

# JVC<sup>®</sup>

## SERVICE MANUAL

DVD RECORDER

### BD-X200U/E BD-X200HU/HE

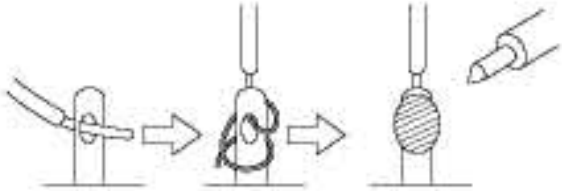
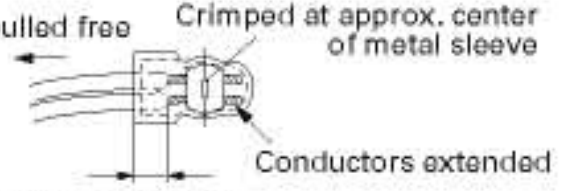
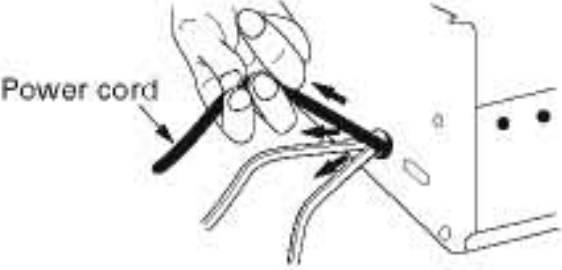
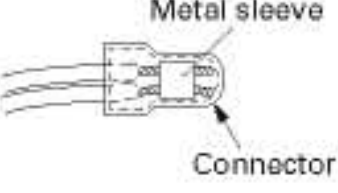
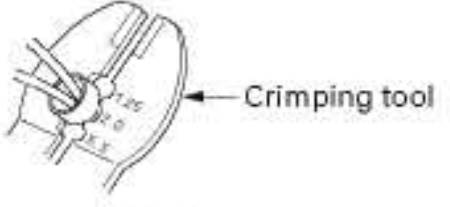



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# Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing	
<p>1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.</p>	<p>12. Crimp type wire connector In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.</p> <p>1) <b>Connector part number</b> : E03830-001 2) <b>Required tool</b> : Connector crimping tool of the proper type which will not damage insulated parts. 3) <b>Replacement procedure</b> (1) Remove the old connector by cutting the wires at a point close to the connector. Important : Do not reuse a connector (discard it).</p>
<p>2. Parts identified by the ⚠ symbol and shaded (■) parts are critical for safety. Replace only with specified part numbers. <b>Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.</b></p>	<p>(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.</p>
<p>3. Fuse replacement caution notice. Caution for continued protection against fire hazard. Replace only with same type and rated fuse(s) as specified.</p>	<p>(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.</p>
<p>4. Use specified internal wiring. Note especially: 1) Wires covered with PVC tubing 2) Double insulated wires 3) High voltage leads</p>	<p>(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.</p>
<p>5. Use specified insulating materials for hazardous live parts. Note especially: 1) Insulation Tape                      3) Spacers                      5) Barrier 2) PVC tubing                              4) Insulation sheets for transistors</p>	<p>(5) Check the four points noted in Fig.7.</p>
<p>6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.</p>  <p style="text-align: center;">Fig.1</p>	<p>Not easily pulled free      Crimped at approx. center of metal sleeve</p>  <p style="text-align: center;">Fig.7</p>
<p>7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)</p>	<p>Wire insulation recessed more than 4 mm</p>
<p>8. Check that replaced wires do not contact sharp edged or pointed parts.</p>	<p>Power cord</p>  <p style="text-align: center;">Fig.2</p>
<p>9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.</p>	<p>Metal sleeve</p>  <p style="text-align: center;">Fig.5</p>
<p>10. Also check areas surrounding repaired locations.</p>	<p>Connector</p>  <p style="text-align: center;">Fig.6</p>
<p>11. Products using cathode ray tubes (CRTs) In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.</p>	<p>Crimping tool</p>
<p>12. Crimp type wire connector</p>  <p style="text-align: center;">Fig.3</p>	<p>Conductors extended</p>



## ● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

### 1. Insulation resistance test

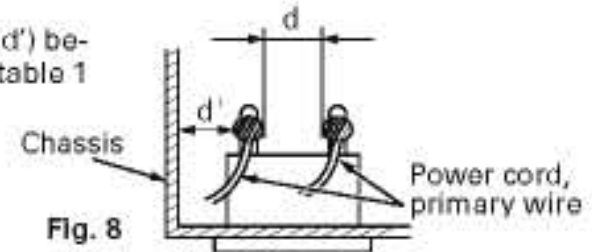
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

### 2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

### 3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance ( $d$ ), ( $d'$ ) between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

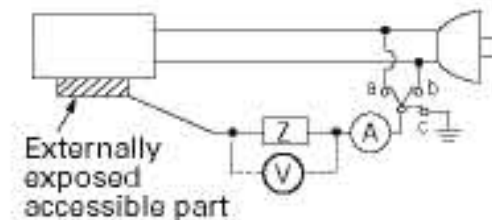


### 4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

**Measuring Method :** (Power ON)

Insert load  $Z$  between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load  $Z$ . See figure 9 and following table 2.



### 5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

**Measuring Method:**

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

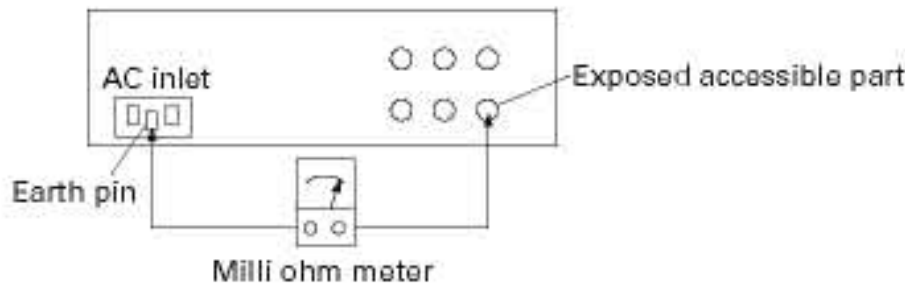


Fig. 10

#### Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	$Z \leq 0.1 \text{ ohm}$
Europe & Australia	$Z \leq 0.5 \text{ ohm}$

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance ( $d$ ), ( $d'$ )
100 V	Japan	$R \geq 1 \text{ M}\Omega/500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3 \text{ mm}$
100 to 240 V			AC 1.5 kV 1 minute	$d, d' \geq 4 \text{ mm}$
110 to 130 V	USA & Canada	-	AC 900 V 1 minute	$d, d' \geq 3.2 \text{ mm}$
110 to 130 V 200 to 240 V	Europe & Australia	$R \geq 10 \text{ M}\Omega/500 \text{ V DC}$	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	$d \geq 4 \text{ mm}$ $d' \geq 8 \text{ mm}$ (Power cord) $d' \geq 6 \text{ mm}$ (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (I)	a, b, c
100 V	Japan	$1 \text{ k}\Omega$	$I \leq 1 \text{ mA rms}$	Exposed accessible parts
110 to 130 V	USA & Canada	$0.15 \mu\text{F}$ and $1.5 \text{ k}\Omega$	$i \leq 0.5 \text{ mA rms}$	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	$2 \text{ k}\Omega$	$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Antenna earth terminals
		$50 \text{ k}\Omega$	$I \leq 0.7 \text{ mA peak}$ $I \leq 2 \text{ mA dc}$	Other terminals

Table 2 Leakage current specifications for each region

**Note:** These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.



# SECTION 1

## SERVICE CAUTIONS AND DISASSEMBLY

### 1.1 MAIN PARTS DIFFERENCE BETWEEN BD-X200 AND BD-X200H

Part Name	BD-X200	BD-X200H	Notes
Hard Disk	-	MHT2040AT	BBD-X200H only
DVD Unit	1L771130-**	←	
Fan	3E03514-**	←	
CODEC Board Assembly	LK1178A0B	←	
Software	PLSL1161-V**	←	
MOTHER Board Assembly	E951551-0**	←	BD-X200U
MOTHER Board Assembly	E951551-1**	←	BD-X200E
CF Board Assembly	LK2136A0B4	←	
Software (CF card)	PLSL1162-V***	PLSL1165-V***	NTSC
Software (CF card)	PLSL1163-V***	PLSL1166-V***	PAL
REAR Board Assembly	LK2136A0B2	←	
FRONT Board Assembly	LK2136A0B1	←	
HEADPHONE Board Assembly	LK2136A0B3	←	

**Table 1-1-1 Differences between BD-X200 and BD-X200H**

### 1.2 REPAIRS

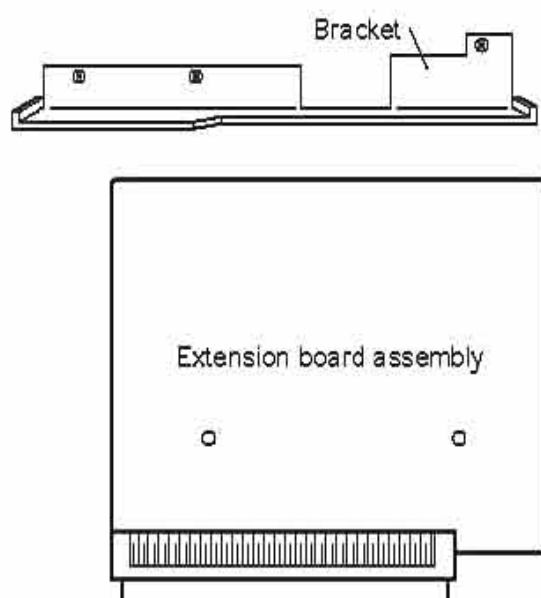
#### 1.2.1 Parts supply for MOTHER board assembly

The MOTHER board assembly installed in the BD-X200 and BD-X200H assumes that the MOTHER board assembly is treated as a single part. So when this circuit board is serviced, it means replacing the entire MOTHER board assembly. Furthermore, a standard circuit diagram is included in this service manual for reference during repairs as well as when future performance improvement measures are implemented (Service Bulletin, etc).

#### 1.2.2 Jig required for servicing

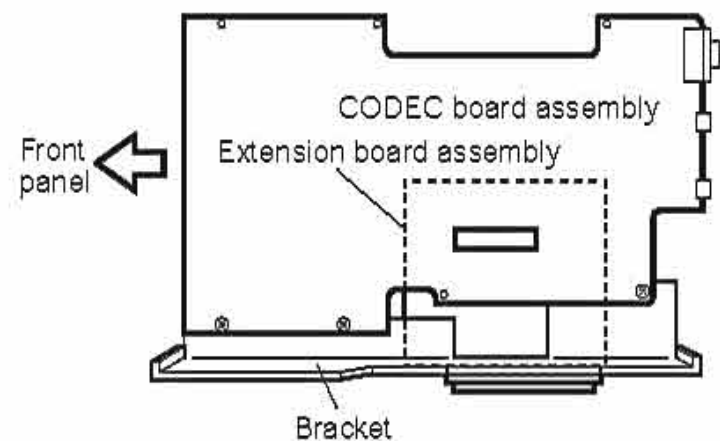
1) Regarding extension board

Part Name	Part No.	Notes
DVD Extension Board Assembly	KLJ0350	Used only at time of repair.

