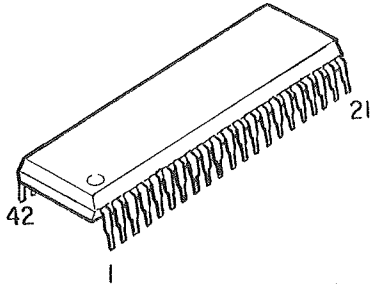
Method of Initializing (Memory clear) of Microcomputer

The following steps should be taken to clear the microcomputer memory and restore to the initial status.

1. Press POWER SW, turn OFF power of the unit, and set to Standby mode.
2. Unplug power cord once from the wall outlet.
3. Plug in the power cord hold and pressing 4 keys of AUDIO, VIDEO, DIGITAL IN, VIDEO SELECT simultueously.
4. When Power SW is pressed and after FL are all lit "INPUT TUNER" is indicated, the memory contents are cleared.

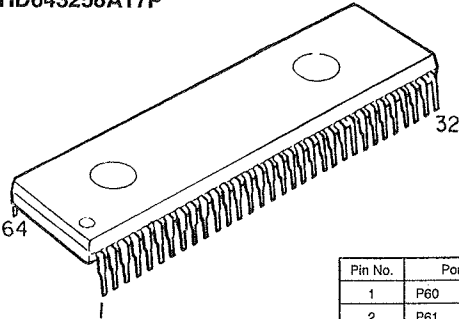
Thus, the initial mode is restored. Due to some reasons, if the memory can not be cleared out, repeat steps 1~3.

IC401
HD404302A31P



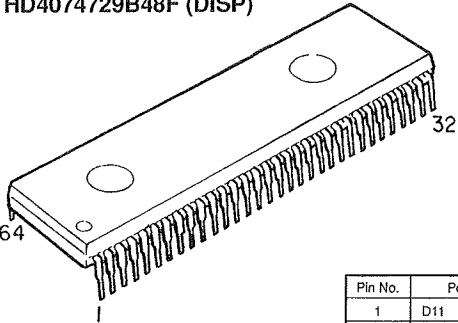
Pin No.	Port Name	I/O	ACT	INT	Usage
1	D10 Power		H	L	POWER ON/OFF discriminating
2	D11 ERR	I		H	Error Input
3	D12 DEMP	I		L	De-emphasis Input
4	RA1 SEL	I		L	Select signal Input
5	R00 S ₁	I		H	Select 1 input
6	R01 S ₂	I		H	Select 2 input
7	R02 DBS/BS	I	H	L	DBS/BS
8	R03 TV	I	H	L	TV
9	R10 VDP	I	H	L	VDP
10	R11 VCR-1	I	H	L	VCR-1
11	R12 VCR-2	I	H	L	VCR-2
12	R13 V, AUX	I	H	L	V, AUX
13	R20 KR ₁	I		L	Key scan signal return input 1
14	R21 KR ₂	I		L	Key scan signal return input 2
15	R22 KR ₃	I		L	Key scan signal return input 3
16	R23 KR ₄	I		L	Key scan signal return input 4
17	R30 SI	I/O			Serial data
18	R31 CK	I/O			Clock
19	INT0 REQ	I/O			Request
20	INT1 REM	I	H	H	Remote control code input
21	GND		L	L	GND
22	AVcc		H	H	A/D Power supply
23	AN0	I			Master volume level A/D input
24	AN1	I			Center volume level A/D input
25	AN2	I			Rear volume level A/D input
26	AN3		L	L	
27	AVSS		L	L	A/D GND
28	RESET	I	L	L	RESET input Master-slave communication
29	TEST	I	H	H	TEST input
30	OSC1	I			Oscillation input
31	OSC2	I			Oscillation output
32	Vcc		H	H	Power supply
33	D0 KS ₁	O	L	L	Key scan signal output 1
34	D1 KS ₂	O	L	L	Key scan signal output 2
35	D2 KS ₃	O	L	L	Key scan signal output 3
36	D3 KS ₄	O	L	L	Key scan signal output 4
37	D4 KS ₅	O	L	L	Key scan signal output 5
38	D5 KS ₆	O	L	L	Key scan signal output 6
39	D6 KS ₇	O	L	L	Key scan signal output 7
40	D7 48kHz	O	L	L	Sampling frequency indication 48 kHz
41	D8 44kHz	O	L	L	Sampling frequency indication 44 kHz
42	D9 32kHz	O	L	L	Sampling frequency indication 32 kHz

IC702
HD643258A17P



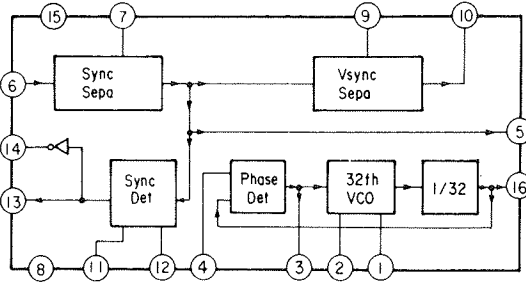
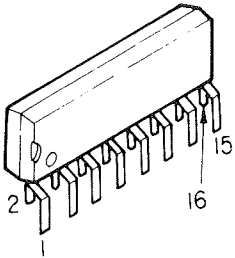
Pin No.	Port Name	I/O	ACT	INT	Usage
1	P60	O	H	L	SOURCE/DSP H: DIRECT L: DSP (2ch, SURROUND)
2	P61	O	H	L	CD DIRECT H: CD, VDP DIRECT L: SD or DSP
3	P62	O	H	L	VDP/CD DIRECT H: VDP L: CD
4	P63	O		L	P0 DSP control (On digital input: H)
5	P64	O		L	P1
6	P65	I	SI		SOAK 1 Indication of serial communication completed
7	P66	O	SI		SORQ 1 Request input
8	RESET	I	L		RESET input (M51953 output connection)
9	XTAL	I			20 MHz ceramic filter
10	EXTAL	I			20 MHz ceramic filter
11	MD1	I		H	Set to single tip mode
12	MD0	I		H	Set to single tip mode
13	NMI	I		H	Power Breakdown detect input (at Power Breakdown: L)
14	Vcc				Power supply
15	STBY	I		H	Stand by (Normally: H)
16	Vss				GND
17	P40	O	SI		SRDY2 Indication of mail box communication completed
18	P41	I	SI		SIAR2 Indication of serial communication under operation
19	P42	O	SI		SIRQ2 Serial communication request output
20	P43	O	SI		SRDY Indication of mail box communication completed
21	P44	O	SI		DSP RST DSP-RST reset
22	P45	O	SI		SIRQ 1 DSP-RST request output
23	P46	I	SI		SIAR 1 Indication of serial communication under operation
24	P47	O	SI		SOCK Serial data clock output
25	P50	O	SI		SI Serial data output
26	P51	I	SI		SO Serial data input
27	P52	O	SI		SICK Serial data clock input
28	P53	I	SI		M-SI Master-slave communication data
29	P54	I			SYNC OSD SYNK DET (W/Video: H)
30	P55	I	SI		M-CK Clock
31	P70	I/O	SI		M-RQ Request
32	P71	O		L	
33	P72	I		L	
34	P73	I		L	
35	P74	O	SI		DATA
36	P75	O	SI		CK
37	P76	O	SI		ST1
38	P77	O	SI		ST2
39	Vcc				Power Supply
40	P27	O			OSC OFF Digital clock OFF (At analog direct: H)
41	P26	O			DIT RESET Digital interface reset (3/12)
42	P25	O	SI		CBDA
43	P24	O	SI		CBLP
44	P23	O	SI		CBCK
45	P22	I			ERR Error input
46	P21	O			SEL Data select
47	P20	O			KMODE Oscillation mode
48	Vss				GND
49	P17	O	H	L	Surround volume
50	P16	O	H	L	Driver
51	P15	O	H	L	C, VR UP
52	P14	O	H	L	C, VR DOWN
53	P13	O	H	L	M, VR UP
54	P12	O	H	L	M, VR DOWN
55	P11	O	H	L	VIDEO MUTE Video Signal Muting
56	P10	O	H	L	VOIDEO POWER Video circuit Power Supply
57	P30	O	H	L	A/D RST A/D Converter reset (At analog direct: H)
58	P31	O	H	L	MUTE & STAND BY LED
59	P32	O	H	L	OVER LOAD LED
60	P33	O	H	L	POWER RELAY
61	P34	O	SI		SI data
62	P35	O	SI		CK clock
63	P36	I/O	SI		REQ request
64	P37	O	H	L	RESET Slave microcomputer reset

IC1101
HD4074729B48F (DISP)

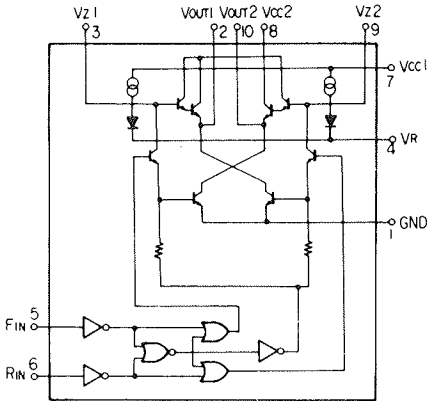
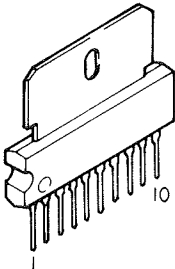


Pin No.	Port Name	I/O	ACT	INT	Usage	
1	D11	I		H		
2	D12	I		H		
3	D13	I		H		
4	D14	I		H		
5	D15	I		H		
6	R00	I		H		
7	R01	I		H		
8	R02	I		H		
9	R03	I		H		
10	R10	I		H		
11	R11	I		H		
12	R12	I		H		
13	R13	I		H		
14	R20	I		H		
15	R21	I		H		
16	R22	I		H		
17	R23	I		H		
18	RA0	I		L		
19	RA1	I		L		
20	R30	I		H		
21	R31	I		H		
22	R32	I		H		
23	R33	I		H		
24	R50	VFD CK	O	Si	VFD CK	
25	R51	VFD DATA	O	Si	VFD DATA	
26	R52	VFD ST1	O	L	H	VFD ST1
27	R53	VFD ST2	O	L	H	
28	INT0	M-RQ	I/O	Si	Request	Master-slave communication
29	R61	I		L		
30	R62	I		L		
31	R63	POWER	I	H	L	Power ON/OFF Discrimination
32	Vcc	Vcc				Power supply
33	R40	M-CK	O	Si	Clock	Master-slave communication
34	R41	M-SI	O	Si	Data	
35	R42	I		L		
36	R43	I		L		
37	R70	OSD AC	O	L	H	M50458
38	R71	OSD CK	O	Si		
39	R72	OSD CS	O	H	L	
40	R73	OSD DATA	O	Si		
41	R80	OSD SYNC	I	(W/Video 3)		
42	R81	I		L		
43	R90	I		L		
44	R91	I		L		
45	R92	I		L		
46	R93	I		L		
47	RESET	I		H	L	
48	OSC2					4MHz Ceramic filter
49	OSC1					
50	GND					Power supply
51	CL1			L		
52	CL2			L		
53	TEST	I		H		
54	D0	I		H		
55	D1	I		H		
56	D2	I		H		
57	D3	I		H		
58	D4	I		H		
59	D5	I		H		
60	D6	I		H		
61	D7	I		H		
62	D8	I		H		
63	D9	I		H		
64	D10	I		H		

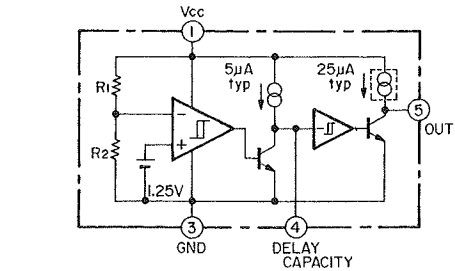
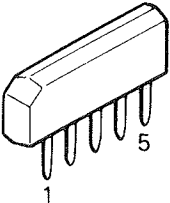
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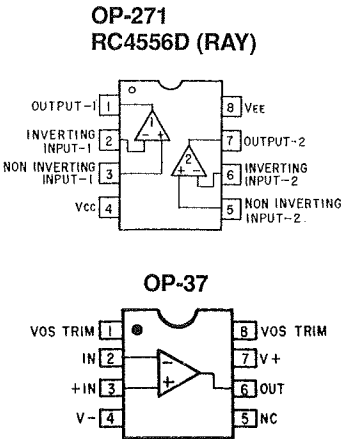
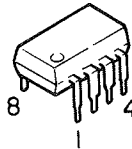
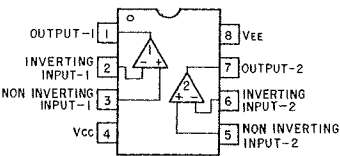
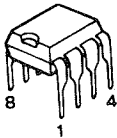
BA6109



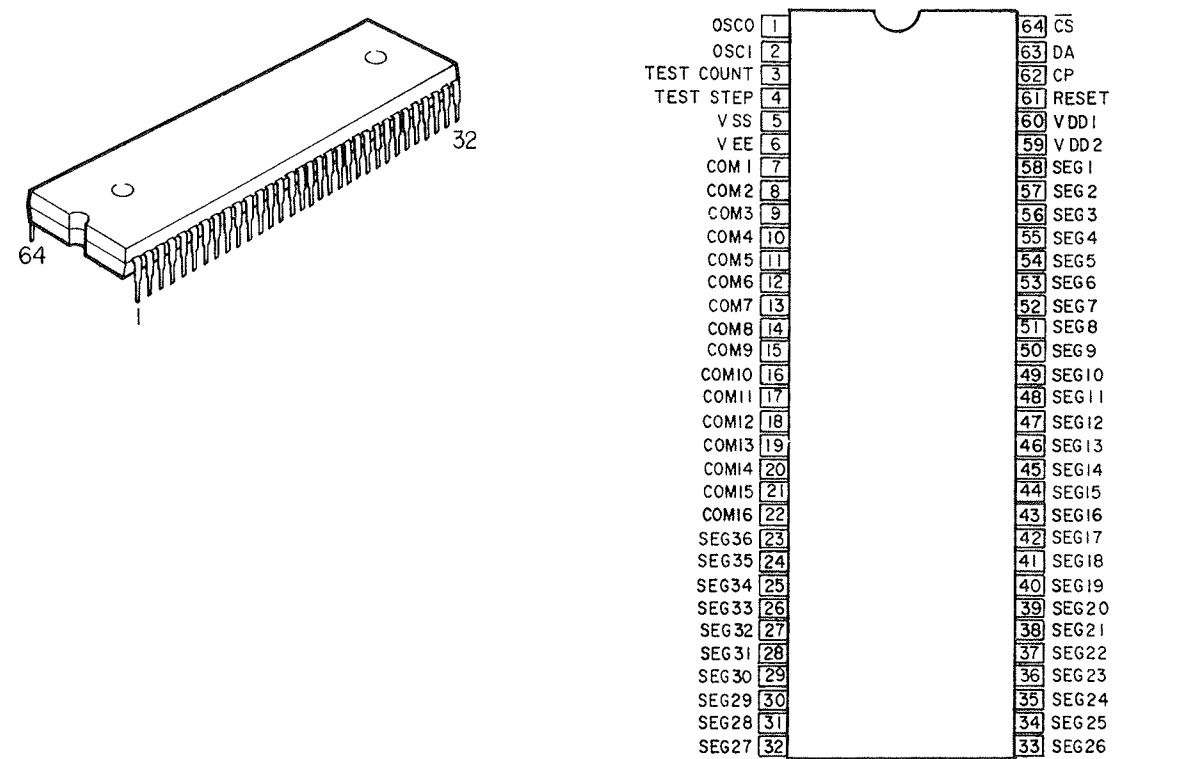
M51953B



MC14577AP
M5218AP
NJM2068DAC
RC5532DD (RAY)

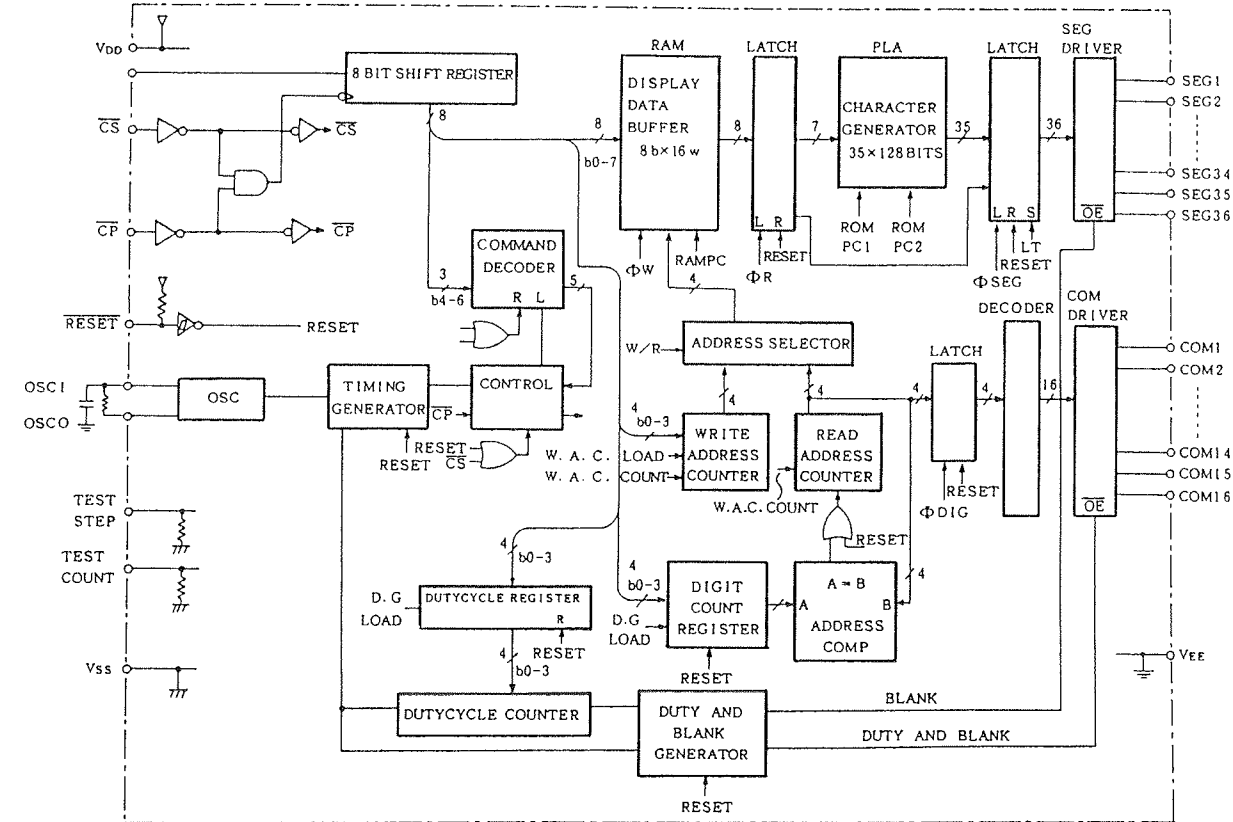


MSC7128-03SS

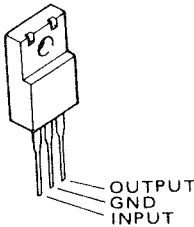


Terminal Functions

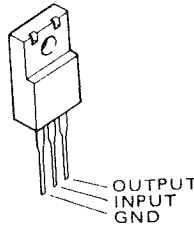
Name	No.	I/O	Connect to:	Function
VDD1	60	—	Power souce	VDD1-VSS Internal Power supply. VDD2-VEE Power supply for drive circuit of fluorecence indicator tube.
VDD2	59			
VSS	5			
VEE	6			
DA	63	I	Microcomputer	Serial data input, Inputs from (positive logic) LSB.
CP	64	I	Microcomputer	Shift check input. Data shift at rise of CP.
CS	2	I	Microcomputer	Chip select input. Prohibits data serial transfer when made to "H".
OSC1	2	I		CR External terminal for CR oscillator. At C=100 PF, R=47Kohm, fosc≈250KHz
OSC0	1	O		
RESET	61	I		Reset input (Pull up resistor built-in) When mate to "LOW", internal logic is reset at "LOW" and SEG 1~16 are all output"LOW".
COM 1	7	O	Fluorecence indicator tube grid electrode	Driving output for fluorecence indicator grid. Able to connect directly to fluorecence indicator tube. Therefore Pull down resister is unnecessary. I _{OH} > -30mA
COM 16	22			
SEG 1	58	O	Fluorecence indicator tube anode	Driving output for anode for fluorecence indicator tube 5×7 dots. Able to connect directly to fluorecence indicator tube. Therefore Pull down resister is unnecessary. I _{OH} > -2mA
SEG 35	24			
SEC 36	23	O	Fluorecence indicator tube anode	Driving output for anode for fluorecence indicator tube cursor. Able to connect directly to fluorecence indicator tube. Therefore Pull down resister is unnecessary. I _{OH} > -10mA
TEST STEP	4	I		Input for test mode setting.(Normally open)
TEST COUNT	3	I		Input for test clock.(Normally open)



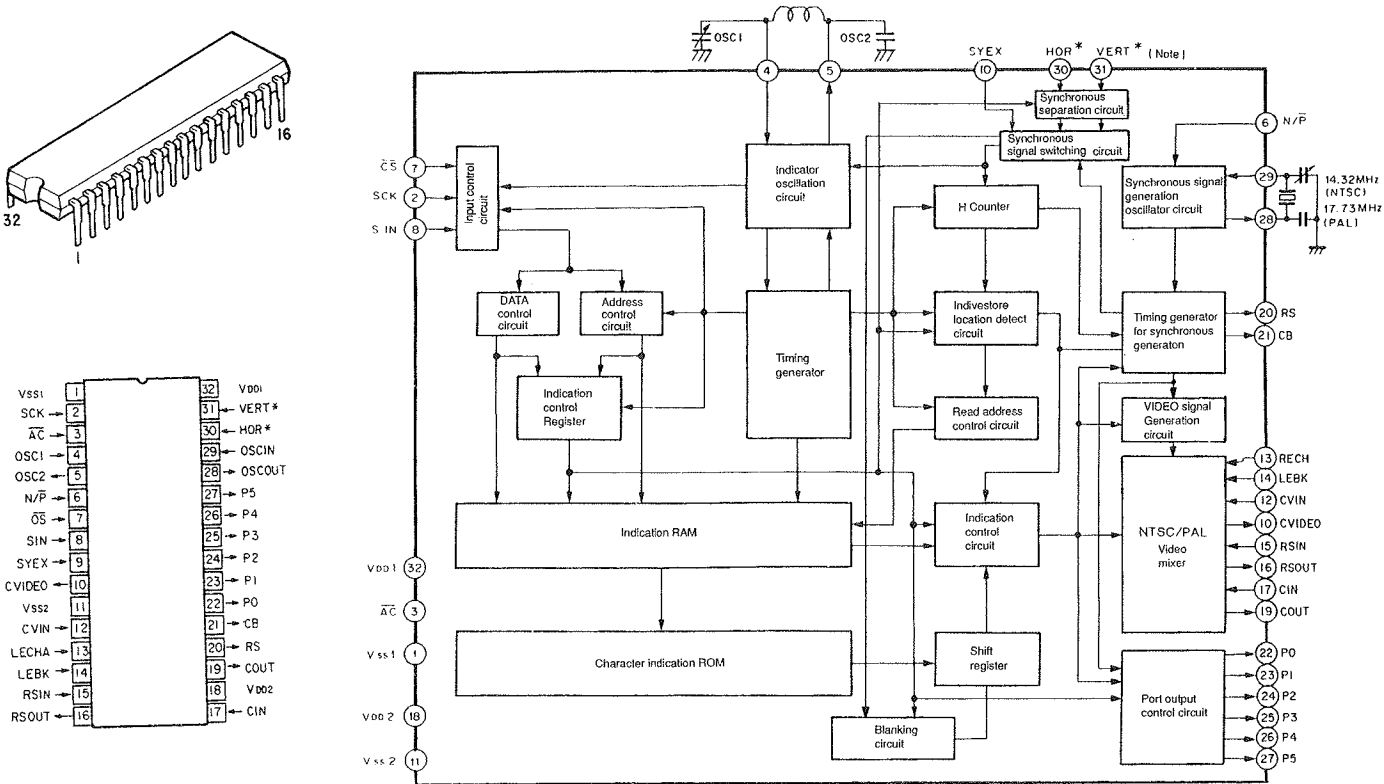
NJM7806FA
NJM7815FA
NJM7812FA



NJM7906FA
NJM7915FA



0458-001SP



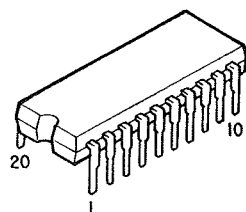
Terminal Functions

Name	No.	Description	I/O	Function
VSS1	1	Grounding terminal	—	Digital system grounding terminal. Connect to GND.
SCK	2	Serial clock input	I	With CS Terminal at "L", takes in SIN serial data at SCK rising. Hysteresis input. Pull-up resistor built-in.
AC	3	Auto clear Input	I	Resets internal circuitry at state of "L". Hysteresis input. Pull-up resistor built-in.
OSC1	4	External terminal For oscillation circuits	I	External terminal for Indicator oscillation circuits. Reference oscillation frequency is about 7MHz By this oscillation frequency, location of indication and width of characters on TV screen in the horizontal level is determined.
OSC2	5		O	
N/P	6	NTSC/PAL switch input	I	Switching terminal of synchronous signal generation of NTSC or PAL systems. In "H" mode, generates synchronous signal of NTSC system, while in "L" mode generates that of PAL system.
CS	7	Chip select input	I	Chip select terminal, and set at "L" state to perform serial data transfer. Pull up resistor built-in.
SIN	8	Serial data input	I	Input serially indicator control register and data, address of indication RAM. Pull-up register built-in.
SYEX	9	Synchronous signal switch input	I	Switching terminal of external synchronous signal or internal synchronous signal. SYEX constitutes EX register of 127 ₁₆ address of indication control register and logical sum of internal synchronous priority. However, when SYEX stays at "L" state, SYEX becomes internally synchronized respective to EX register value.
CVIDEO	10	Composite Video signal input	O	Output terminal of composite video signal. Outputs 2V _{P-P} composite video signal. When superimposed, external composite video signal from CVIN will be overlapped with character signal output. In case of Y-C independent output, outputs Y signal (Brightness signal).