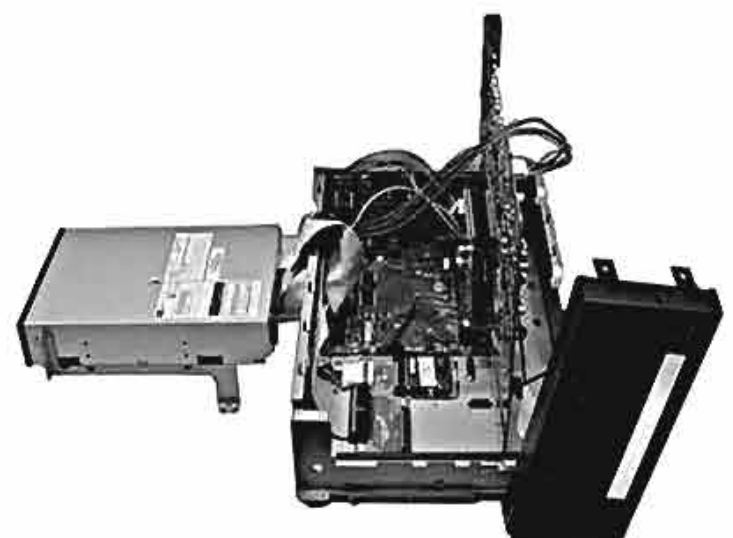


**Fig. 1-2-1 DVD Extension board assembly (KLJ0350)**

2) How to attach extension board



**Fig. 1-2-2 Attaching the Extension Board**



**Fig. 1-2-3 Examining the CODEC board assembly**

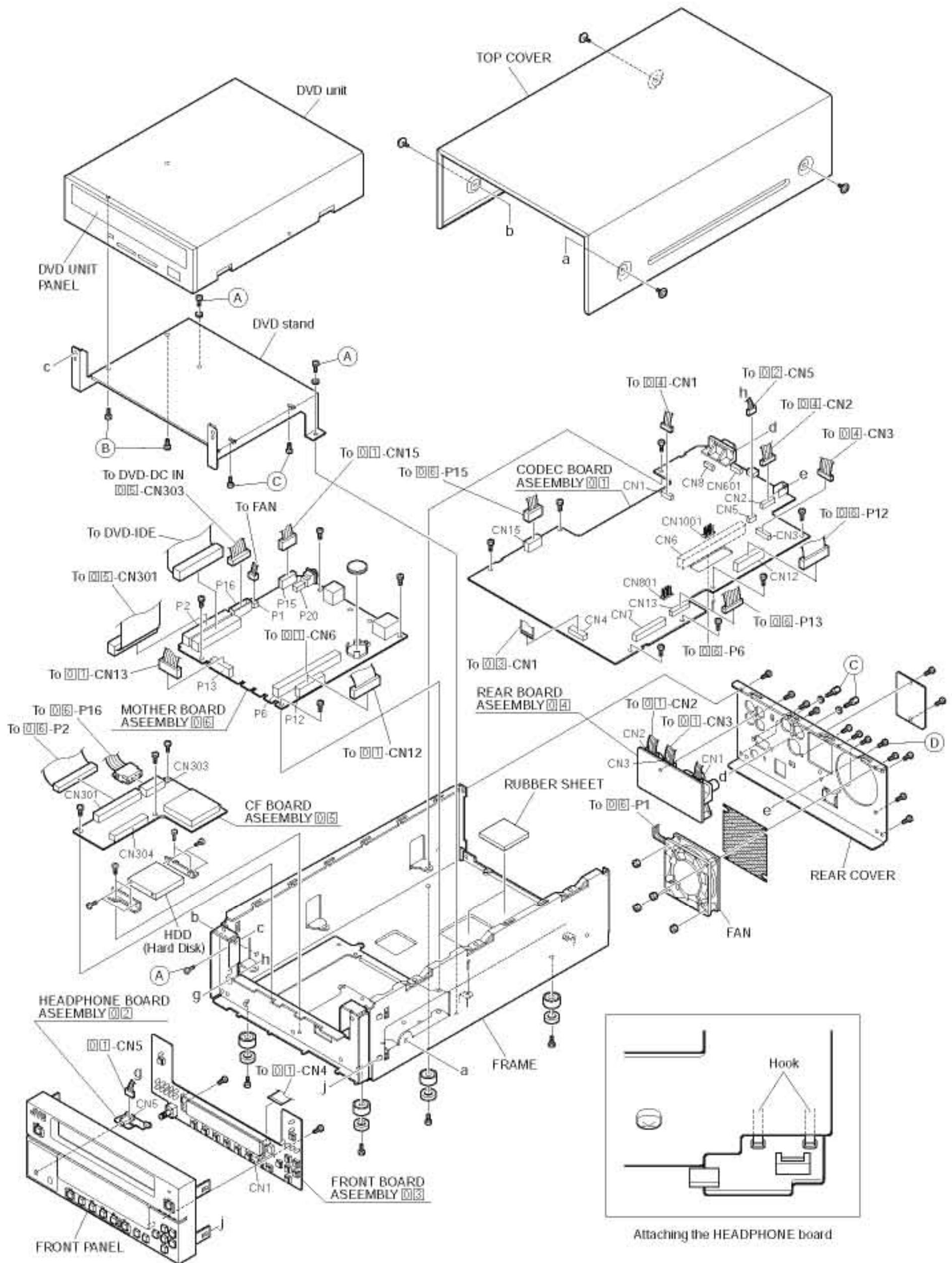
### 1.3 BASIC GUIDELINE FOR REPLACEMENT OF MAIN PARTS

	Part Name	Symbol No.	Usage Time (Recording Time)						Ref.	Notes
			1000	2000	3000	4000	5000	10000		
1	DVD Unit	M 2 14	○	●	○	●	○	●	1.4.1	
2	Fan	M 2 16	★	★	★	★	○	●	1.4.2	Replace at 10,000h use
3	Hard Disk	M 2 27	○	○	○	○	●	●	1.5.1	BD-X200H only

★ : Cleaning ○ : Check and replace if necessary ● : Replace

**Table 1-3-1 Maintenance Checklist**

## 1.4 HOW TO REMOVE MAIN PARTS



#### 1.4.1 How to remove DVD unit

- (1) Remove top cover and front panel assembly. (See Fig. on page 1-3)
- (2) Disconnect the two cables that are wired to the DVD Unit. (DVD-IDE and power supply cables)
- (3) Remove 4 Screws (A) and pull up the DVD Unit together with the stand.
- (4) Remove 4 Screws (B) and remove the stands from the DVD Unit.

**Note** : The DVD Unit Panel is not included as part of the DVD Unit, so when replacing the parts be sure to attach the removed DVD Unit Panel to the new DVD Unit as described in steps (5) and (6) below.

- (5) Press the EJECT button to extend the tray.
- (6) Draw out upwards while pulling out the bottom of the DVD Unit Panel.



Fig. 1-4-1 Removing the DVD unit panel

- (7) When attaching the DVD Drive, make sure that the jumper is in the MA position (see Fig. below).



Fig. 1-4-2 Setting the jumper

- (8) Attach a new DVD Unit by performing steps (1) to (4) in reverse order.

#### 1.4.2 How to remove fan

- (1) Remove the top cover.
- (2) Disconnect the wire P1 that is attached to the MOTHER Board.
- (3) Remove 4 screws (nut secured) and remove the fan.
- (4) When mounting, cover the fan with the fan guard and affix it to the rear panel using the correct screws and nuts.

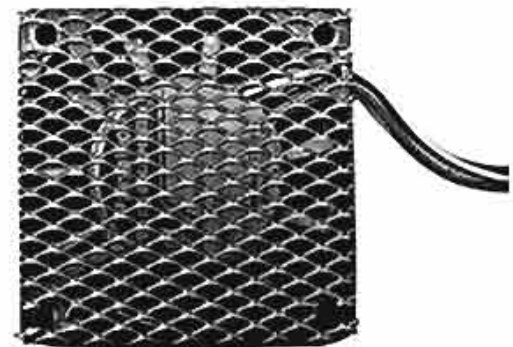


Fig. 1-4-3

#### 1.4.3 How to Remove CODEC Board

- (1) Remove the DVD Unit. (Refer to section 1.4.1)
- (2) Remove 7 screws that attach the CODEC Board to the frame.
- (3) Remove 2 screws (C) that fix the REMOTE terminal (D-SUB 9-pin) in place, as well as a screw D for the SIGNAL GND terminal.
- (4) Disconnect the wiring connected to the CODEC Board.

**Note** : When disconnecting the flat cable that connects the CODEC Board's CN12 and MOTHER Board's P13, be sure to unlock the cable lock before pulling it out.

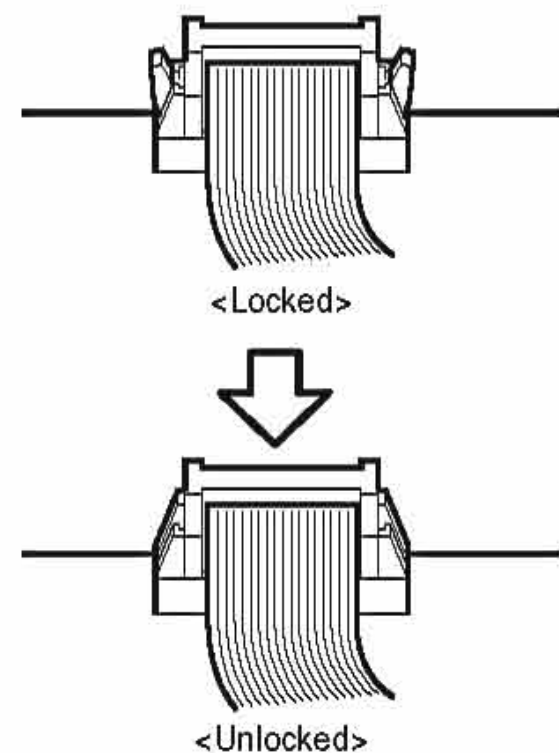


Fig. 1-4-4

- (5) Raise the front panel side of the CODEC Board and detach the connector that connects its CN6 to the MOTHER Board's P6.
- (6) Remove the CODEC Board by pulling out the REMOTE terminal (D-SUB 9-pin) and DV IN/OUT terminal on the CODEC Board.
- (7) When mounting, perform these steps in reverse order.



**Note :** When attaching, please beware of the following.

- Make sure DV IN/OUT terminal on CODEC Board does not get caught against rear panel.
- CN601 of the CODEC Board is not used, so do not wire it.

#### 1.4.4 How to remove CF board

- (1) Remove the CODEC Board. (Refer to section 1.4.3)
- (2) Disconnect the cables and wiring connected to the CF Board.
- (3) Remove 3 screws and detach the CF Board.
- (4) When mounting, perform these steps in reverse order.

#### 1.4.5 How to remove MOTHER board

- (1) Remove the CODEC Board. (Refer to section 1.4.3)
- (2) Disconnect the cables and wiring connected to the MOTHER Board.
- (3) Remove 4 screws and raise the MOTHER Board.

**Note :** A rubber sheet for heat dissipation is attached to the MOTHER Board. When this sticks to the frame, it can become difficult to remove the board.

- (4) When mounting, first attach the heat dissipating rubber sheet to the ICs (Symbol No. U1, U2) on the MOTHER Board, then perform steps (1) to (3) in reverse order.

### 1.5 HARD DISK DRIVE (HDD)

#### Caution

**Disk drive unit is a very delicate, with even just a few shocks causing damage and making it impossible to use. Be especially careful to avoid shocks and vibrations when the unit is in operation.**

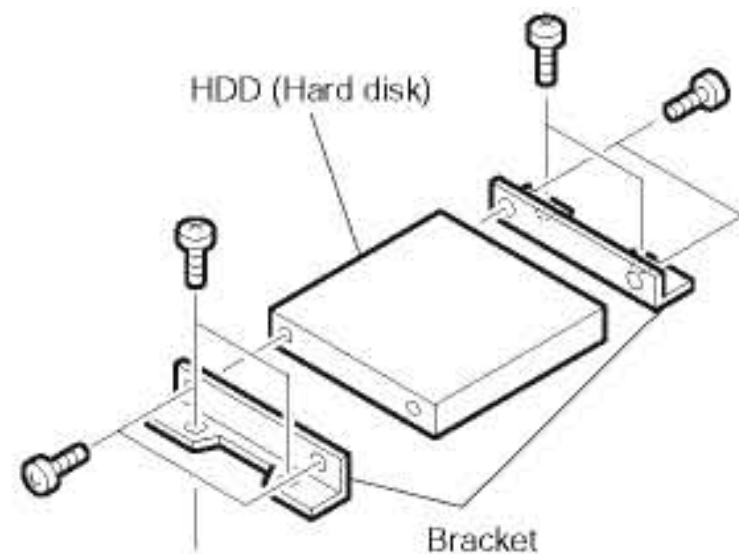
**As a result, it is important that you make sure that the VR-777 is either disconnected from power or in the operation OFF mode when moving the unit.**

#### 1.5.1 How to replace the built-in HDD

#### Caution

**Since power tools such as electric screwdrivers cause strong vibrations, please do not use them.**

- (1) Remove the DVD Unit. (Refer to section 1.4.1)
- (2) Remove 4 screws that attach the bracket to the frame.
- (3) Remove the HDD by disconnecting the connector (CN304) of CF board assembly.
- (4) Remove the 4 screws and 2 brackets.
- (5) When mounting, perform these steps in reverse order.