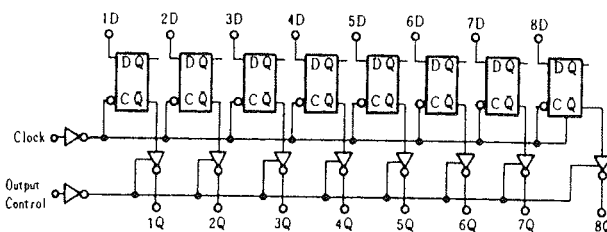
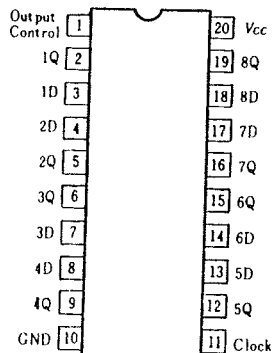
Name	No.	Function	I/O	Function
VSS2	11	Grounding terminal	—	Analog ground terminal. Connect to GND.
CVIN	12	Composite Video signal Input	I	Input terminal of composite video signal. Input 2V _{P-P} composite video signal after externally clamped. When superimposed, this composite video signal will be overlapped with characters, etc. In case of Y-C independent output, inputs Y signal (Brightness signal).
LECHA	13	Character level input	I	Input terminal to determine "white" level of character color for composite video signal.
LEBK	14	Blanking level input	I	For composite video signal, input terminal to determine "black" level and blanking level.
RSIN	15	Video signal input	I	Input terminal of video signal at internal synchronization. Input output signal of RSOUT terminal.
RSOUT	16	Video signal output	O	Output terminal of video signal at internal synchronization. Connect to RSIN terminal.
CIN	17	Chroma signal input	I	Input terminal of C-signal(chroma) at the time of Y-C independent output.
VDD2	18	Power supply terminal	—	Analog power supply terminal. Connect to +5V.
COUT	19	Chroma signal output	O	Input terminal of C-signal(chroma) at the time of Y-C independent output.
RS	20	Transfer color signal output	O	Transfer color signal output for video signal. Outputs signal with signal angle against color burst signal CB. Amplitude 5V.
CB	21	Color burst signal output	O	Outputs color burst signal of 3.58MHz at NTSC system. and 4.43MHz at PAL system.
P0	22	Output port P0	O	Shifting of port terminal output or YM (Brightness)signal output is feasible. At YM signal output, selection of polarity at character ROM determination is possible.
P2	23	Output port P1	O	Shifting of port terminal output or BLNK* (Video blanking)signal output is feasible. At BLNK* signal output, selection of polarity at character ROM determination is possible.
P3	24	Output port P2	O	Shifting of port terminal output or B* (Blue)signal output is feasible. At B* signal output, selection of polarity at character ROM determination is possible.
P4	25	Output port P3	O	Shifting of port terminal output or G* (Green)signal output is feasible. At G* signal output, selection of polarity at character ROM determination is possible.
P5	26	Output port P4	O	Shifting of port terminal output or R* (Red)signal output is feasible. At R* signal output, selection of polarity at character ROM determination is possible.
OSCIN	27	Output port P5	O	Shifting of port terminal output or CSYN (Composite synchro)signal is feasible.
OSCIN	28	Oscillation circuit for sync signal generation	I	External terminal of oscillation circuit for synchronous signal generation. Add oscillation of 14.32MHz for NTSC system and of 17.73 MHz for PAL syatem by quartz oscillator.
OSCOU	29		O	
HOR*	30	Horizontal sync signal input	I	Input horizontal synchronous signal. Hysteresis input. Selection of polarity is possible at character ROM determination.
VERT*	31	Vertical sync signal input	I	Input vertical synchronous siganl. Hysteresis input. Selection of polarity is possible at character ROM determination.
VDD1	32	Power supply terminal	—	Digital Power suply terminal. Connect to 5V.

(Note) Terminal with * mark can make selection on polarities of input / output.

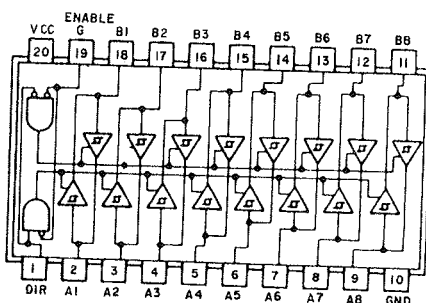
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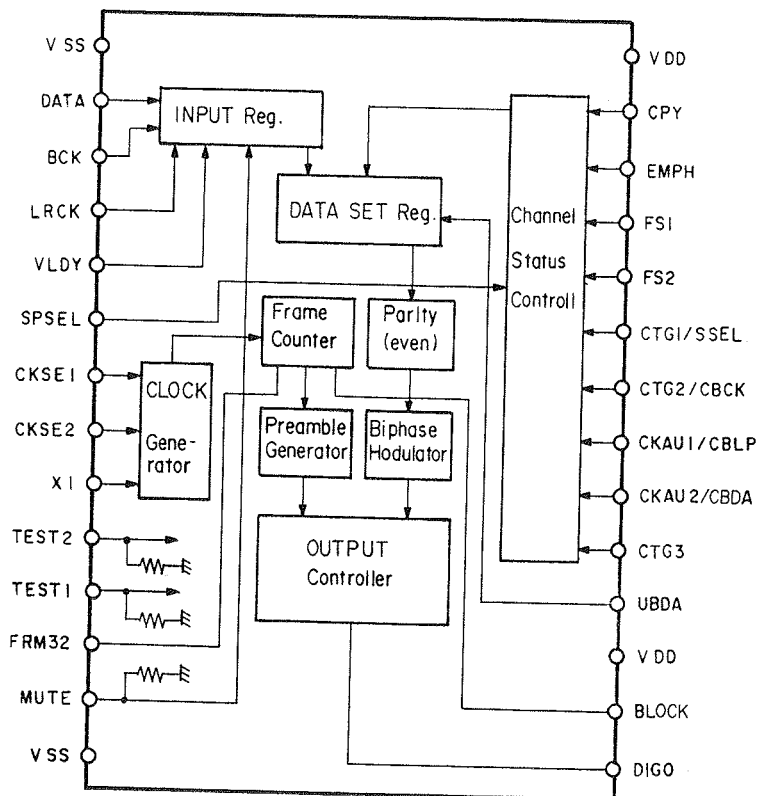
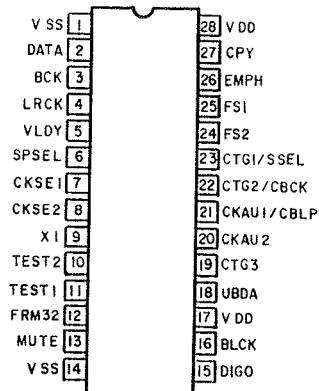
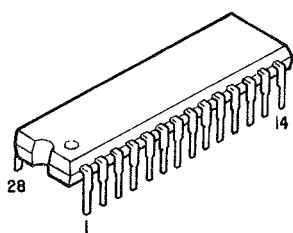
HD74HC374P



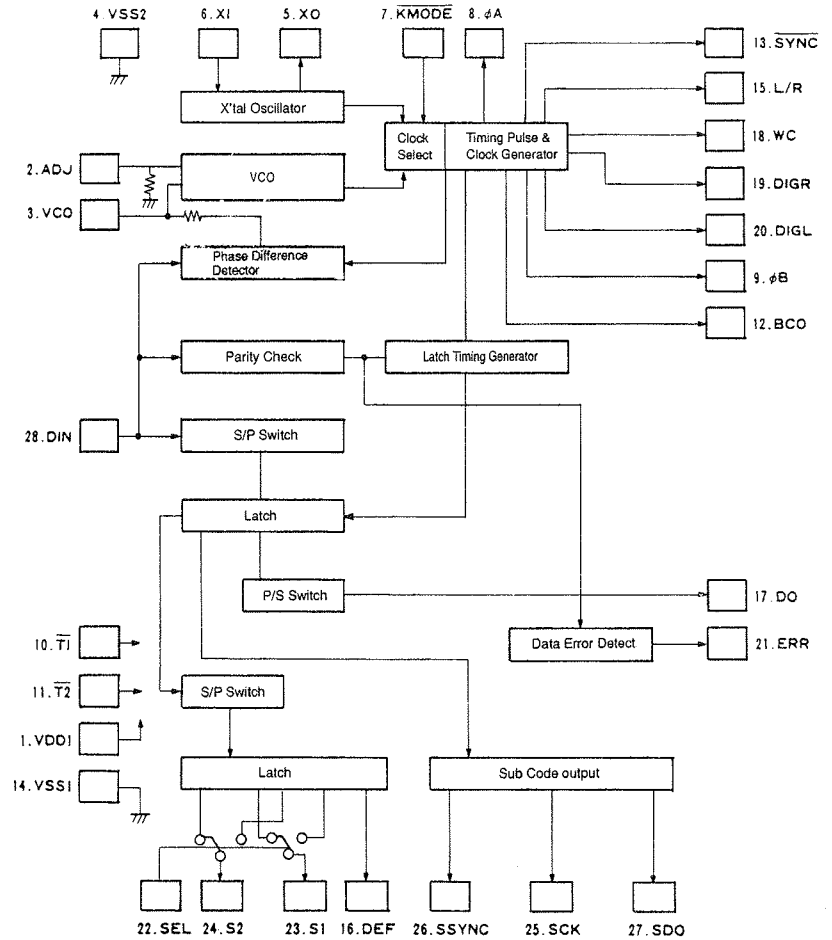
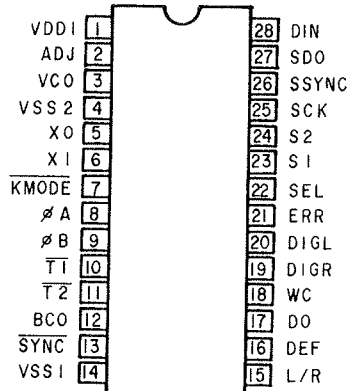
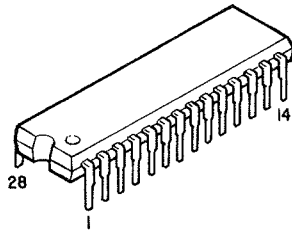
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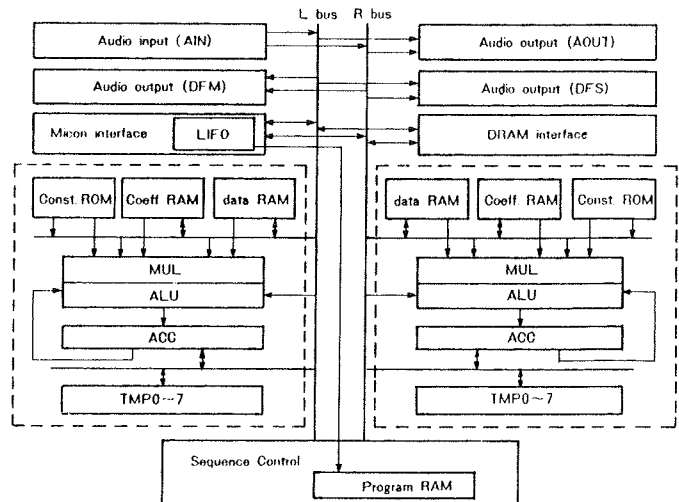
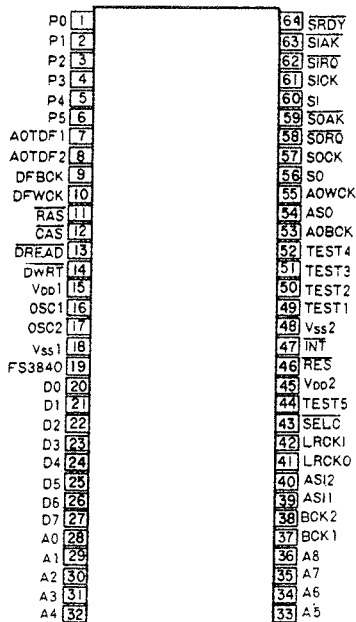
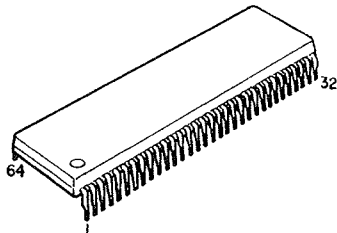
TC9231N



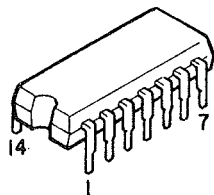
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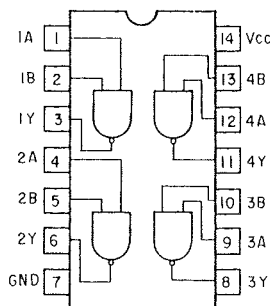
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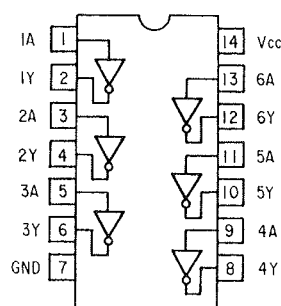
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HD74HC04P
HD74HC74P
HD74HC107P



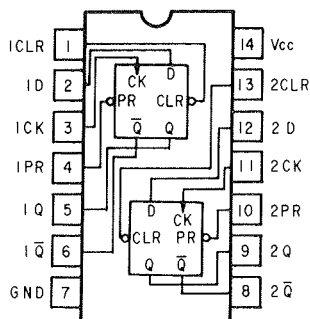
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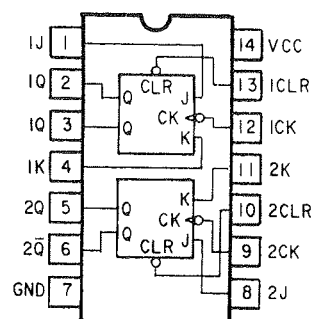
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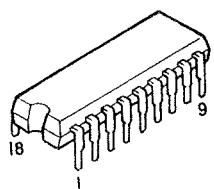
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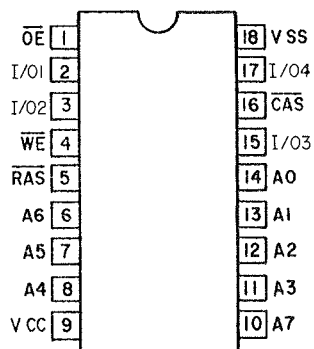
HD74HC107P



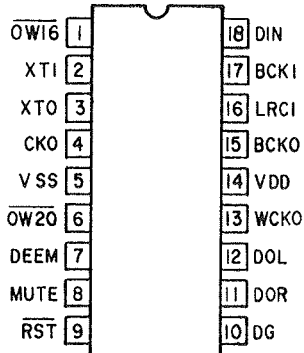
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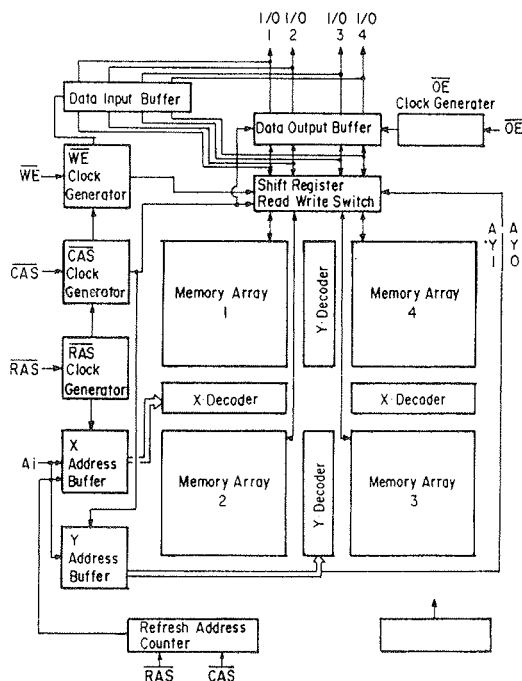
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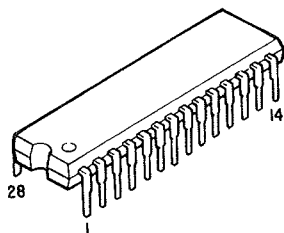
SM5840CP



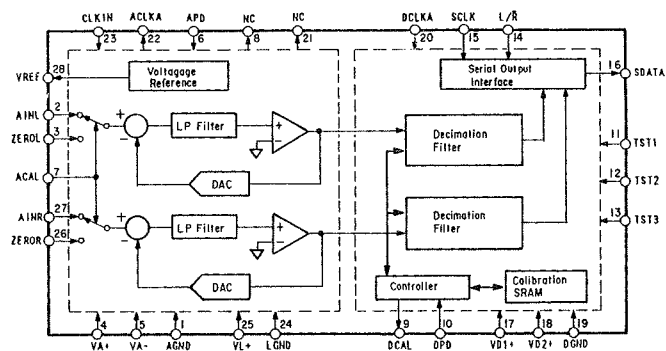
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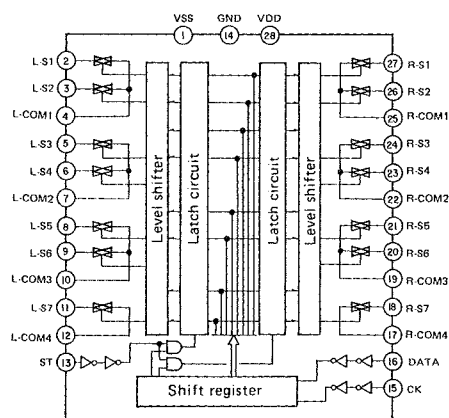
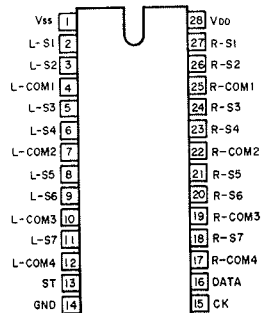
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TC9162N
TC9163N
TC9164N



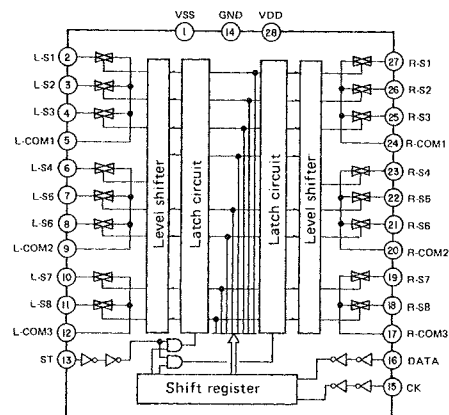
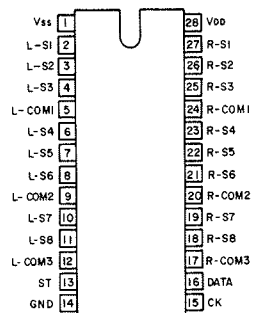
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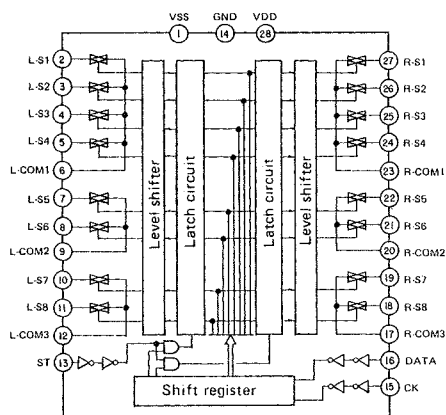
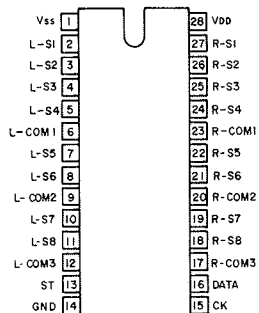
TC9162N



TC9163N

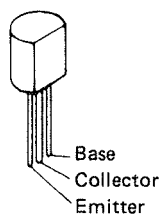


TC9164N

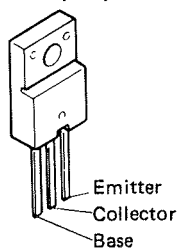


● TRANSISTORS

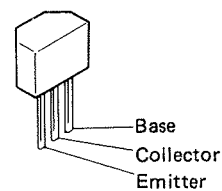
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2SC1815 (BL)



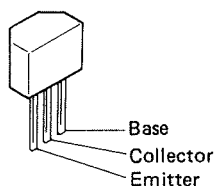
2SB1274 (R/S)
2SD1913 (R/S)



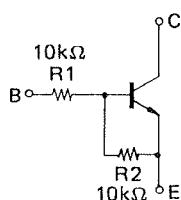
2SA1048 (GR)
2SC2458 (BL)



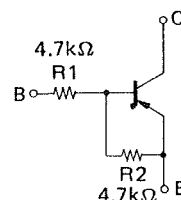
RN1202 (10K-10K)
DTA143ES (4.7K-4.7K)



RN1202 (10K-10K)

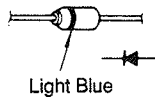


DTA143ES (4.7K-4.7K)

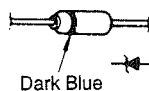


● DIODES (Included LED)

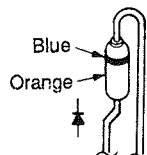
1SS270A



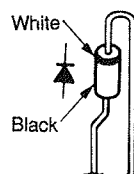
HZS4B-2
HZS5C-1
HZS7B-3
HZS20-1
HZS20-3



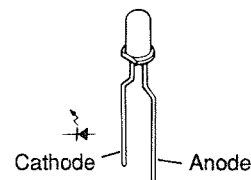
1SR35-200



DSM1D2 (TYPE3)

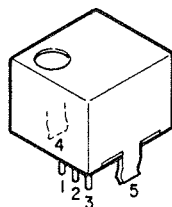


SEL2210R (RED)
SEL2410G (GREEN)



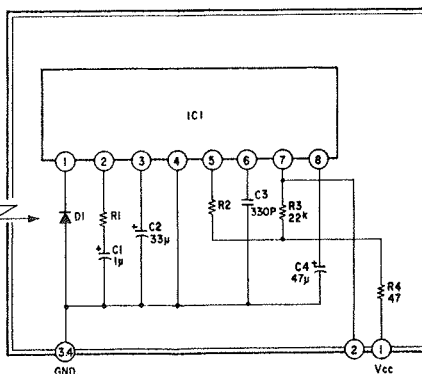
● OTHERS

SBX1610-52 (REMOTE SENSOR)



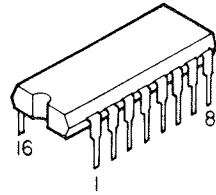
1. Vcc
2. Output
3. GND
4. Case Fin
5. Case Fin

STANDARD
TRANSMITTER

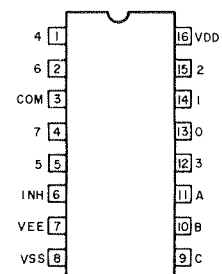


- IC1 : CX20106A Chip
- D1 : PIN Photo Dide Chip
- C1,C2,C4 : Aluminum Electrolytic Capacitor
- C3 : SL Characteristic $\pm 5\%$
- R1 : Gain Adjuster
- R2 : fo Adjuster $\pm 1\%$ USE
- R3,R4 : $\pm 5\%$

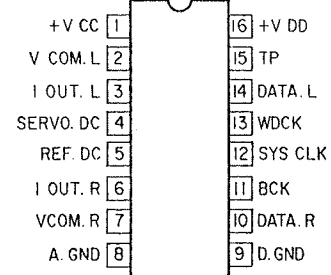
LA2730
TC4051BP
HD74HC153P
PCM67P



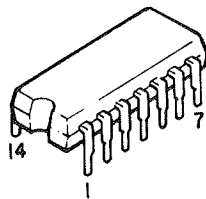
TC4051BP



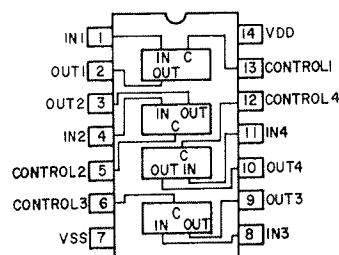
PCM67P



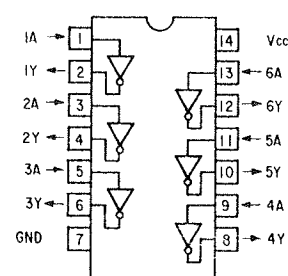
HD14066BP
TC74HCU04AP
LC4966



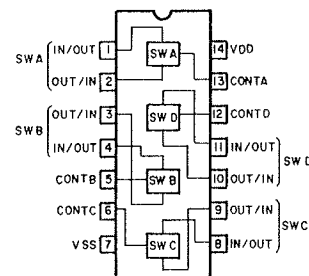
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TC74HCU04AP