#### 1.5.2 Handling the HDD

##### Packaging Method

#### Caution

**Disk drive unit is a very delicate, with even just a few shocks causing damage and making it impossible to use. When transporting it, be sure to pack it keeping the following points in mind.**

- Beware of static electricity when handling. Discharge your static electricity before touching the HDD unit, and put the HDD unit in an anti-static bag before packaging it.
- Use a sturdy corrugated cardboard box (that is strong enough to not become crushed or destroyed during shipping due to vibrations and other factors).
- When packaging in a box, pack securely with at least 5 cm of shock-absorbing material (Styrofoam or spongy material) around the unit, on the HDD unit's underside, the four sides and top panel of the unit. Make sure the HDD unit will not shift around in the box or contact the box inside surface. Granular shock-absorbing materials (popcorn, chips) and thin sheets should not be used since they do not offer sufficient protection against vibration during transport, and can allow the HDD unit to shift around inside the box.
- If packing more than one HDD unit into the same box, be sure to have at least 5 cm of shock-absorbing material between the units to assure that they do not contact each other or shift around in the box. Wrapping only with thin shock absorbent material and stacking HDD units can result in damage to the units due to bumping into each other during transport.
- After confirming that there is sufficient Styrofoam in the box to secure the unit(s) and make sure that box vibrations during transport will not be transmitted to the unit(s) inside, seal the box with tape.

#### Caution

**Granular shock-absorbing materials (popcorn, chips) and thin sheets should not be used since they do not offer sufficient protection against vibration during transport, and can allow the drive to shift around inside the box.**

HDD (Hard Disk Drive) is a device for data storage. It is composed of multiple magnetic disks that rotate at high speed, heads for each of the disks, and a motor to rotate the disks. Heads read and write data on the rotating disks but never come into contact with them while they are rotating. Reading/writing is done at point-blank range, in a narrow distance of 1/1000mm or less. Moreover, the disk consists of a rigid base material such as aluminum or glass, coated with a magnetic layer, and can be used indefinitely with proper use. However, it is very susceptible to the effects of vibration, and jolts such as dropping it onto the floor can easily damage it, making it impossible to read and write data.

The disk surface is buffed like a mirror, but when shocks are applied to the HDD the head can collide with the disk to dent or fragment the disk surface. As a result, it not only becomes impossible to read or write on the disk, but continued use is likely to lead to a head crash. This is why HDD is weak against vibrations, and why it is so important to take special care when transporting and handling the set or the HDD.

## 1.6 INTERNAL SWITCHES AND LEDS

### 1.6.1 CODEC board assembly

The functions of the internal switch S501 are as follows.

Symbol No. Switch No.	Setting when shipped	Function
S501	1	OFF OFF: Regular operation. ON : If REV+STOP+PLAY buttons are kept pressed while plugging in the power, BIOS and OS launch screens will be displayed.
	2	OFF OFF: Regular operation. ON : Becomes impossible to turn operation OFF.
	3	OFF Not used
	4	OFF Not used
	5	OFF Not used
	6	OFF Not used
	7	OFF Not used
	8	OFF OFF: NTSC ON : PAL

Table 1-6-1 Functions of Internal Switch S501



Fig. 1-6-1 CODEC Board Internal Switch S501

### 1.6.2 MOTHER board assembly

The MOTHER board is equipped with the LEDs (D19,D32) and internal switch (S2) listed below, however none are used for servicing.

Symbol No. Switch No.	Setting when shipped	Function
S2	1	OFF Not used
	2	OFF Not used

Table 1-6-2 Functions of Internal Switch S2

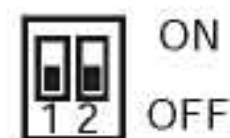


Fig. 1-6-2 MOTHER Board Internal Switch S2

Symbol No.	LED Name	Normal	Notes
D19	EXP	Light off	Not used
D35	STATUS	Light off	Not used

**Table 1-6-3 Regarding LED**

**Note :** The MOTHER Board Assembly is referred to assuming that the board assembly is treated as a single part. So when this board is serviced, it requires replacing the entire MOTHER Board Assembly.

## 1.7 DATA BACKUP

### 1.7.1 Regarding EE-PROM data

BD-X200 is installed with one EEP-ROM chip for data storage. Memorized data is as shown in the chart below. Since there is no data stored in a new EEP-ROM, it will be necessary to re-adjust settings when the Board Assembly or EEP-ROM is replaced.

Symbol No.	Board Name	Contents of Memory Data
IC502	CODEC Board Assembly	Electrical adjustment data (Refer to Chapter 2, Electrical Adjustment Procedure)

**Table 1-7-1 EEP-ROM Memory Data Contents**

### 1.7.2 Lithium battery

The MOTHER Board is installed with a button-type lithium battery (commercially available CR2032) for clock data storage purposes.

Symbol No.	Board Name	Contents of Memory Data
BT1	MOTHER Board Assembly	Clock data

**Table 1-7-2 Regarding Lithium Battery**

**Note :** The lithium battery is not used when power is supplied to the main unit, so drain is minimal. However, since it is used for backup storage while power is not supplied, its service life can differ drastically depending on the usage situation.

As a basic rule, it is recommended that you replace this battery once every 2 to 3 years. Figuring in the time that the product was in inventory, it is recommended that the first battery replacement take place 1 to 1.5 years after purchase.



## 1.8 ERROR MESSAGES

Error Message	Error Contents	Notes
INVALID DISC	Media other than DVD-R or DVR-RW has been loaded.	If the same error message appears even if you change the recording media, it may be a disc drive malfunction. Note: Since this can also appear due to condensation or a dirty disc, leave it for a while with the power supplied and try again later.
NOT X200	Media recorded using model other than X200 is loaded or being played.	
REC INHIBIT	<ul style="list-style-type: none"> <li>• Attempted to record on already recorded disc.</li> <li>• Loaded an RW disc that does not allow recording.</li> </ul>	If the same error message appears even if you change the recording media, it may be a disc drive malfunction. Note: Since this can also appear due to condensation or a dirty disc, leave it for a while with the power supplied and try again later.
COPY INHIBIT	Attempted to record a copy-protected signal.	
DISC FULL	No more disc space left while recording.	
CELL OVER	Number of CELLS for 1 title exceeded 255.	When recording scenes with little motion at low encoding quality, CELL OVER may be displayed and recording may stop.
OVERHEATING !	Temperature inside the set is rising too high. (Due to stopping of fan motor, etc.)	<p>From OVERHEATING display to shutdown:</p> <ol style="list-style-type: none"> <li>1) Temperature checked at approx. 1 second intervals.</li> <li>2) If temperature remains at or above 80°C for longer than 10 seconds, countdown begins.</li> <li>3) OVERHEATING is displayed on the LCD and on-screen at this time.</li> </ol> <p>Note: Although OVERHEATING is displayed and then goes out on-screen, it remains displayed on the LCD.</p> <ol style="list-style-type: none"> <li>4) In the above state, if temperature becomes lower than 80°C, countdown will be temporarily suspended. If this state remains for 10 seconds or longer, OVERHEATING status is cancelled and the countdown is reset.</li> </ol> <ul style="list-style-type: none"> <li>• If the temperature remains at 80°C or higher for 20 minutes, the shutdown process is performed.</li> </ul>
INVALID TV	Unsupported signal is input, or disc containing unsupported signals was played.	Displayed for 3 seconds after error occurs (then goes out)
TITLE FULL	Attempted to record on a disc that already contains 99 titles.	Displayed for 3 seconds after error occurs (then goes out)
CHAPTER FULL	Attempted to add a chapter on a disc that already contains 99 titles.	Displayed for 3 seconds after error occurs (then goes out)
NOT FINALIZE DURATION OVER	Attempted to EJECT a disc before it is finalized.	Displayed for 3 seconds after error occurs (then goes out)
INVALID EDL	In VTR mode, pressed AUTO EDIT with insufficient disc remaining space.	Displayed for 3 seconds after error occurs (then goes out)
EDL UNDER EDIT	In VTR mode, when invalid value is received for EDL registration.	Displayed for 3 seconds after error occurs (then goes out)
NO CASSETTE	In VTR mode, pressed EDL LOAD after EDL registration was started.	Displayed for 3 seconds after error occurs (then goes out)
NOT CONNECT	In VTR mode, attempted to operate when no cassette is loaded.	Displayed for 3 seconds after error occurs (then goes out)
EDIT FAILURE	In VTR mode, attempted to operate when no external unit is connected.	Displayed for 3 seconds after error occurs (then goes out)
ERROR	VTR mode, when editing did not take place correctly.	Displayed for 3 seconds after error occurs (then goes out)
	Other error	Displayed when there is a DVD drive malfunction, etc. Note: Since this can also appear due to condensation or a dirty disc, leave it for a while with the power supplied and try again later.

## 1.9 TROUBLESHOOTING

Symptom	Cause	Countermeasure
Power won't turn on. Power won't turn off.	Is the AC Adapter connected correctly?	Connect the AC Adapter correctly.
Control buttons won't work.	Is the BUSY lamp lit because the unit is in the process of REC STOP, Title close, Finalizing, etc.?	Operate again after the REC STOP, Title close, Finalizing, or other process is complete.
Tray won't come out even when	Is the BUSY lamp lit because the unit is in the process of REC STOP, Title close, Finalizing, etc.?	Operate again after the REC STOP, Title close, Finalizing, or other process is complete.
OPEN/CLOSE button is pressed. Picture is not displayed.	Is the BUSY lamp lit because the unit is in the process of REC STOP, Title close, Finalizing, etc.?	Operate again after the REC STOP, Title close, Finalizing, or other process is complete.
	Have connections been made correctly?	Connect correctly.
	Are monitor settings, etc. correct?	Switch the monitor or other display device's input to the terminal to which this unit's output is connected.
	Is the input selection (MENU: INPUT SELECT) setting wrong?	Correct the input selection (MENU: INPUT SELECT) setting.
	MENU: Is REMOTE SELECT set to 9PIN (MASTER), DV (MASTER) or DV (SLAVE)?	MENU: Set REMOTE SELECT to OFF. With the unit in the NODISC or STOP mode, it is possible to check the encoder output by press the REC button for longer than 2 seconds.
Input (MENU: INPUT SELECT) cannot be set.	MENU: Is REMOTE SELECT set to DV (MASTER), DV (SLAVE) or DV (TRIGGER)?	MENU: Set REMOTE SELECT to any setting other than that described on the left.
Even when a connected unit is outputting a DV signal, the DV input-selected DV signal is not received.	---	Pull out and plug in the DV cable again. If signal is still not received, perform OPE OFF/ON.
Setup menu is not displayed even when SETUP button is pressed.	Is the unit in recording or playback mode? Is the TOP MENU or MENU opened?	Press STOP button to stop the unit, then press SETUP button again. Press STOP button to close the menu, then press SETUP button again.
On-screen displays are not displayed.	MENU: Is DISPLAY set to OFF?	MENU: Set DISPLAY to ON.
Disc is not recognized.	Is the disc dirty or scratched?	Clean the disc or use another disc.
	Is the disc set correctly on the disc tray?	Set the disc correctly on the disc tray.
	Is the disc set upside down?	Set the disc correctly on the disc tray.
	Has the disc been recorded in PAL/SECAM format? (If NTSC unit)	Use another disc.
	Is there moisture condensation in the unit?	Turn the unit's power on and wait a few hours before using the unit.
	Are you using media other than recommended type?	Use recommended media.
	Did you load a non-supported disc? (CD, CD-R, CD-RW, VIDEO-CD, DVD-ROM, DVD-RAM, DVD+R/+RW)	Use supported disc.
	Are you using a disc imprinted using a commercially available label printer, or with label sticker made using such a label printer?	Depending on the printed label or label sticker, the disc may warp and result in irregular rotation. If using a label printer, be sure to record the disc on this unit first, then make the label.
	Was there a power outage, etc. that caused power supply to be interrupted during recording, finalizing or erasing of that disc?	It is likely that the disc was damaged during the situation described on the left. Use another disc.
Recording cannot be done.	Has the disc already been finalized?	If RW, erase it or use another disc. If R, use another disc.