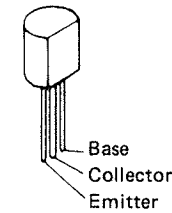


LC4966

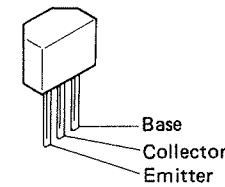


● TRANSISTORS

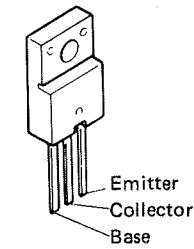
2SA988 (E/F)
2SC1815 (BL)



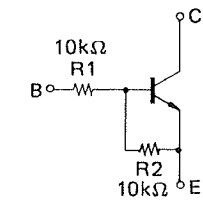
RN1202 (10K-10K)
DTA143ES (4.7K-4.7K)



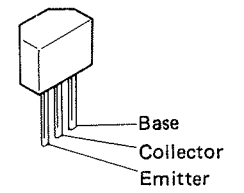
2SB1274 (R/S)
2SD1913 (R/S)



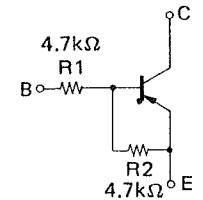
RN1202 (10K-10K)



2SA1048 (GR)
2SC2458 (BL)

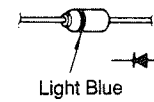


DTA143ES (4.7K-4.7K)



● DIODES (Included LED)

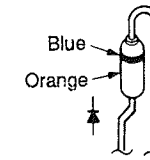
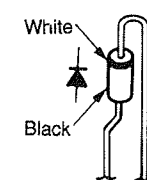
1SS270A



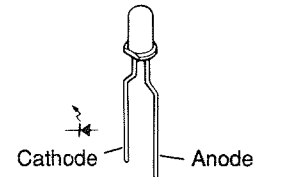
HZS4B-2
HZS5C-1
HZS7B-3
HZS20-1
HZS20-3



1SR35-200

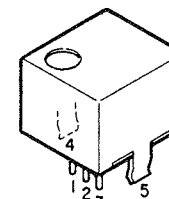
**DSM1D2 (TYPE3)**

SEL2210R (RED)
SEL2410G (GREEN)

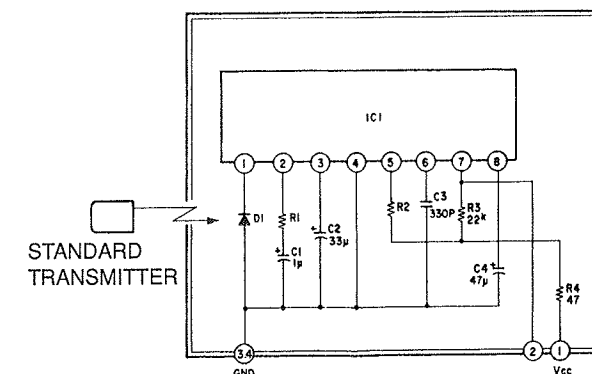


● OTHERS

SBX1610-52 (REMOTE SENSOR)

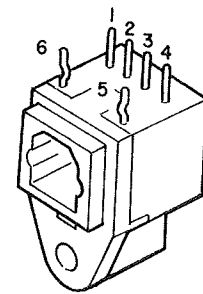


1. Vcc
2. Output
3. GND
4. Case Fin
5. Case Fin



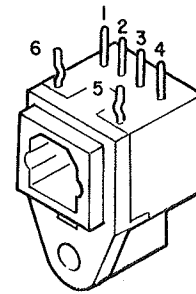
IC1	: CX20106A Chip
D1	: PIN Photo Dide Chip
C1,C2,C4	: Aluminum Electrolytic Capacitor
C3	: SL Characteristic $\pm 5\%$
R1	: Gain Adjuster
R2	: fo Adjuster $\pm 1\%$ USE
R3,R4	: $\pm 5\%$

Optical Reception Module (TORX176)



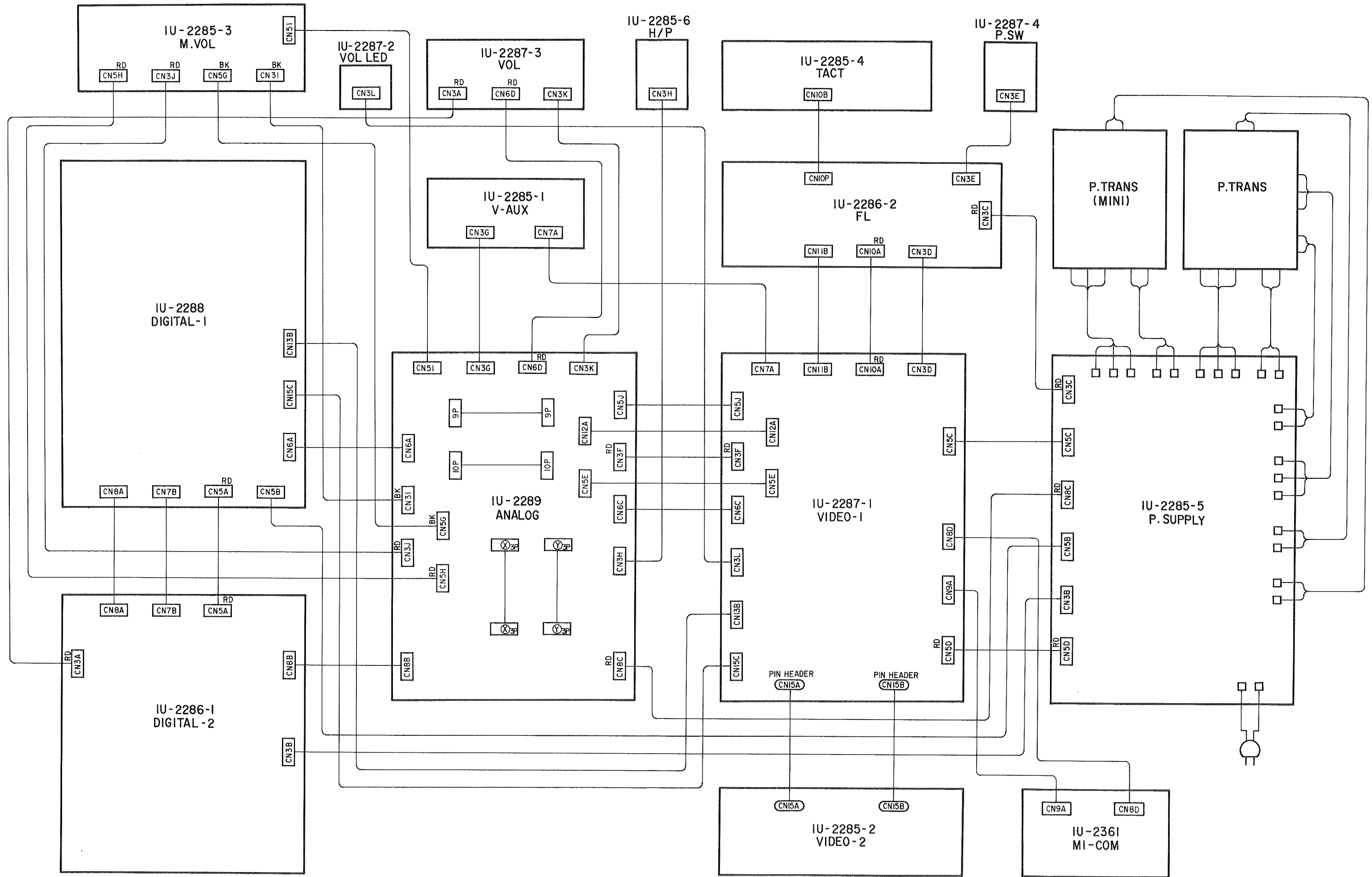
1. Output
2. GND 1
3. Vcc
4. GND 2
5. Case
6. Case

Optical Transmitting Module (TOTX176)

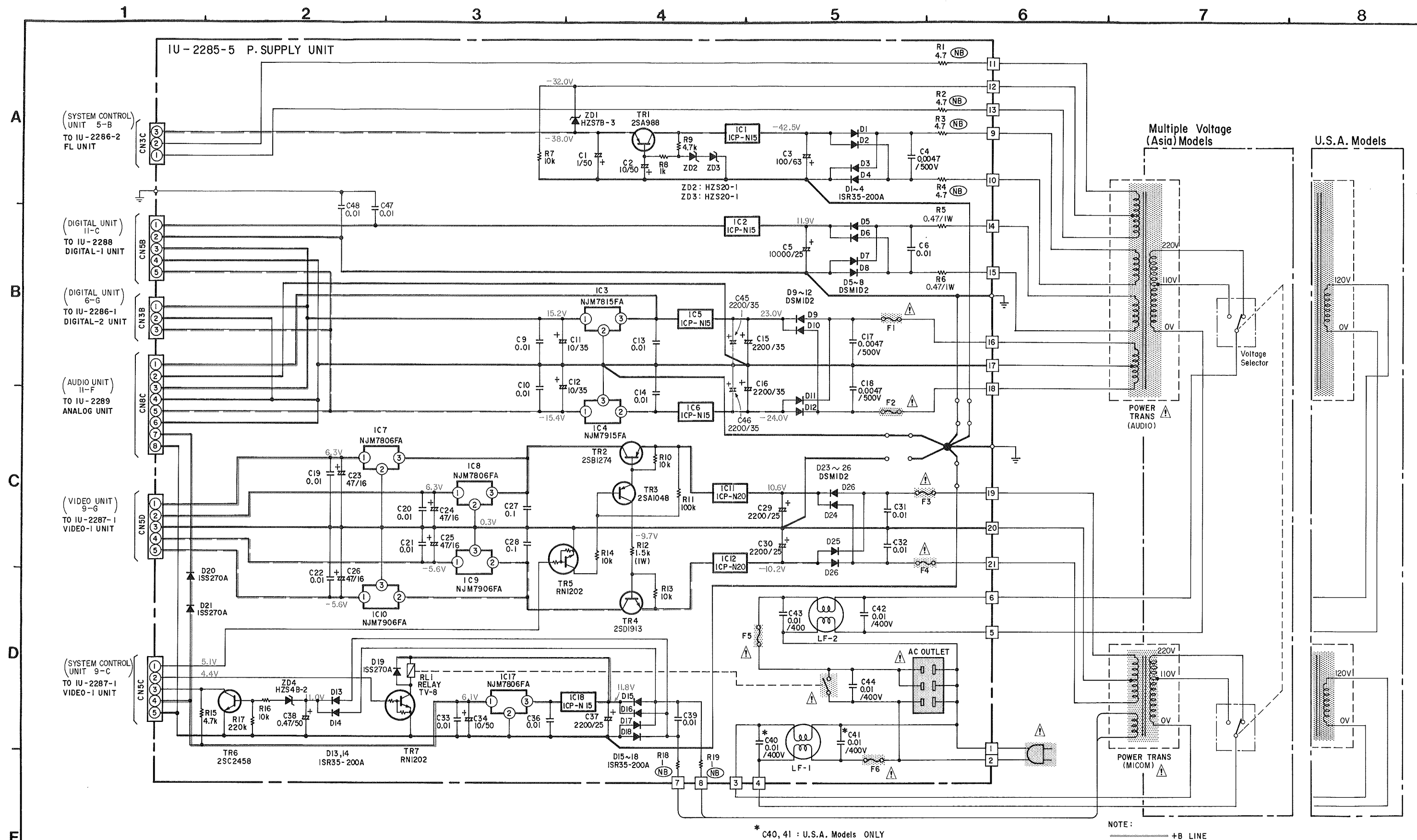


1. GND
2. Resistor for adjusting LED Current
3. Vcc
4. Input
5. NC
6. NC

WIRING DIAGRAM



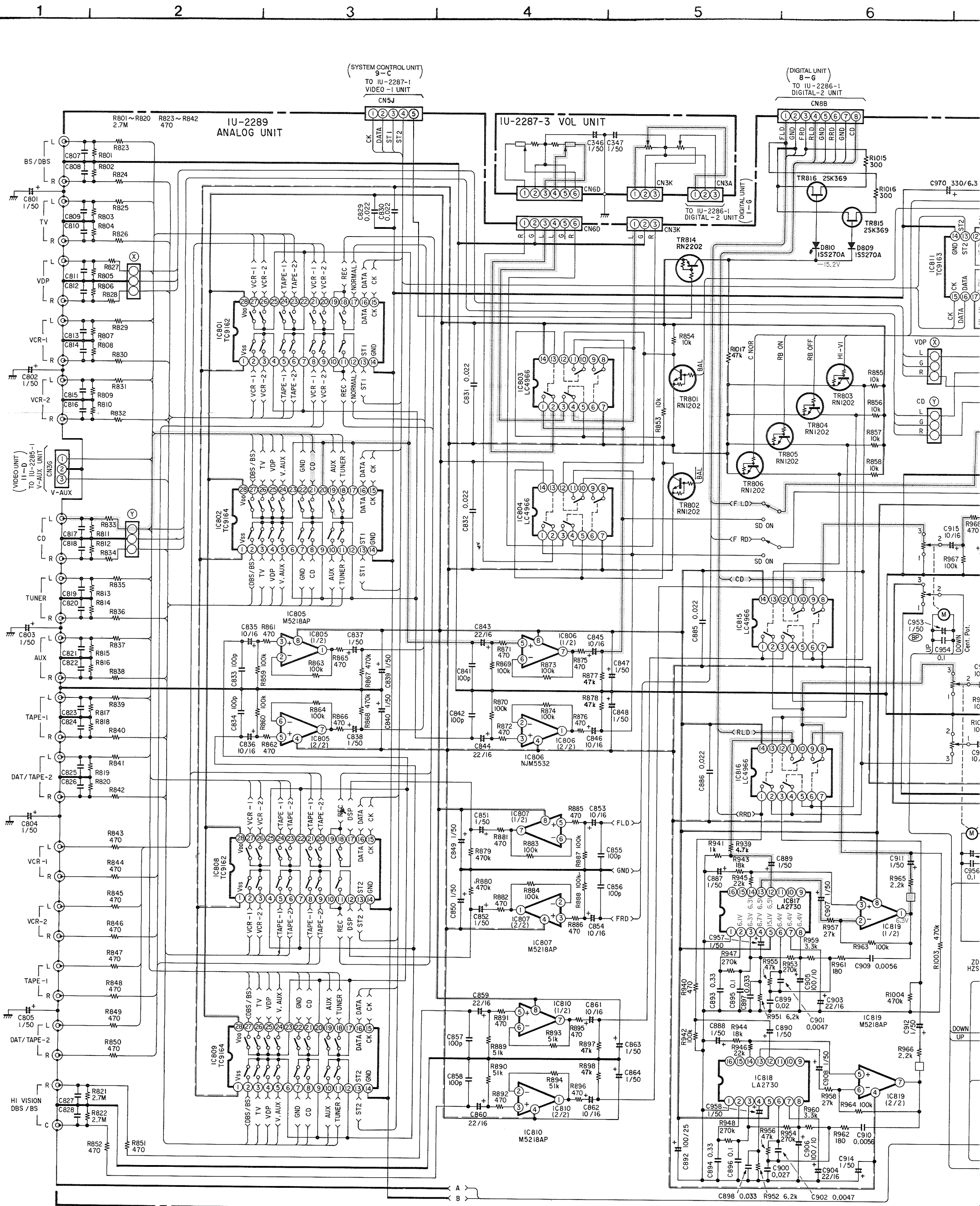
SCHEMATIC DIAGRAM (POWER SUPPLY UNIT)

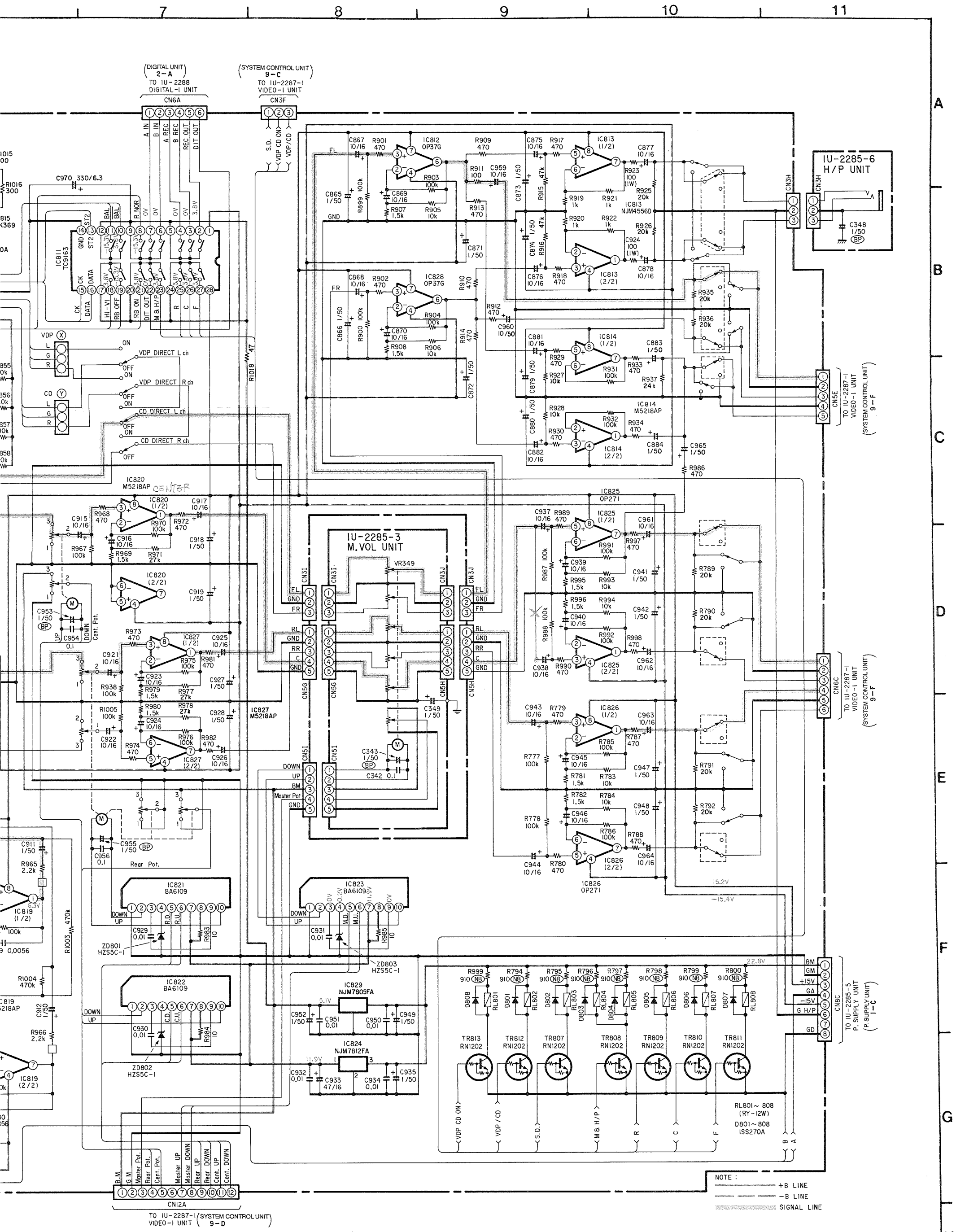


NOTES

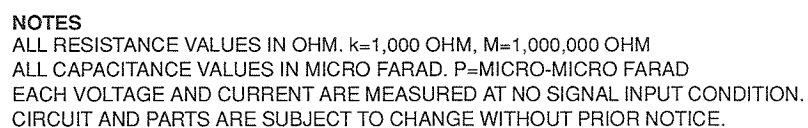
ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 OHM
 ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
 EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
 CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

SCHEMATIC DIAGRAM (AUDIO INPUT UNIT)