Symptom	Cause	Countermeasure
	Has the disc already been recorded on another unit?	If RW, erase it or use another disc. If R, use another disc.
	Are you using media other than a recommended type?	Use recommended media.
	Did you load a non-supported disc? (CD, CD-R, CD-RW, VIDEO-CD, DVD-ROM, DVD-RAM, DVD+R/+RW)	Use supported disc.
	Are you using a disc imprinted using a commercially available label printer, or with label sticker made using such a label printer?	Depending on the printed label or label sticker, the disc may warp and result in irregular rotation. If using a label printer, be sure to record the disc on this unit first, then make the label.
	Is it an RW disc that was erased on another unit?	Erase it on this unit, or use another disc.
	Is it an RW disc that was erased at high speed using a PC, etc.?	Use the disc after fully erasing it on a PC, etc.
	Is a double-sided disc set upside-down?	Set the disc correctly on the disc tray.
	Is the input signal from a copy-protected source?	Recording is not possible if the input signal is copy-protected.
	Is the disc dirty or scratched?	Clean the disc or use another disc.
	Is the space left on the disc not enough?	Use another disc.
	Have 99 titles already been recorded?	Use another disc.
	Is there moisture condensation in the unit?	Turn the unit's power on and wait a few hours before using the unit.
Recording stops unexpectedly.	Is the space left on the disc not enough? (DISC FULL)	Use another disc.
	Have you recorded scenes with little motion at low encoding quality for a long time (over the total contents time)? (CELL OVER)	When recording scenes with little motion at low encoding quality, CELL OVER may be displayed and recording may stop. Even in such a case, the recording time will not be shorter than the total contents time setting.
	When editing with 9PIN MASTER or DV MASTER, has the source's time code stopped? (Has the recording been interrupted?)	Change to source whose time code has not been interrupted.
	Is the input signal from a copy-protected source?	Recording is not possible if the input signal is copy-protected.
Recording is occasionally interrupted.	Did you operate the DV connected device or disconnect any cables while recording was taking place?	While recording, do not operate the DV connected device or disconnect cables.
ENCODE QUALITY cannot be set.	MENU: Has TOTAL CONTENTS TIME been set?	MENU: Set TOTAL CONTENTS TIME to NO USE.
ENCODE QUALITY won't go below 3.8 or over 8.0.	MENU: Is AUDIO ENCODE set to LPCM ?	MENU: Set AUDIO ENCODE to a setting other than LPCM.
Title/Chapter menu cannot be edited.	MENU: Is EDIT MENU set to DISABLE?	MENU: Set EDIT MENU to ENABLE.
Cannot input text.	Has ALT key and SHIFT key been pressed simultaneously to engage CTRL lock mode?	Press the keyboard's CTRL key (right side) to disengage the mode.
When inputting text, different symbols appear.	MENU: Has KEYBOARD STYLE been set correctly?	MENU: Set KEYBOARD STYLE correctly in accordance with the keyboard you are using.
Not all of the input text is displayed.	There is a maximum limit to displayable characters for each type of title or chapter.	Change the TITLE/CHAPTER PATTERN.



Symptom	Cause	Countermeasure
The ¥ mark cannot be input during text input.	---	¥ (yen) mark cannot be displayed on this unit. It will be displayed as a backslash.
Thumbnails look horizontally or vertically stretched.	MENU: Is THUMBNAIL FORM set correctly?	Set as follows: if Source=4:3 → NORMAL, if Source=SQUEEZE → H CUT, if Source=LETTER → NOMAL or H+V CUT.
Thumbnail's vertical lines look jagged.	Does the scene include rapid movement?	Check the actual Menu screen using Chapter Menu/Title Menu Preview. Change the thumbnail image as necessary using Thumbnail Edit function.
Trying to change the thumbnail image in the Title/Chapter Edit mode but it won't change.	Are you trying to set the beginning or end scene of a chapter as the thumbnail image?	Thumbnails can only be changed to scenes within the same chapter. Thumbnails can be set in 1GOP (15 frame) increments.
Widescreen recording cannot be done.	Is the input signal 4:3 when paused or when recording is started?	Change the input signal or set MENU ASPECT to LETTER or SQUEEZE.
	MENU: Is Y/C TERMINAL MODE set to S1 when recording in LETTER mode via Y/C input?	MENU: Set Y/C TERMINAL MODE to S2.
Chapter cannot be marked.	Have 99 chapters already been marked?	No more than the maximum 99 chapters can be marked.
	Are you trying to mark within a span of less than 1 GOP (15 frames)?	The minimum span for a chapter is 1 GOP (15 frames). Attempts to mark chapters in smaller spans are invalidated.
	Is automatic editing taking place?	While automatic editing is taking place, it is not possible to manually mark chapters using the unit's REC key.
Playback cannot be done.	Has the disc been finalized?	Finalize the disc.
	Is the disc dirty or scratched?	Clean the disc or use another disc.
	Is it a disc with a region code?	Discs that have a set region code cannot be played.
	Is it a commercially available DVD-Video (DVD-ROM) disc?	Commercially available DVD-Video (DVD-ROM) discs cannot be played.
	Was the disc recorded on another unit?	There are cases where discs recorded on other units cannot be played.
	Have a number of chapters been inserted in intervals of a few seconds?	When chapter intervals are extremely short, such as only a few seconds, playback may not be possible in some cases.
Skips chapters during fast-forward and fast-reverse playback.	Have a number of chapters been marked in intervals of a few seconds (under 8 sec.)?	When chapter intervals are short, playback on this unit may take the form of fast-forward play, fast-reverse play, or skipping over chapters.
Disc that was created cannot be played on other commercially available DVD player.	Is the DVD Player being used compatible with DVD-R/-RW?	Play the disc on a DVD Player that supports DVD-R/-RW.
		There is no guarantee that discs created on this unit will be playable on all DVD Players.
Sound level is too small / too loud / breaks up.	Is the INPUT LEVEL switch on the rear panel set correctly?	Set the switch correctly.
	Is the recording level correct?	Adjust the recording level.
Soundtrack is not recorded / Different soundtrack is included.	When using 32kHz source material through DV input, is AUDIO CHANNEL(DV) set to 3,4ch → 1,2ch on the MENU?	Set as follows: 1,2ch → 1,2ch when recording in 1.2ch, 1,2ch → 3,4ch when recording in 3.4ch
VTR does not operate with 9PIN (MASTER)/DV (MASTER).	Are the 9PIN cable / DV cable connected correctly?	Connect the cables correctly.
	Is the VTR in the REMOTE status?	Switch the VTR's SW to REMOTE.
	Is a cassette loaded in the VTR?	Load a cassette.
EDIT cannot be performed with 9PIN (MASTER)/DV (MASTER).	Does the tape have 5 seconds of recorded material for preroll prior to the in-point?	Re-set the in-point so there is at least 5 sec. of recorded material prior to the in-point.

Symptom	Cause	Countermeasure
	Failing to cue up to the preroll point.	MENU: Try setting REM FF/REW MODE to SEARCH.
	Is the VTR's input selector set to DV?	Set the VTR's input to something other than DV.
NLE does not operate.	Is the DV cable connected correctly?	Connect the DV cable correctly.
	Is something other than REMOTE DV(SLAVE) selected on the MENU?	MENU: Set to REMOTE DV(SLAVE).
Chapter cannot be registered on the REMOTE screen.	MENU: Is CHAPTER CREATION set to AUTO?	Set to MANUAL.
	Have 99 chapters already been marked?	No more than the maximum 99 chapters (in-point + 98 chapters) can be marked.
	Are you trying to mark a chapter outside the span between in-point and out-point?	Mark the chapter within the span between the in-point and out-point you selected.
In-point/Out-point cannot be set on the REMOTE screen.	If a chapter point is already marked, are you trying to set the in-point after it, or the out-point before it?	Set the in-point before the chapter point, and the out-point after the chapter point.
EDL LOAD cannot be done on the REMOTE screen.	MENU: Is CHAPTER CREATION set to AUTO?	Set to MANUAL.
Dubbing cannot be done.	Is the LAN cable correctly connected?	Connect both units using crossed cable.
	Are a finalized disc (sender) and blank disc (receiver) loaded?	Load a disc finalized using this unit on the sender side, and a blank disc on the receiver side.
	Has the IP address been set correctly?	Set the IP address correctly.

## SECTION 2 ELECTRICAL ADJUSTMENTS

### 2.1 PRECAUTIONS TO BE TAKEN BEFORE CARRYING OUT ELECTRICAL ADJUSTMENTS

Electrical adjustments should be performed only when necessary, i.e., during maintenance or repair. Before starting electrical adjustments, be sure to warm up the unit for more than 2 minutes after turning it ON.

The oscilloscope probe to be used should be a 10:1 probe unless otherwise specified.

#### 2.1.1 Instruments and tools required for the adjustments

(1) Measuring instruments

- Oscilloscope: 2 traces, 100 MHz or higher.
- NTSC & PAL waveform monitor (WFM).
- Frequency counter: 10 MHz or higher, sensitivity below 100 mV
- Monitor TV

(2) Tools

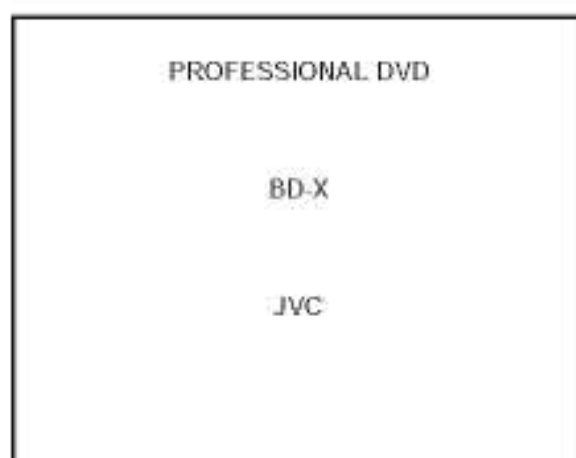
- 75  $\Omega$  terminator.

#### 2.1.2 How to display the adjustment screens

While holding the [FWD] and [REV] buttons, press the [OPERATE] button to turn the unit ON.

Release the [OPERATE] button but keep on holding the [FWD] and [REV] buttons for about 1 second or more.

Connect the monitor TV to the VIDEO output. The following display will appear in about 30 seconds.

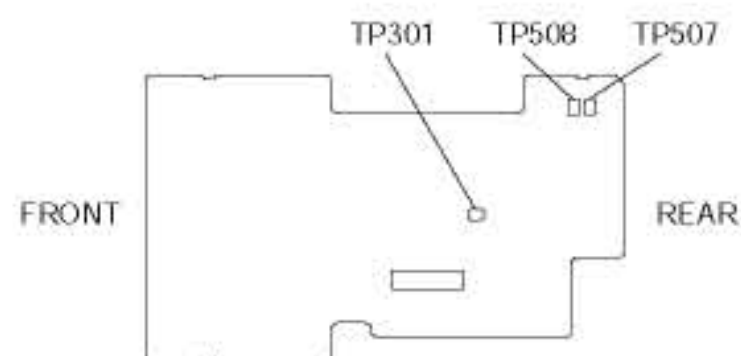


The following display appears in about 1 minute.



**CAUTION** : Warm up the unit for more than 2 seconds before beginning adjustments. The reference levels for the sync, Y and setup adjustments are to be adjusted with the back porch.