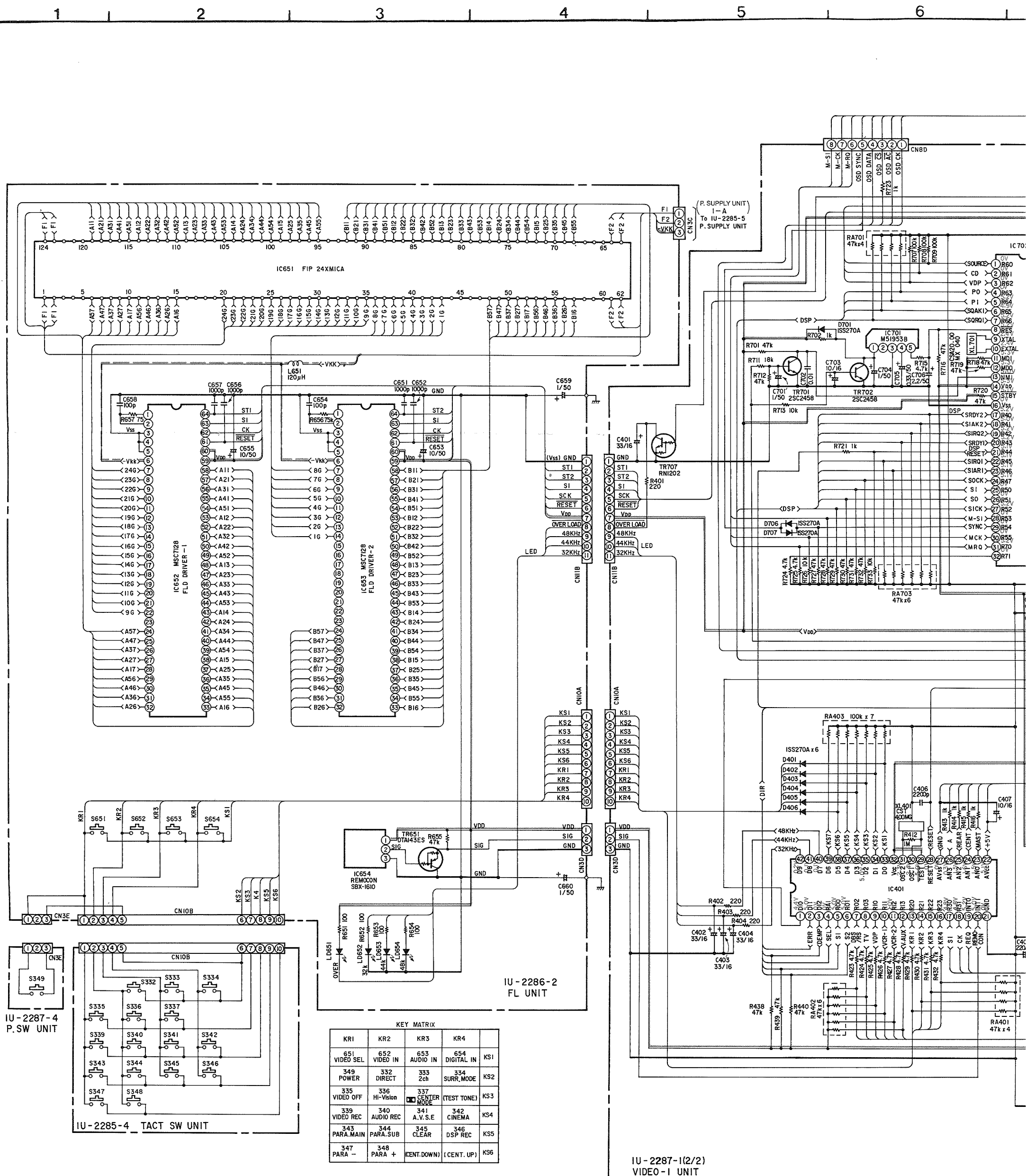


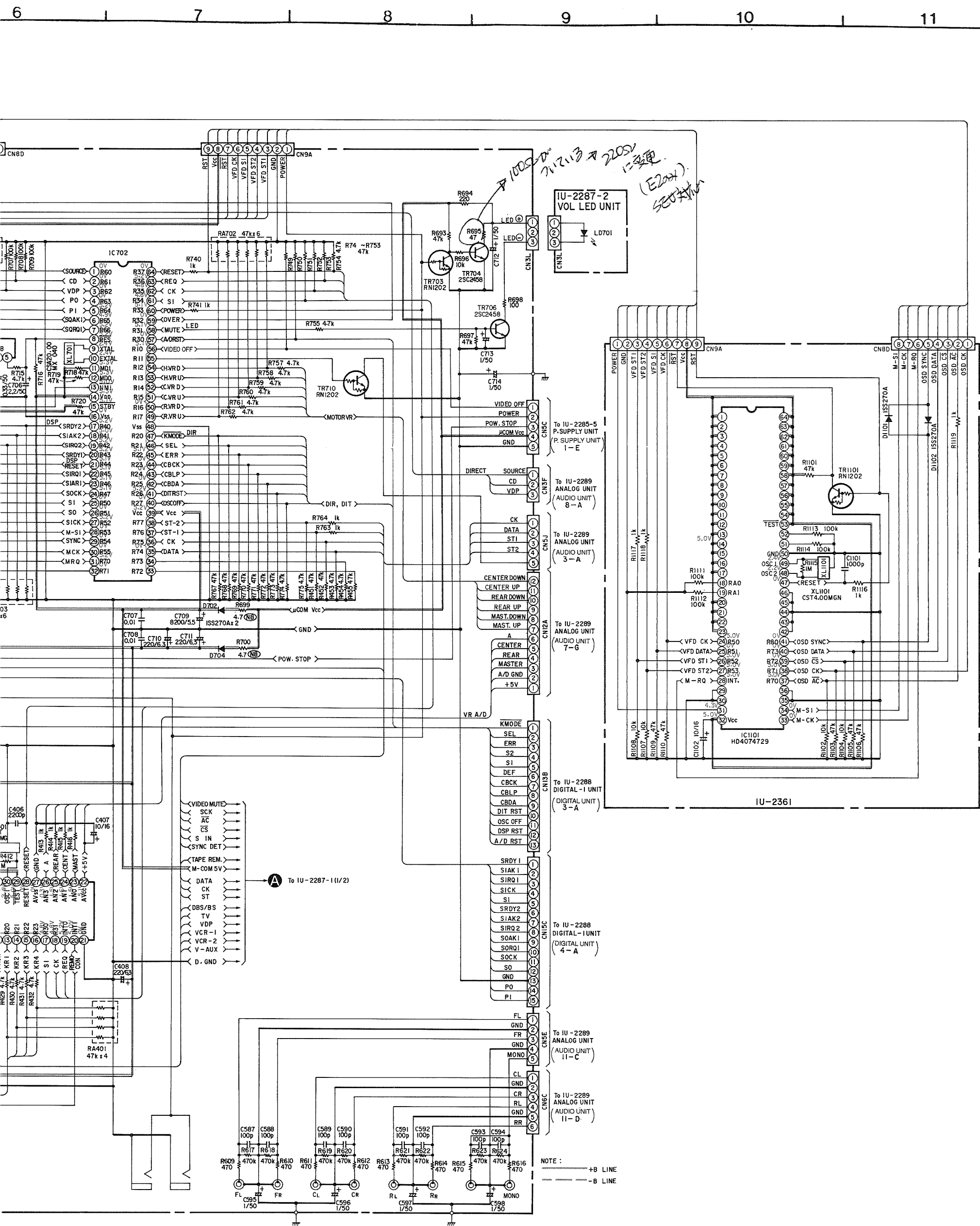


NOTES
 ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 OHM
 ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
 EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
 CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.



SCHEMATIC DIAGRAM (SYSTEM CONTROL UNIT)

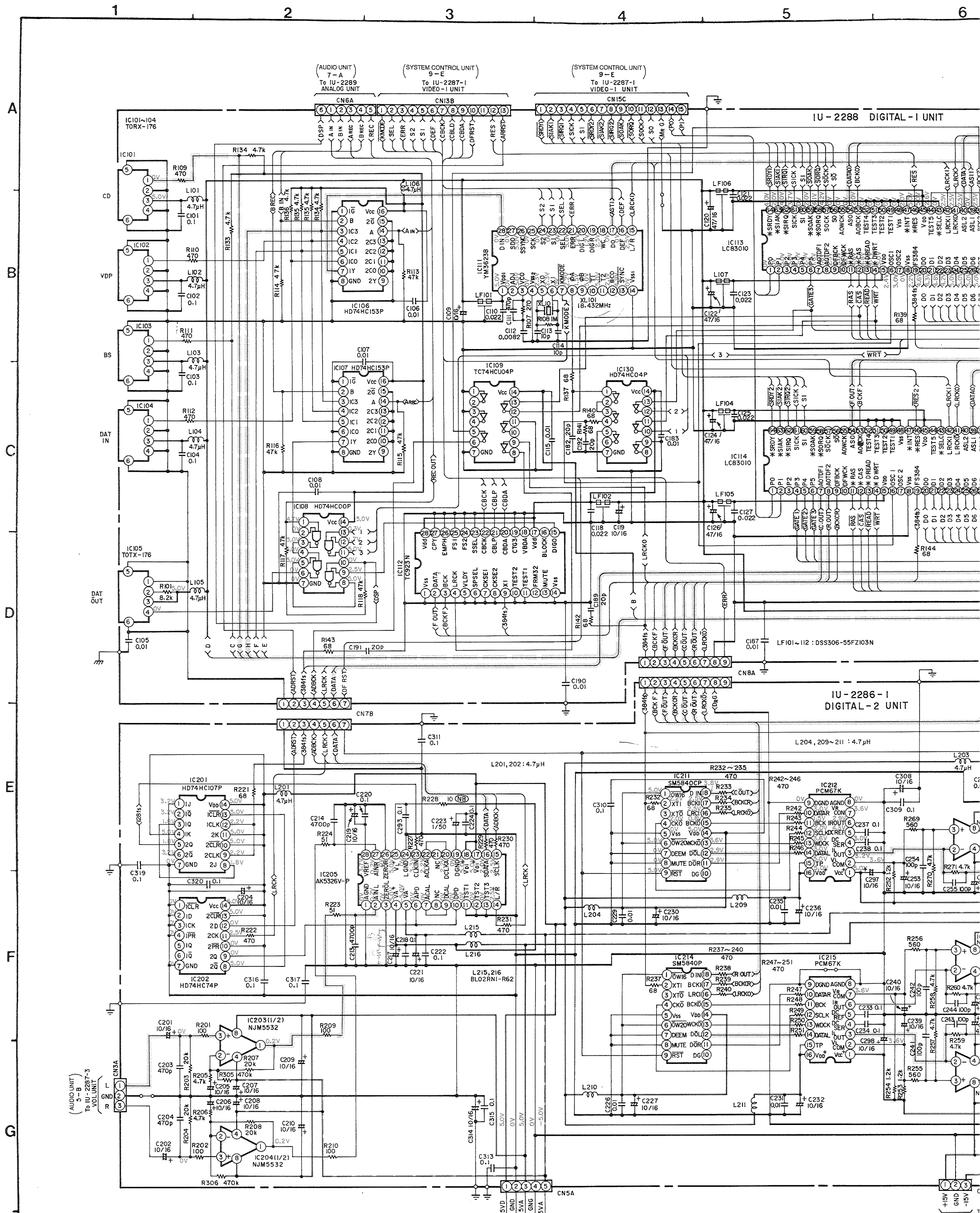




NOTES

ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 OHM
 ALL CAPACITANCE VALUES IN MICRO-FARAD. P=MICRO-MICRO FARAD
 EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
 CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

SCHEMATIC DIAGRAM (DIGITAL UNIT)

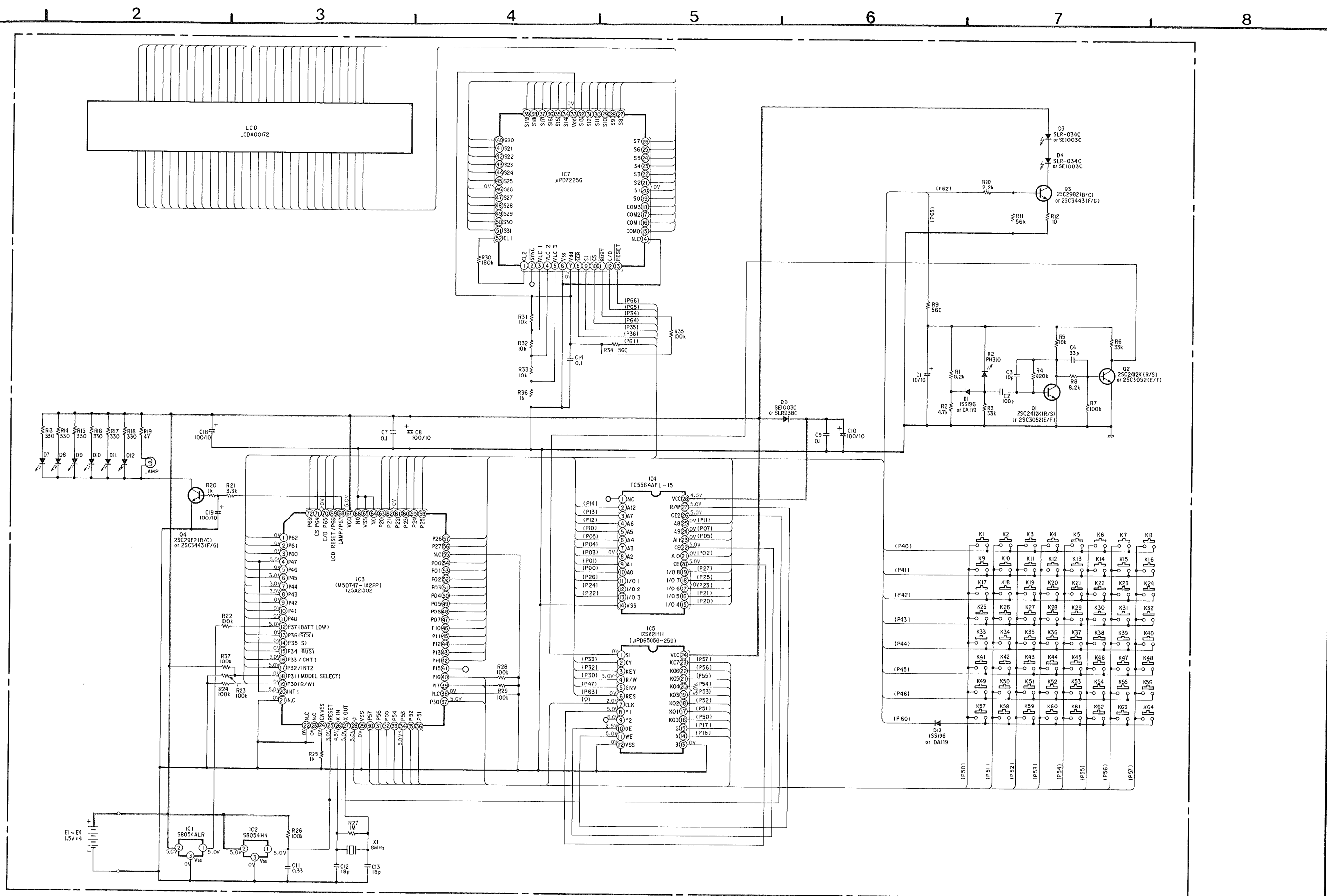


NOTES

ALL RESISTANCE VALUES IN OHM. K=1,000 OHM, M=1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

REMOTE CONTROLLER SCHEMATIC DIAGRAM

AVP-5000



NOTE:
+ B LINE

REMOTE CONTROLLER
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS			
IC1	9H3 1000 022	IC S-8054ALR	Vol. Detector
IC2	9H3 1000 021	IC S-8054HN	Vol. Detector
IC3	9H3 1000 066	IC M50747-B21FP /IZSA21156	M.Computer
IC4	9H3 1000 067	IC TC5564APL-15	Ram-CMOS
		or IC TC5564AFL-15	Ram-CMOS
IC5	9H3 1000 068	IC (μPD6505G-259)/IZSA21111	Gate Array
IC7	9H3 1000 115	IC μPD7225G/IZSA/IZSA21111	LCD Driver
LCD	9H3 1000 116	LCD (LCDA00171)	
Q1,2	9H3 1000 069	Transistor 2SC2412K R/S or Transistor 2SC3052 E/F	Chip Chip
Q3,4	9H3 1000 070	Transistor 2SC2982 B/C or Transistor 2SC3443 F/G	Chip Chip
D1	276 0574 900	Diode DA119 or Diode 1SS196	Chip Chip
D2	9H3 1000 029	Diode PH310	Photo-Pin
D3,4	9H3 1000 072	LED SE-1003-C or LED SLR-938C	Infrared Ray Infrared Ray
D5	9H3 1000 117	LED RLS139 or LED RLS141	
D7~12	393 9320 007	LED TLG223	Visible-Red
D13	276 0574 900	Diode DA119 or Diode 1SS196	Chip Chip
RESISTORS			
R1	247 0009 066	R-Chip 8.2Kohm,1/10W	
R2	247 0009 008	R-Chip 4.7Kohm,1/10W	
R3	247 0011 009	R-Chip 33Kohm,1/10W	
R4	247 0014 048	R-Chip 820Kohm,1/10W	
R5	247 0009 082	R-Chip 10Kohm,1/10W	
R6	247 0011 009	R-Chip 33Kohm,1/10W	
R7	247 0012 024	R-Chip 100Kohm,1/10W	
R8	247 0009 066	R-Chip 8.2Kohm,1/10W	
R9	247 0006 085	R-Chip 560ohm,1/10W	
R10	247 0008 025	R-Chip 2.2Kohm,1/10W	
R11	247 0011 067	R-Chip 56Kohm,1/10W	
R12	247 0002 063	R-Chip 10ohm,1/10W	
R13~18	247 0006 027	R-Chip 330ohm,1/10W	
R19	247 0004 029	R-Chip 47ohm,1/10W	
R20	247 0007 042	R-Chip 1Kohm,1/10W	
R21	247 0008 067	R-Chip 3.3Kohm,1/10W	
R22~24	247 0012 024	R-Chip 100Kohm,1/10W	
R25	247 0007 042	R-Chip 1Kohm,1/10W	
R26	247 0012 024	R-Chip 100Kohm,1/10W	
R27	247 0014 064	R-Chip 1Mohm,1/10W	
R28,29	247 0012 024	R-Chip 100Kohm,1/10W	
R30	247 0012 082	R-Chip 180Kohm,1/10W	
R31~33	247 0009 082	R-Chip 10Kohm,1/10W	
R34	247 0006 085	R-Chip 560ohm,1/10W	
R35	247 0012 024	R-Chip 100Kohm,1/10W	
R36	247 0007 042	R-Chip 1Kohm,1/10W	
R37	247 0012 024	R-Chip 100Kohm,1/10W	
J		R-Chip 0ohm,1/8W	

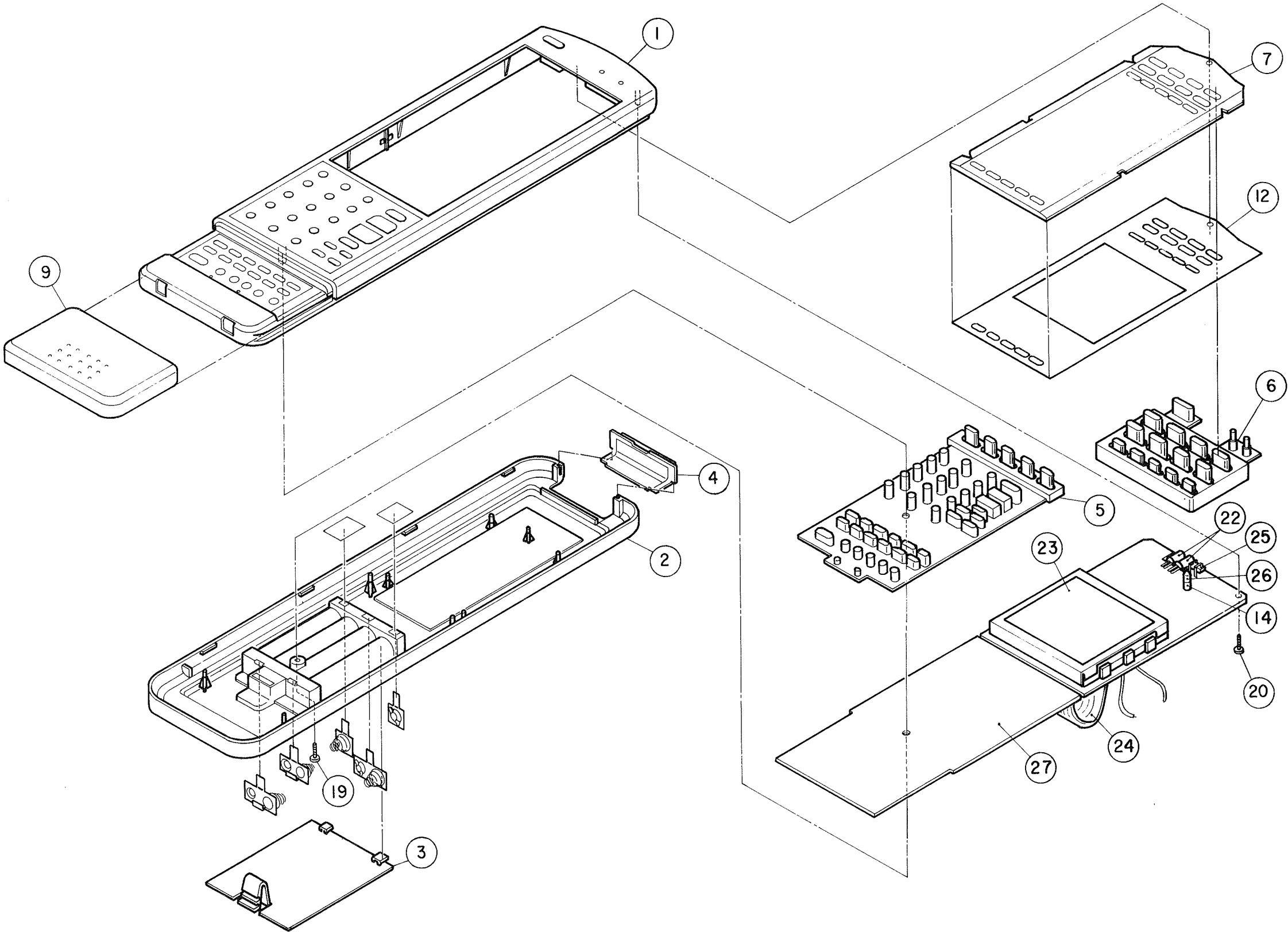
Ref. No.	Part No.	Part name	Remarks
CAPACITORS			
C1	254 4193 002	Electrolytic 10μF/16V	
C2	257 0004 068	Ceramic 100PF/50V	Chip
C3	257 0002 028	Ceramic 10PF/50V	Chip
C4	257 0005 083	Ceramic 33PF/50V	Chip
C7	257 0014 032	Ceramic 0.1μF/25V	Chip
C8	254 4192 032	Electrolytic 100μF/10V	
C9	257 0014 032	Ceramic 0.1μF/25V	Chip
C10	9H3 1000 118	Electrolytic 100μF/10V	Low Leak
C11	257 1016 042	Ceramic 0.33μF/25V	Chip
C12,13	253 3633 007	Ceramic 18PF/50V	
C14	257 0014 032	Ceramic 0.1μF/25V	Chip
C18,19	254 4192 032	Electrolytic 100μF/10V	
ELECTRIC PARTS			Q'ty
X1	9H3 1000 073	X'tal(8MHz)	1
LAMP1	9H3 1000 120	Lamp Ass'y (LAMA00011)	1
	9H3 1000 119	X'tal TQC-210C-6R	1
	9H3 1000 119	Flat Cable	1
	9H3 1000 116	LCD(LCDA00171)	1

REMOTE CONTROLLER
EXPLODED VIEW OF PARTS LIST

Ref. No.	Part No.	Part name	Remarks	Q'ty
⊙ 1	9H3 1000 132	Top Cover Ass'y		1
⊙ 2	9H3 1000 133	Bottom Cover Ass'y		1
3	9H3 1000 097	Battery Case		1
⊙ 4	9H3 1000 098	Filter-IR		1
5	9H3 1000 134	Rubber Switch A		1
6	9H3 1000 100	Rubber Switch B		1
⊙ 7	9H3 1000 135	Acrylic Plate		1
★ 8		Prism		1
9	9H3 1000 136	Slide Cover		1
⊙ 10		Panel A		1
⊙ 11		Panel B		1
⊙ 12	9H3 1000 104	PVC Sheet		1
★ 13		LCD Holder		1
⊙ 14	9H3 1000 106	Lamp Holder		1
★ 15		Instruct Label		1
16		Battery Terminal A		2
17		Battery Terminal B		3
18	9H3 1000 140	Coil Spring		4
19	9H3 1000 108	Tapping Screw 2x6	Black	1
20	9H3 1000 107	Tapping Screw 2x5		1
★ 21	9H3 1000 109	Inter-Connector		2
22	9H3 1000 072	LED SEL1003-C or SLR-938C		
23	9H3 1000 143	LCD Ass'y		
24	9H3 1000 119	Flat Cable		
25	9H3 1000 029	PH310		
26	9H3 1000 120	Lamp Ass'y		
⊙ 27	9H3 1000 141	P.W.B. Unit Ass'y		

NOTE FOR PARTS LIST

- Part incated with the mark " ⊙ " are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-sup-
plying.
- Ordering part without stating its part number can not be supplied.
- Part incated with the mark " ★ " is not illustrated in the exploded view.



REMOTE CONTROLLER
PRINTED WIRING BOARD

1

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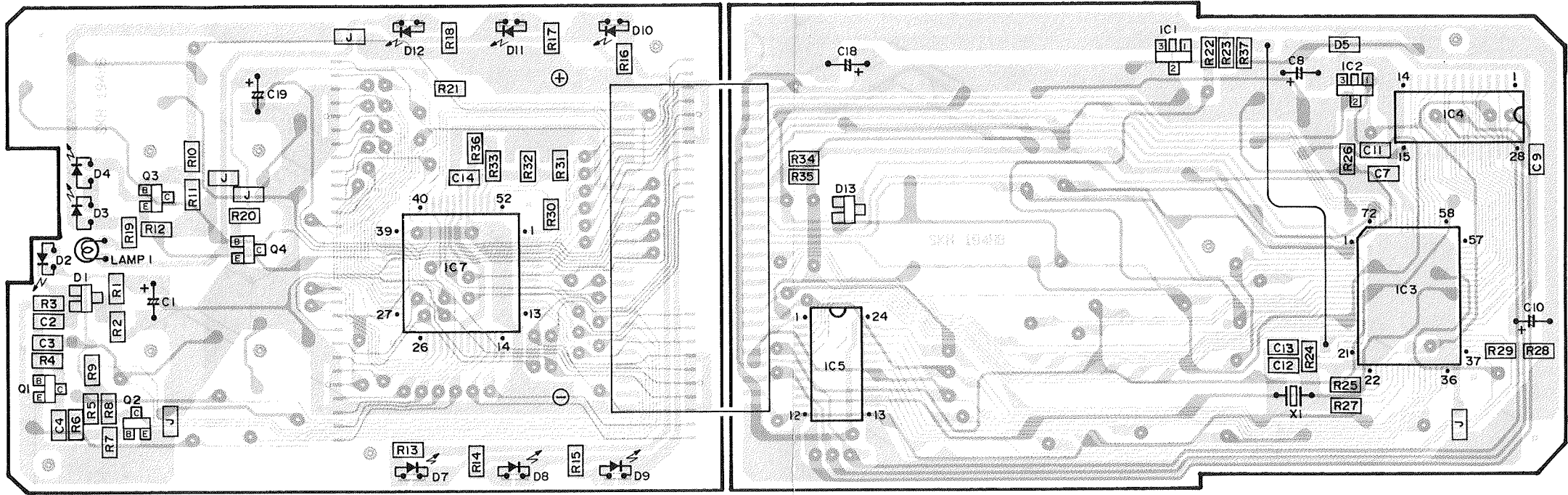
A

B

C

D

E



Vcc=DC5V
To be measured under no operation of operation key, LCD, etc.

IC1		IC2	
Pin	Voltage	Pin	Voltage
1	5.0V	1	5.0V
2	5.0V	2	5.0V
3	0V	3	0V

IC3			
Pin	Voltage	Pin	Voltage
1	0V	37	5.0V
2	0V	38	0V
3	0V	39	—
4	5.0V	40	—
5	0V	41	—
6	3.0V	42	—
7	3.0V	43	—
8	3.0V	44	—
9	0V	45	—
10	0V	46	—
11	0V	47	—
12	5.0V	48	—
13	0V	49	—
14	0V	50	—
15	0V	51	—
16	5.0V	52	—
17	5.0V	53	—
18	0V	54	—
19	0V	55	—
20	5.0V	56	—
21	0V	57	—
22	0V	58	0V
23	0V	59	0V
24	0V	60	0V
25	5.0V	61	0V
26	4.5V	62	0V
27	5.0V	63	0V
28	5.0V	64	0V
29	0V	65	0V
30	5.0V	66	0V
31	5.0V	67	5.0V
32	5.0V	68	0V
33	5.0V	69	0V
34	5.0V	70	0V
35	5.0V	71	0V
36	5.0V	72	0V

IC4			
Pin	Voltage	Pin	Voltage
1	0V	15	0V
2	0V	16	0V
3	0V	17	0V
4	0V	18	0V
5	0V	19	0V
6	0V	20	5.0V
7	0V	21	0V
8	0V	22	5.0V
9	0V	23	0V
10	0V	24	0V
11	0V	25	0V
12	0V	26	5.0V
13	0V	27	5.0V
14	0V	28	4.5V

IC5			
Pin	Voltage	Pin	Voltage
1	0V	13	0V
2	5.0V	14	5.0V
3	5.0V	15	5.0V
4	5.0V	16	5.0V
5	5.0V	17	5.0V
6	0V	18	5.0V
7	2.0V	19	5.0V
8	5.0V	20	5.0V
9	5.0V	21	5.0V
10	2.5V	22	5.0V
11	5.0V	23	5.0V
12	0V	24	5.0V

IC7			
Pin	Voltage	Pin	Voltage
1	0V	27	0V
2	0V	28	0V
3	0V	29	0V
4	0V	30	0V
5	0V	31	0V
6	0V	32	0V
7	0V	33	0V
8	0V	34	0V
9	0V	35	0V
10	0V	36	0V
11	0V	37	0V
12	0V	38	0V
13	0V	39	0V
14	0V	40	0V
15	0V	41	0V
16	0V	42	0V
17	0V	43	0V
18	0V	44	0V
19	0V	45	0V
20	0V	46	0V
21	0V	47	0V
22	0V	48	0V
23	0V	49	0V
24	0V	50	0V
25	0V	51	0V
26	0V	52	0V