#### 2.1.3 Test point layout (CODEC board)





No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓜ) Adjustment level (☆)	Adjustment procedure
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## 2.2 PLL FREQUENCY ADJUSTMENTS

1	FS PLL 48 kHz	<ul style="list-style-type: none"> <li>• Frequency counter</li> <li>• No signal input</li> </ul>	EE	◎ TP508 (CODEC) GND: Frame Ⓜ Adjustment Screen No. 1 ☆ 12.288 MHz ± 20 kHz	<ol style="list-style-type: none"> <li>1) Connect the frequency counter to TP508.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [UP]/[DOWN] button to vary the D/A DATA value.</li> <li>4) Press the [SET] button again to set the DATA value.</li> </ol>
2	FS PLL 44.1 kHz	<ul style="list-style-type: none"> <li>• Frequency counter</li> <li>• No signal input</li> </ul>	EE	◎ TP508 (CODEC) GND: Frame Ⓜ Adjustment Screen No. 2 ☆ 11.2896 MHz ± 20 kHz	<ol style="list-style-type: none"> <li>1) Connect the frequency counter to TP508.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [UP]/[DOWN] button to vary the D/A DATA value.</li> <li>4) Press the [SET] button again to set the DATA value.</li> </ol>
3	V PLL 13.5 MHz	<ul style="list-style-type: none"> <li>• Frequency counter</li> <li>• No signal input</li> </ul>	EE	◎ TP507 (CODEC) GND: Frame Ⓜ Adjustment Screen No. 3 ☆ 13.5 MHz ± 20 kHz	<ol style="list-style-type: none"> <li>1) Connect the frequency counter to TP507.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [UP]/[DOWN] button to vary the D/A DATA value.</li> <li>4) Press the [SET] button again to set the DATA value.</li> </ol>
4	INTERNAL 27 MHz	<ul style="list-style-type: none"> <li>• Frequency counter</li> <li>• No signal input</li> </ul>	EE	◎ TP301 (CODEC) GND: Frame Ⓜ Adjustment Screen No. 4 ☆ 27.0 MHz ± 30 Hz	<ol style="list-style-type: none"> <li>1) Connect the frequency counter to TP301.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [UP]/[DOWN] button to vary the D/A DATA value.</li> <li>4) Press the [SET] button again to set the DATA value.</li> </ol>

## 2.3 VIDEO ADJUSTMENTS (BD-X200U)

1	PB Y LEVEL (SET UP OFF)	<ul style="list-style-type: none"> <li>• WFM or oscilloscope</li> <li>• No signal input</li> </ul>	EE	◎ LINE OUT, 75 Ω terminated Ⓜ Adjustment Screen No. 5 ☆ 100 IRE ± 1% 714.3 mV ± 7 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE Y OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the Y level to 100 IRE or 714.3 mV.</li> <li>5) Press the [SET] button again to set the adjusted data value.</li> </ol>
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No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (①) Adjustment level (☆)	Adjustment procedure
2	PB SYNC LEVEL (SET UP OFF)	<ul style="list-style-type: none"> <li>• WFM or oscilloscope</li> <li>• No signal input</li> </ul>	EE	◎ LINE OUT, 75 Ω terminated ① Adjustment Screen No. 6 ☆ 40 IRE ±2% 285.7 mV ± 5 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the SYNC level to 40 IRE or 285.7 mV.</li> <li>5) Press the [SET] button again to set the adjusted data value.</li> </ol>
3	PB C LEVEL (SET UP OFF)	<ul style="list-style-type: none"> <li>• WFM or oscilloscope</li> <li>• No signal input</li> </ul>	EE	◎ LINE OUT, 75 Ω terminated ① Adjustment Screen No. 7 ☆ 640 mV ± 12 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the BLUE level to 640 mV.</li> <li>5) Press the [SET] button again to set the adjusted data value.</li> </ol>
4	PB BURST LEVEL (SET UP OFF)	<ul style="list-style-type: none"> <li>• WFM or oscilloscope</li> <li>• No signal input</li> </ul>	EE	◎ LINE OUT, 75 Ω terminated ① Adjustment Screen No. 8 ☆ 40 IRE ±2% 285.7 mV ± 5 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the BURST level to 40 IRE or 285.7 mV.</li> <li>5) Press the [SET] button again to set the adjusted data value.</li> </ol>
5	PB Y LEVEL (SET UP ON)	<ul style="list-style-type: none"> <li>• WFM or oscilloscope</li> <li>• No signal input</li> </ul>	EE	◎ LINE OUT, 75 Ω terminated ① Adjustment Screen No. 9 ☆ 100 IRE ±1% 714.3 mV ± 7 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE Y OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the Y level to 100 IRE or 714.3 mV.</li> <li>5) Press the [SET] button again to set the adjusted data value.</li> </ol>

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (⊙) Adjustment parts (Ⓜ) Adjustment level (☆)	Adjustment procedure
6	PB SETUP LEVEL (SET UP ON)	<ul style="list-style-type: none"> <li>• WFM or oscilloscope</li> <li>• No signal input</li> </ul>	EE	⊙ LINE OUT, 75 Ω terminated Ⓜ Adjustment Screen No. 10 ☆ 7.5 IRE 53.6 mV ± 4 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the SETUP level to 7.5 IRE or 53.6 mV.</li> <li>5) Check the adjustment of the previous item (NO. 5 PB Y LEVEL) and readjust it if it is deviated from the standard.</li> <li>6) Check that the adjustment value is 200 or 201.</li> <li>7) Press the [SET] button again to set the adjusted data value.</li> </ol>
7	PB SYNC LEVEL (SET UP ON)	<ul style="list-style-type: none"> <li>• WFM or oscilloscope</li> <li>• No signal input</li> </ul>	EE	⊙ LINE OUT, 75 Ω terminated Ⓜ Adjustment Screen No. 11 ☆ 40 IRE ±2% 285.7 mV ± 5 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the SYNC level to the specified value.</li> <li>5) Press the [SET] button again to set the adjusted data value.</li> </ol>
8	PB C LEVEL (SET UP ON)	<ul style="list-style-type: none"> <li>• WFM or oscilloscope</li> <li>• No signal input</li> </ul>	EE	⊙ LINE OUT, 75 Ω terminated Ⓜ Adjustment Screen No. 12 ☆ 592 mV ± 11 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the BLUE level to the specified value.</li> <li>5) Press the [SET] button again to set the adjusted data value.</li> </ol>
9	PB BURST LEVEL (SET UP ON)	<ul style="list-style-type: none"> <li>• WFM or oscilloscope</li> <li>• No signal input</li> </ul>	EE	⊙ LINE OUT, 75 Ω terminated Ⓜ Adjustment Screen No. 13 ☆ 40 IRE ±2% 285.7 mV ± 5 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the BURST level to the specified value.</li> <li>5) Press the [SET] button again to set the adjusted data value.</li> </ol>



No.	Item	Measuring instruments & Input signals	Mode	Measuring point (⊙) Adjustment parts (Ⓜ) Adjustment level (☆)	Adjustment procedure
-----	------	---------------------------------------	------	---	----------------------

#### 2.4 VIDEO ADJUSTMENTS (BD-X200E)

1	PB Y LEVEL	<ul style="list-style-type: none"> <li>•WFM or oscilloscope</li> <li>•No signal input</li> </ul>	EE	⊙ LINE OUT, 75 Ω terminated Ⓜ Adjustment Screen No. 14 ☆ 700 mV ± 7 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE Y OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the Y level to 100 IRE or 700 mV.</li> <li>5) Press the [SET] button again to set the adjusted data value.</li> </ol>
2	PB SYNC LEVEL	<ul style="list-style-type: none"> <li>•WFM or oscilloscope</li> <li>•No signal input</li> </ul>	EE	⊙ LINE OUT, 75 Ω terminated Ⓜ Adjustment Screen No. 15 ☆ 300 mV ± 6 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the SYNC level to 300 mV.</li> <li>5) Press the [SET] button again to set the adjusted data value.</li> </ol>
3	PB C LEVEL	<ul style="list-style-type: none"> <li>•WFM or oscilloscope</li> <li>•No signal input</li> </ul>	EE	⊙ LINE OUT, 75 Ω terminated Ⓜ Adjustment Screen No. 16 ☆ 627 mV ± 12 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the BLUE level to 627 mV ± 2%.</li> <li>5) Press the [SET] button again to set the adjusted data value.</li> </ol>
4	PB BURST LEVEL	<ul style="list-style-type: none"> <li>•WFM or oscilloscope</li> <li>•No signal input</li> </ul>	EE	⊙ LINE OUT, 75 Ω terminated Ⓜ Adjustment Screen No. 17 ☆ 300 mV ± 6 mV	<ol style="list-style-type: none"> <li>1) Terminate the LINE OUT terminal with a 75 Ω terminator.</li> <li>2) Press the [SET] button to turn the applicable adjustment item blue.</li> <li>3) Press the [SETUP] button to display the color bars.</li> <li>4) Press the [UP]/[DOWN] button to adjust the BURST level to 300 mV.</li> <li>5) Press the [SET] button again to set the adjusted data value.</li> </ol>

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## SECTION 3 CHARTS AND DIAGRAMS

### ■ SCHEMATIC DIAGRAM NOTES

#### • Schematic safety precaution

△ Parts are safety related parts.

When replacing them, be sure to use the specified parts.

#### • Voltage and waveform measurements

Measurements condition if described.

Voltage: Measured with digital voltmeter in DC range; in REC mode.

Value in ( ) is indicated only in the case PB voltage is different from that in REC mode.

Waveform: Measured by supplying the 100% color bar signal and 1kHz, -8dB sine wave in REC or PB mode.

Switch setting ; VIDEO INPUT SELECT ; LINE  
MENU : Initial setting.

#### • Unit of value

Unless otherwise specified

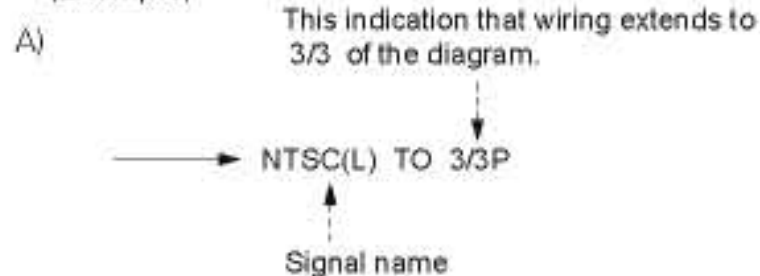
- 1) Resistance is in  $\Omega$  (1/6 W)
- 2) Capacitance is in  $\mu\text{F}$
- 3) Inductance is in  $\mu\text{H}$

#### • Expression of wiring

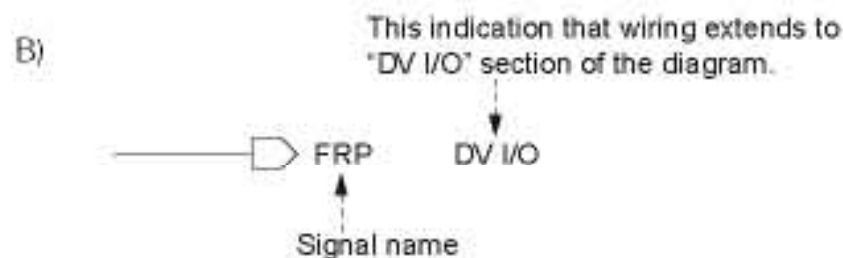
Several diagram is divided to print on some sheets, such an indication as the following is found in the case the wiring extends over two or more divided sections.

Indication of wiring which extends to another section:

(Example)



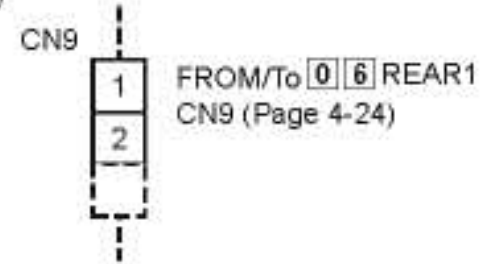
In the above case, the end of the wiring is connected to the "NTSC(L)" on the 3rd section of the diagram.



In the above case, the end of the wiring is connected to the "FRP" on the "DV I/O" section of the diagram.

#### • Wiring of connector

(Example)



In the above example, CN9 is connected with CN9 on 06 REAR1 board.

#### • Signal flow on the diagram

The following allow marks indicate the specified signal paths respectively.

- ➡ : Recording or EE signal path
- ⇨ : Playback signal path
- ◻➡ : Recording and Playback signal path

#### • Others

In regard of a board assembly whose circuit is composed of multilayered board patterns such 4- or 6-layered patterns, board patterns of the power supply lines and grounding lines are omitted in this section.

**Note:** For detail of each electrical part, refer to Section 5 "ELECTRICAL PARTS LIST" by its symbol number.

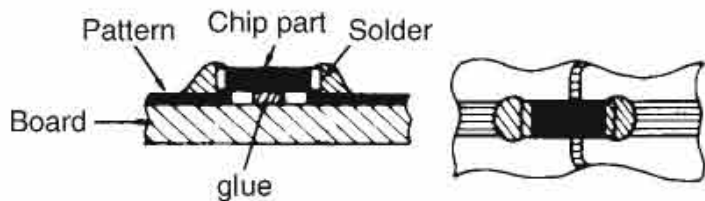


## ■ REPLACING SURFACE MOUNT "CHIP" COMPONENTS

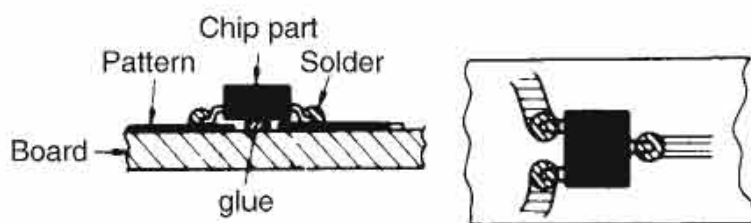
- Some resistors, shorting jumpers (0 resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
- Chip resistors used in some circuits are of high precision type having little error in resistance.  
To demonstrate the full capacity of this set, place an order for proper parts referring to the diagrams and parts lists in the section 5.
- Soldering cautions:
  - 1) Do not apply heat for more than 3 seconds.
  - 2) Avoid using a rubbing stroke when soldering.
  - 3) Discard removed chips; do not reuse them.
  - 4) Supplementary cementing is not required.
  - 5) Use care not to scratch or otherwise damage the chips.

### (1) Soldered condition of chip parts

- Resistors, capacitors, etc.



- Transistors, diodes, etc.



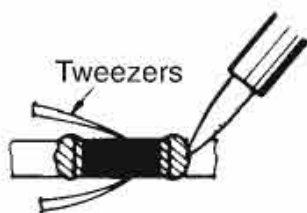
### (2) Removing of chip parts

- Resistors, capacitors, etc.

- i) Melt solder at a side.



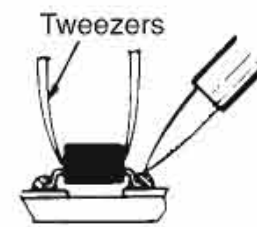
- ii) Holding the chip with tweezers, melt solder at the other side.



- iii) Take off the chip in twisting and sliding motion.



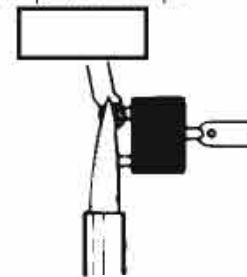
- Transistors, diodes, etc.
- i) Melt solder at the side of single lead.



- ii) Lift the unsoldered side upwards.



- iii) Simultaneously melt solder at two leads of the other side and pull up the chip.

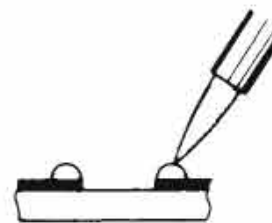


### (3) Preheating and soldering of chip parts

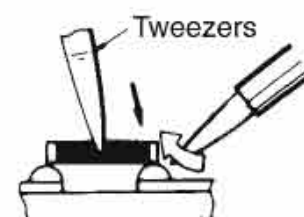
Except transistors, make sure to preheat all chip parts, capacitors in particular, with a hot wind of 150°C approx. (of a hair dryer, etc.) for 2 minutes just before soldering, and immediately solder by a soldering iron of approx. 30 W.

### (4) Attaching of chip parts

- i) Heap up a proper amount of solder beforehand.

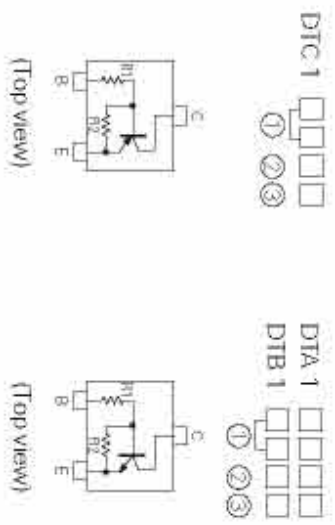


- ii) Holding down a new chip by tweezers, solder it to the board by a soldering iron to melt solder from its lower part to the upper part (in the direction shown by a big arrow).



■ CHIP PARTS PIN ARRANGEMENT

[1] Digital transistors



① Two digits show resistance of R1 in abbreviation.

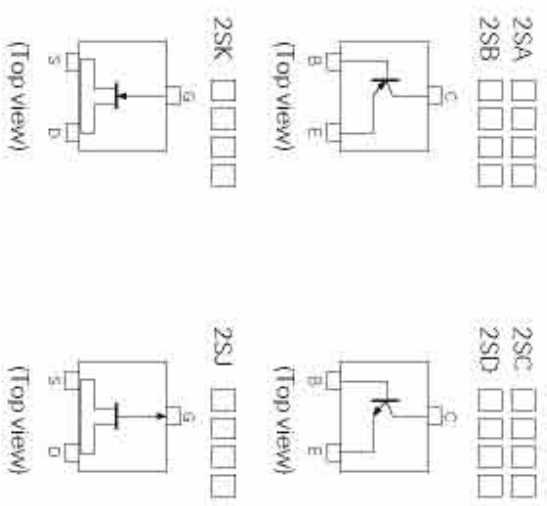
- 43 : 4.7 kΩ
- 14 : 10 kΩ
- 24 : 22 kΩ
- 44 : 47 kΩ

② Roman letter show the resistive ratio between R1 and R2 in abbreviation.

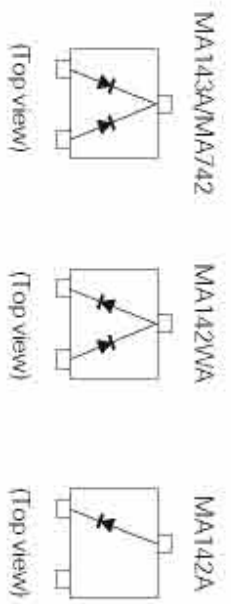
- E : R2/R1 = 1/1
- Y : R2/R1 = 5/1
- W : R2/R1 = 2/1
- X : R2/R1 = 1/2
- T : R2 is opened.

③ Symbol the shape of resistor in abbreviation.

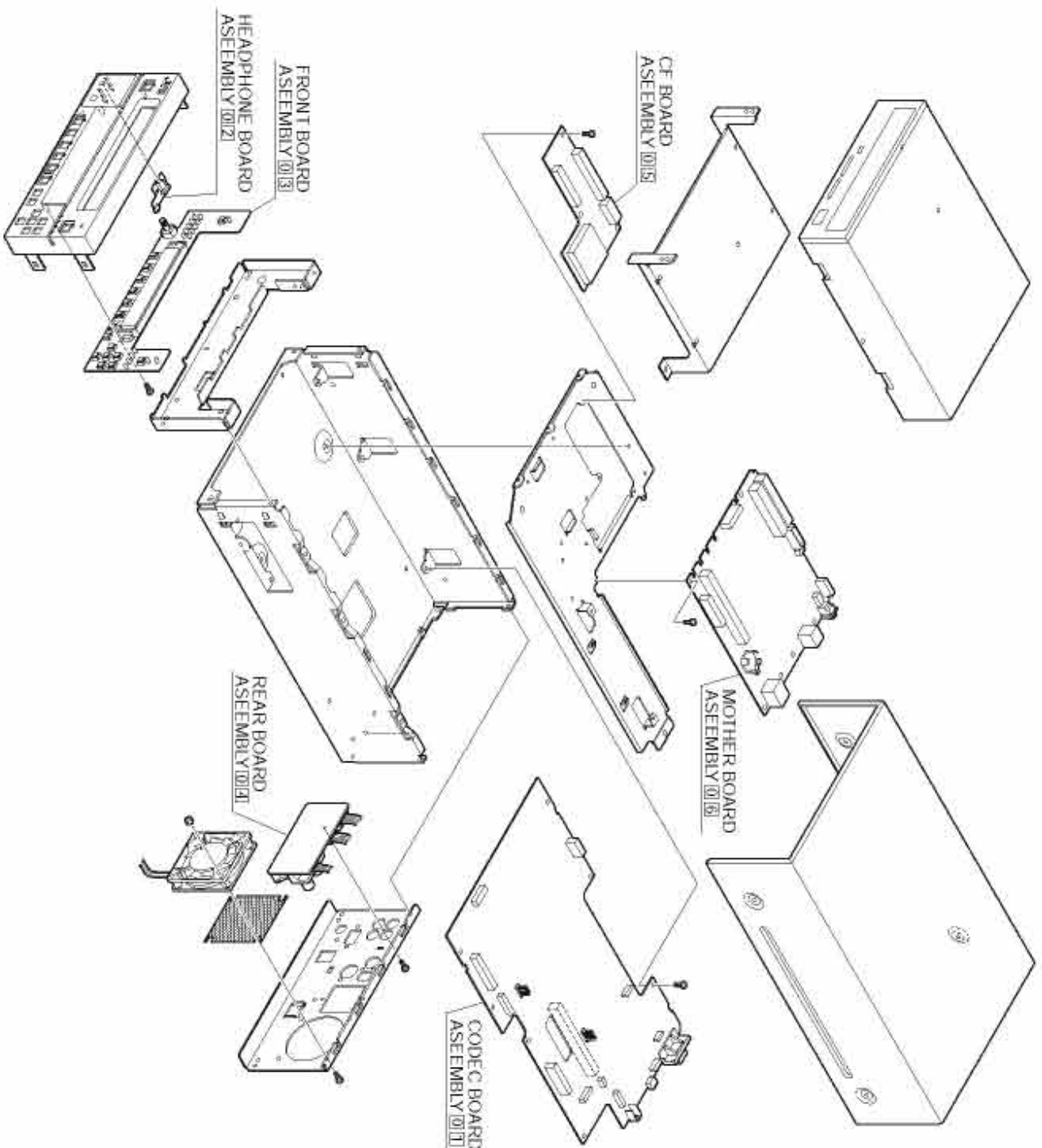
[2] Chip transistors and chip F.E.T's



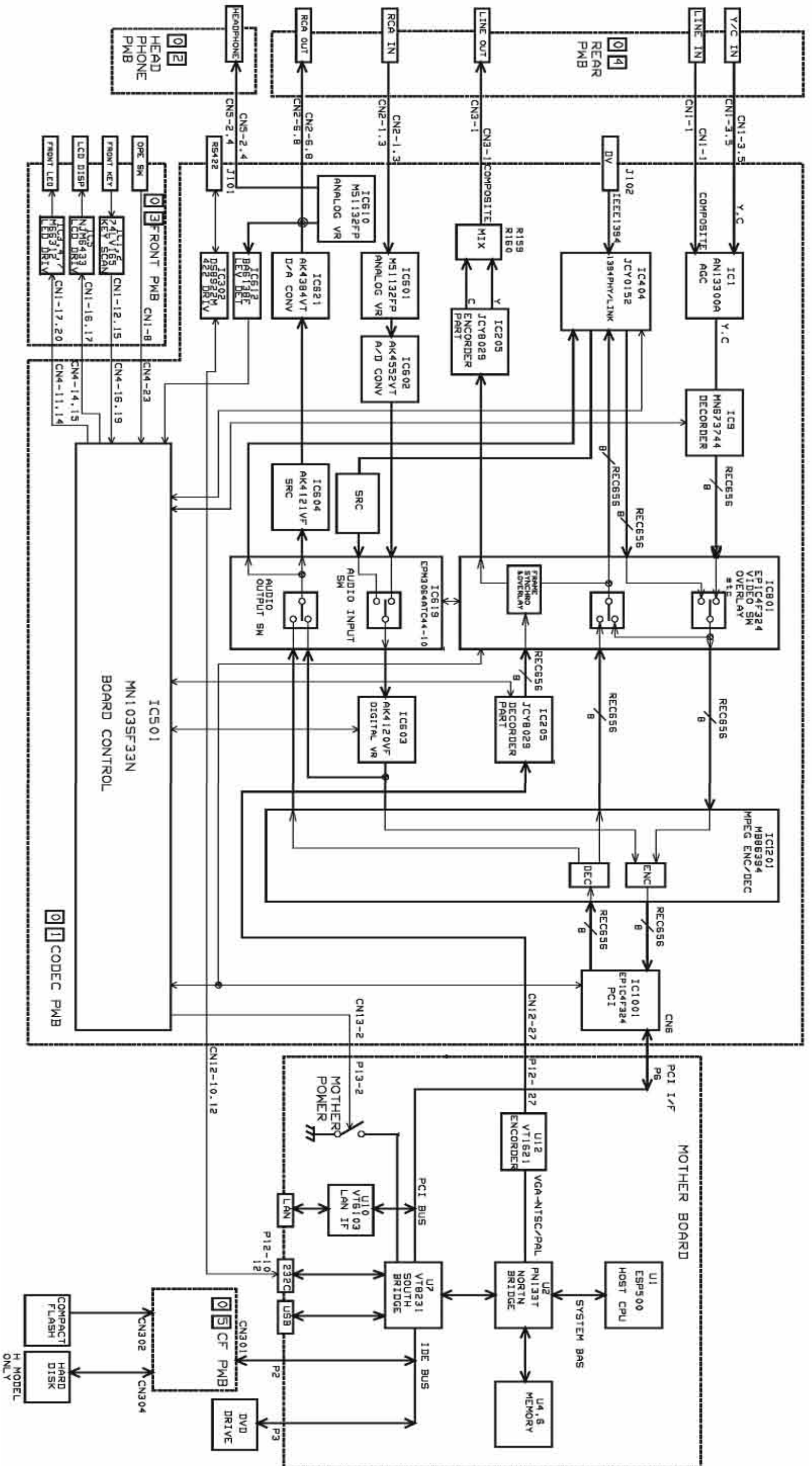
[3] Chip diodes



3.1 INDEX TO PAGE OF MAIN BOARDS AND CIRCUIT BOARD LOCATION

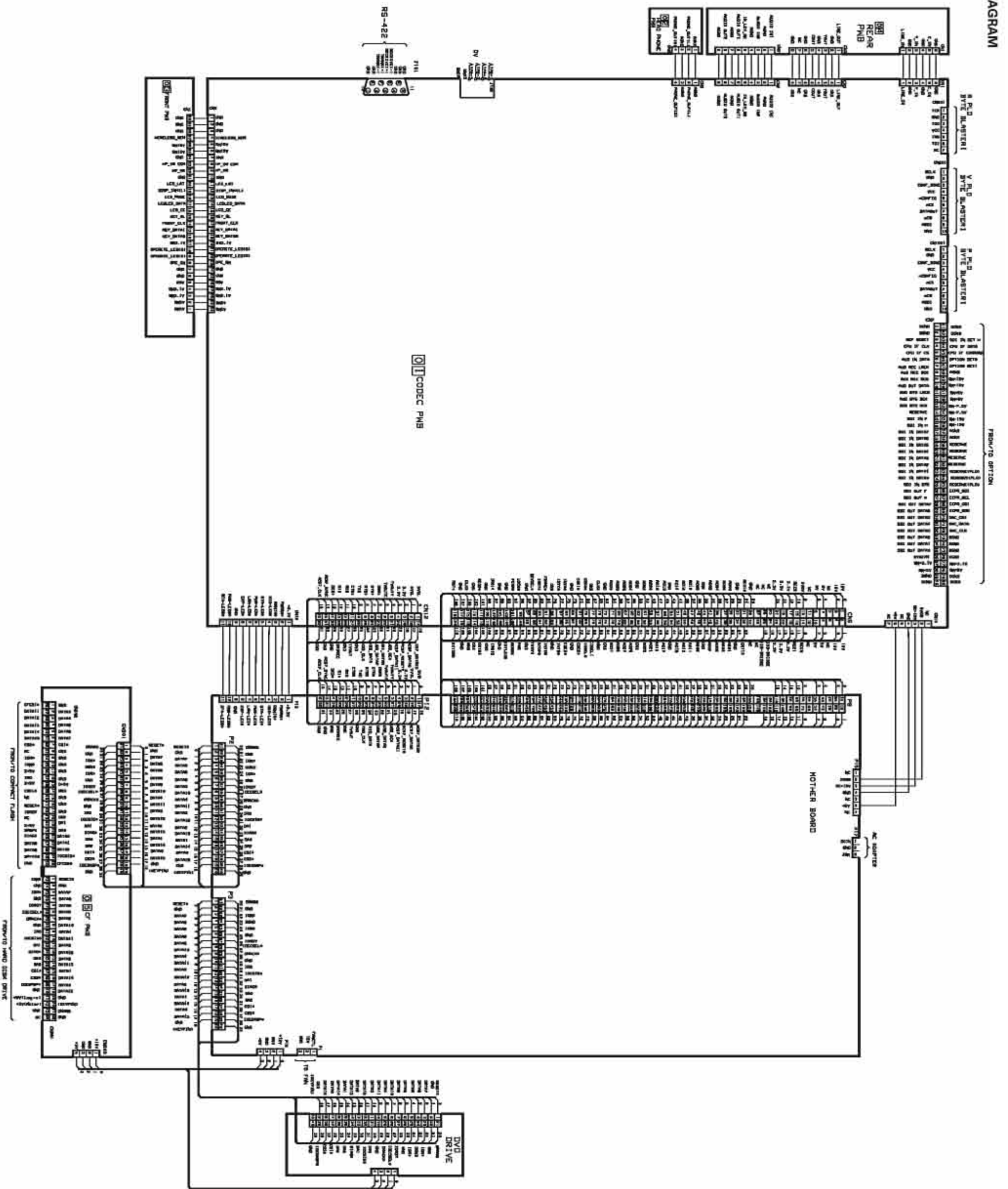


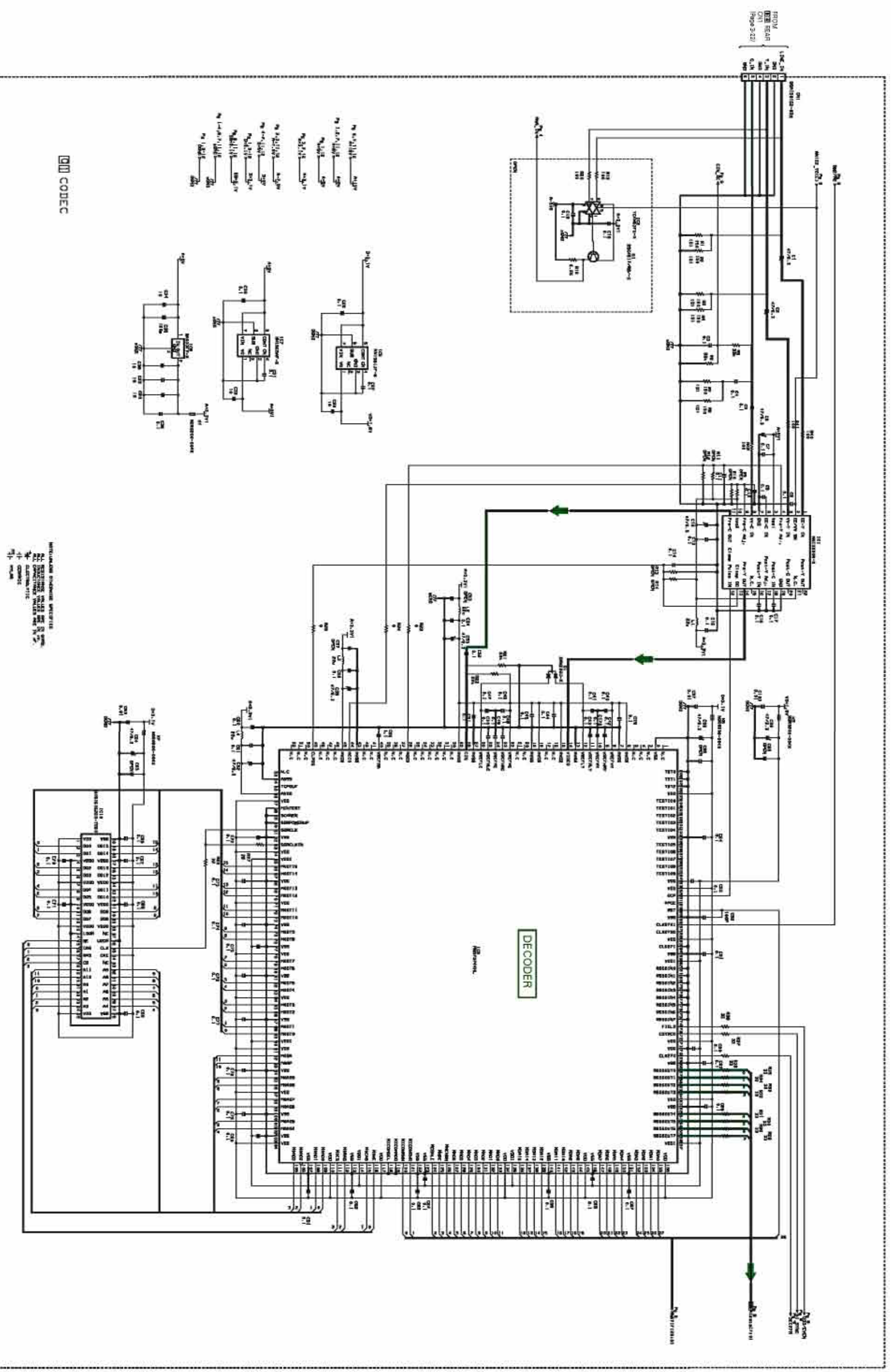
Board No.	Board Name	Page of diagram	
		Schematic diagram	Circuit board
001	CODEC	3-6 to 3-17	3-18, 3-19
002	HEADPHONE	3-24	3-23
003	FRONT	3-20	3-21
004	REAR	3-22	3-23
005	CF	3-24	3-23
006	MOTHER	3-25 to 3-36	—





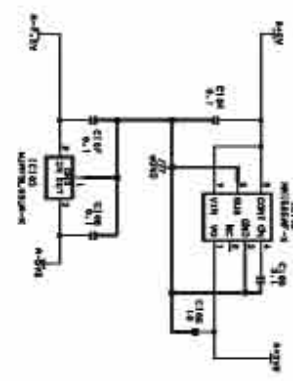
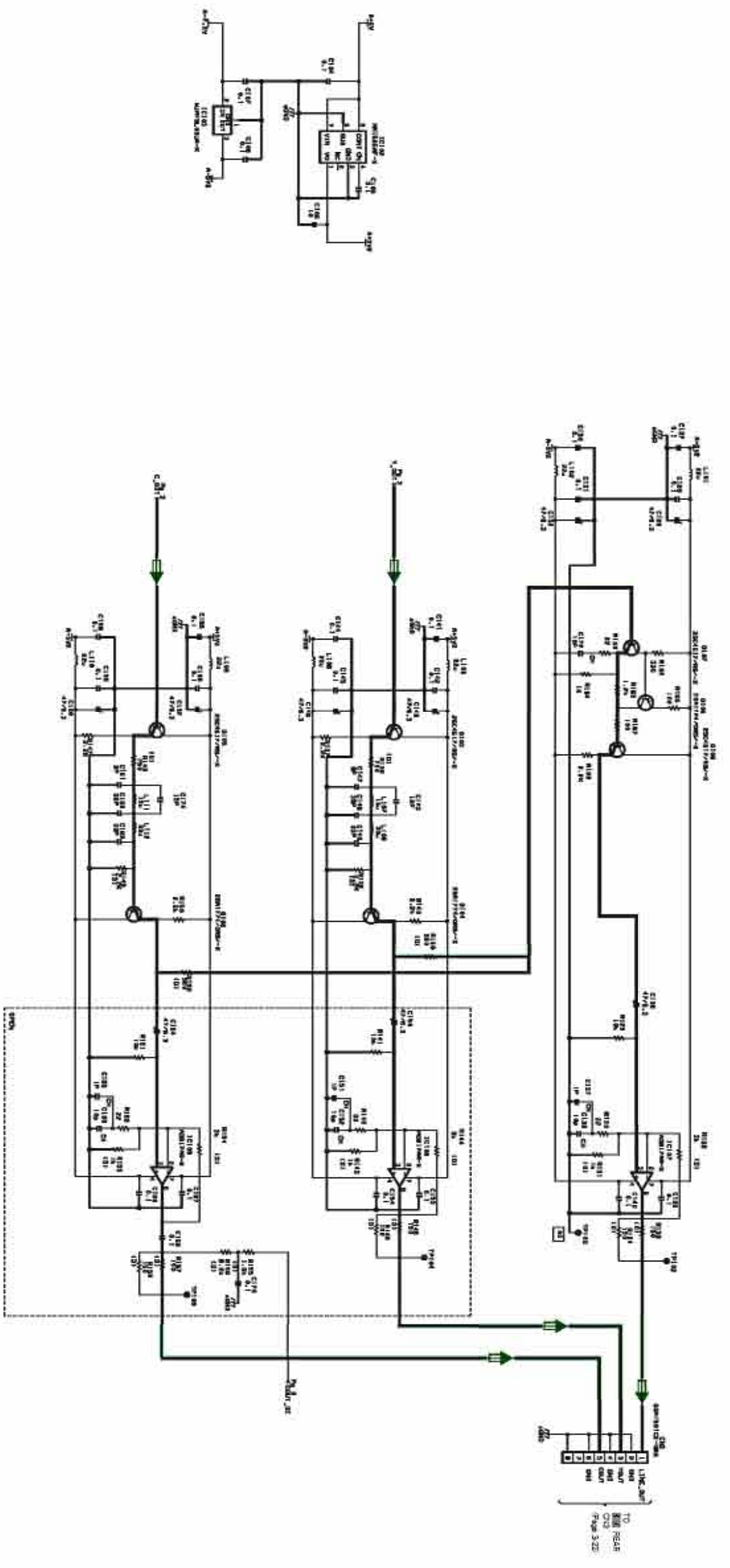
3.3 OVERALL WIRING DIAGRAM



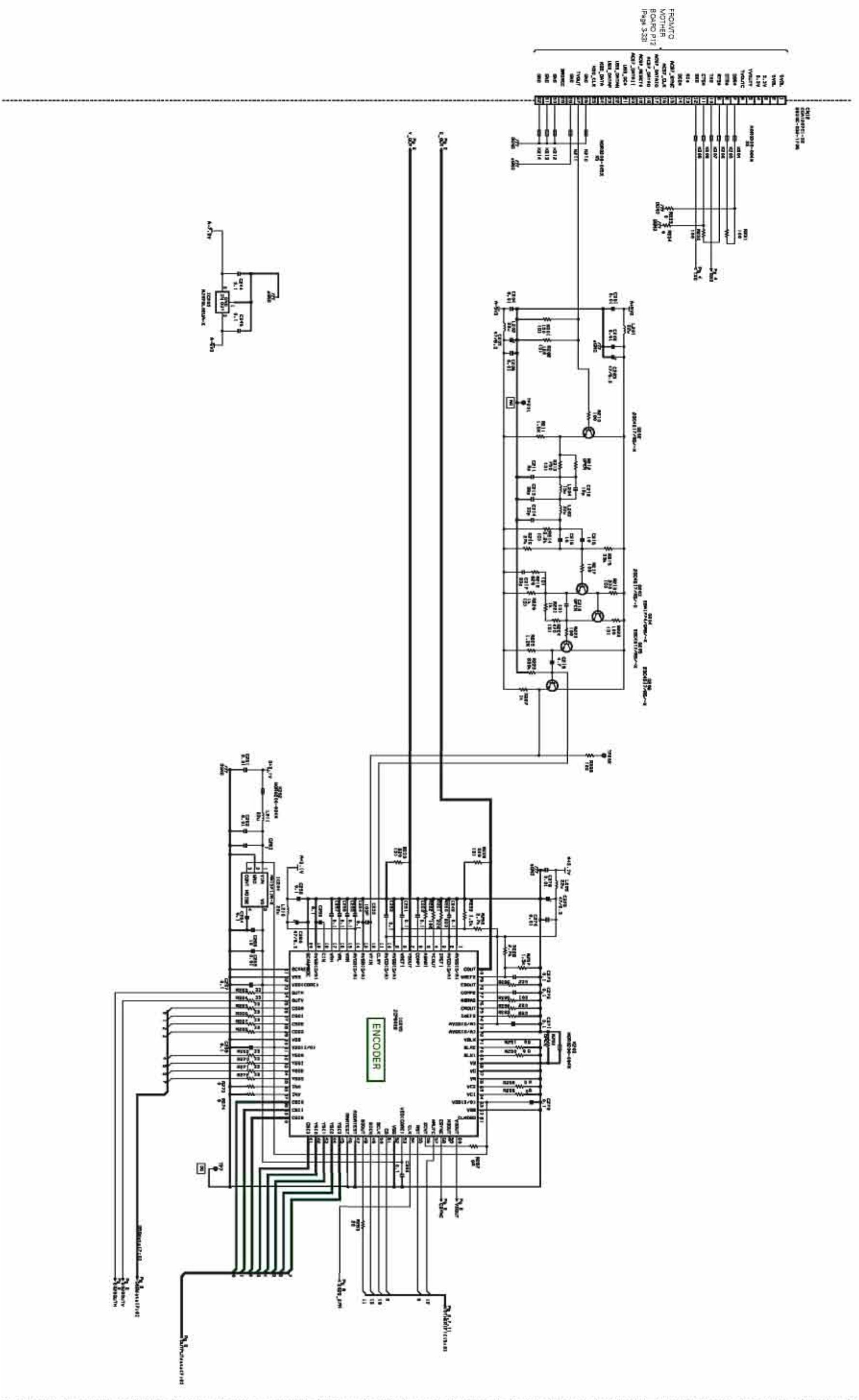


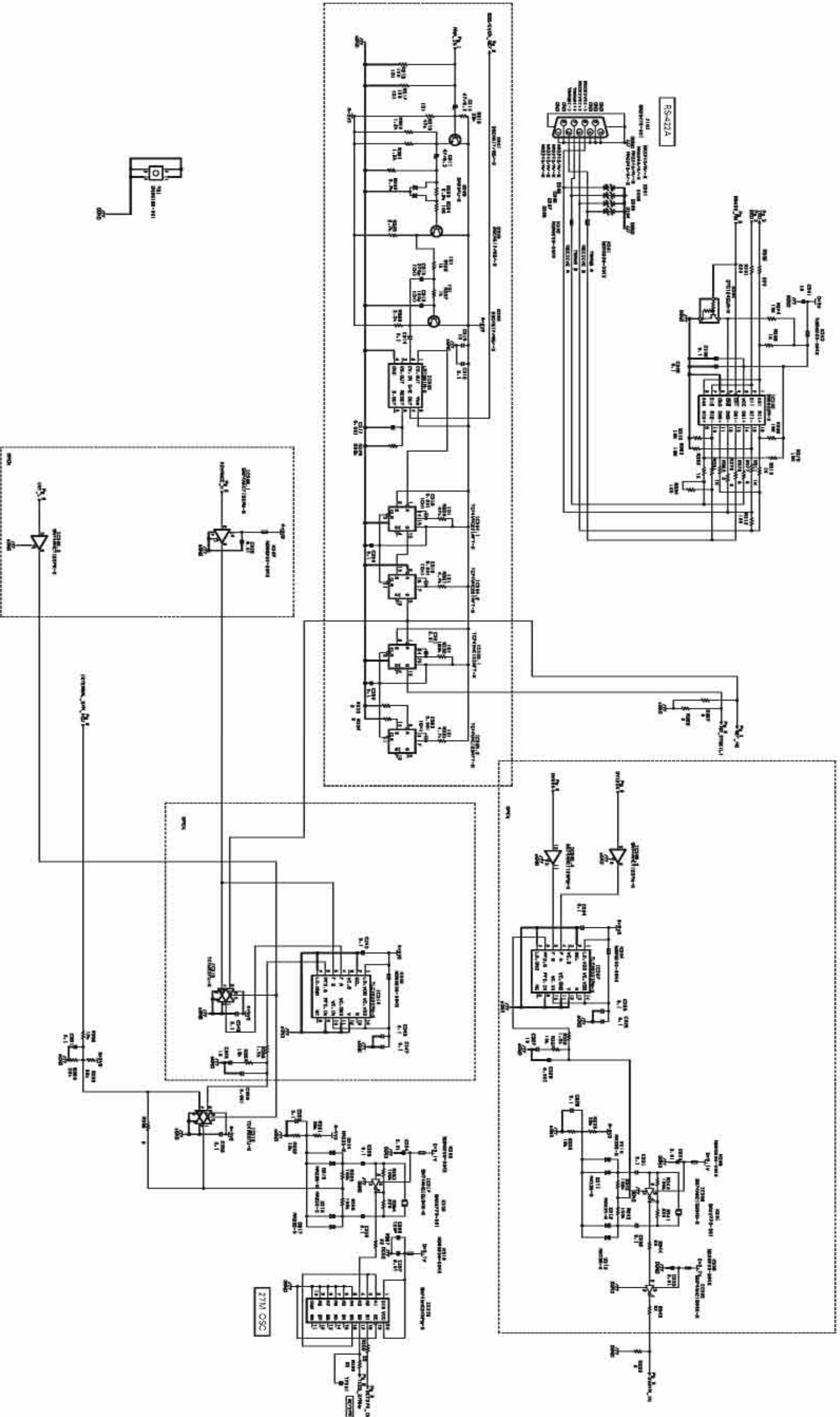
3-6

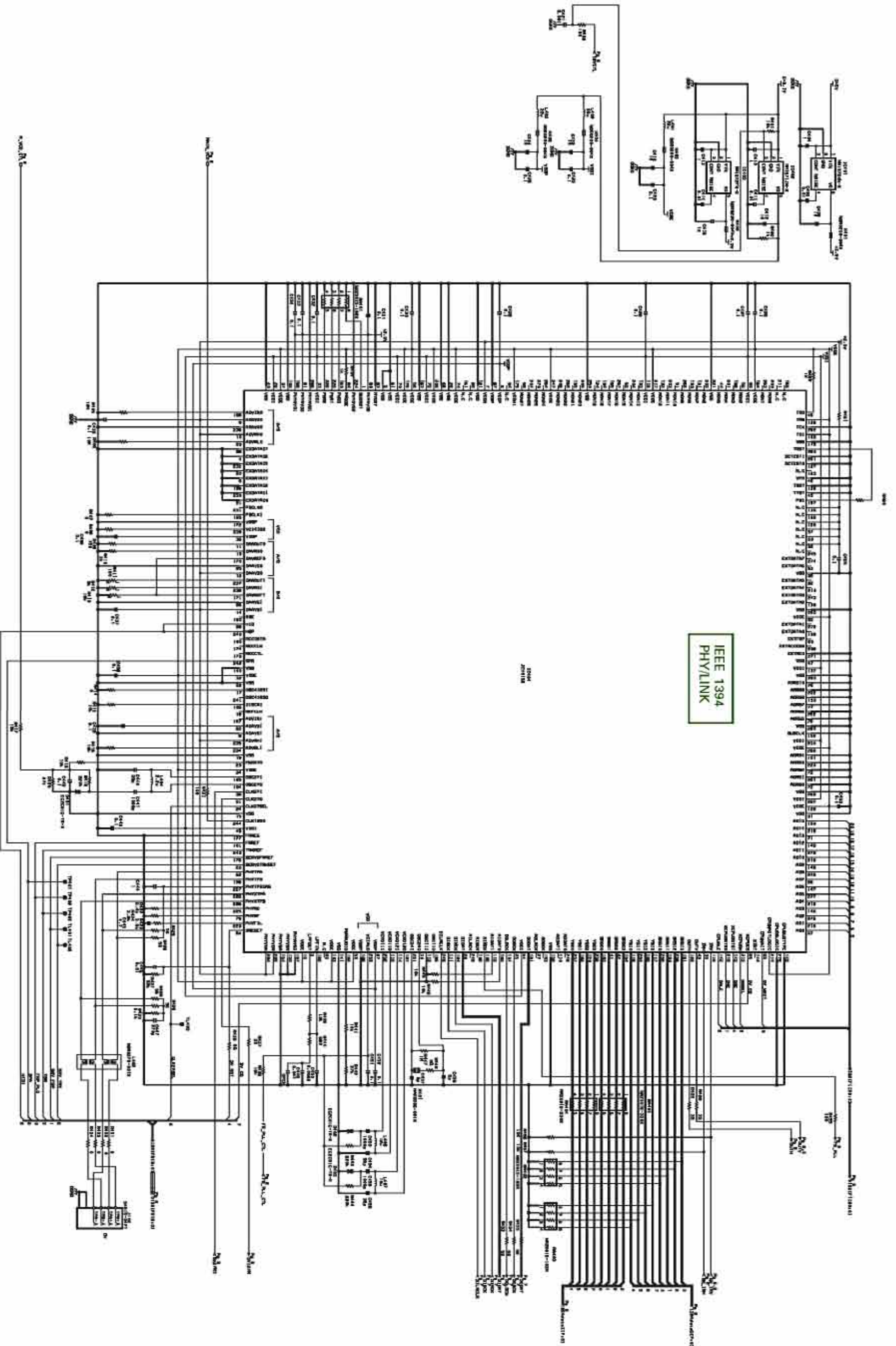
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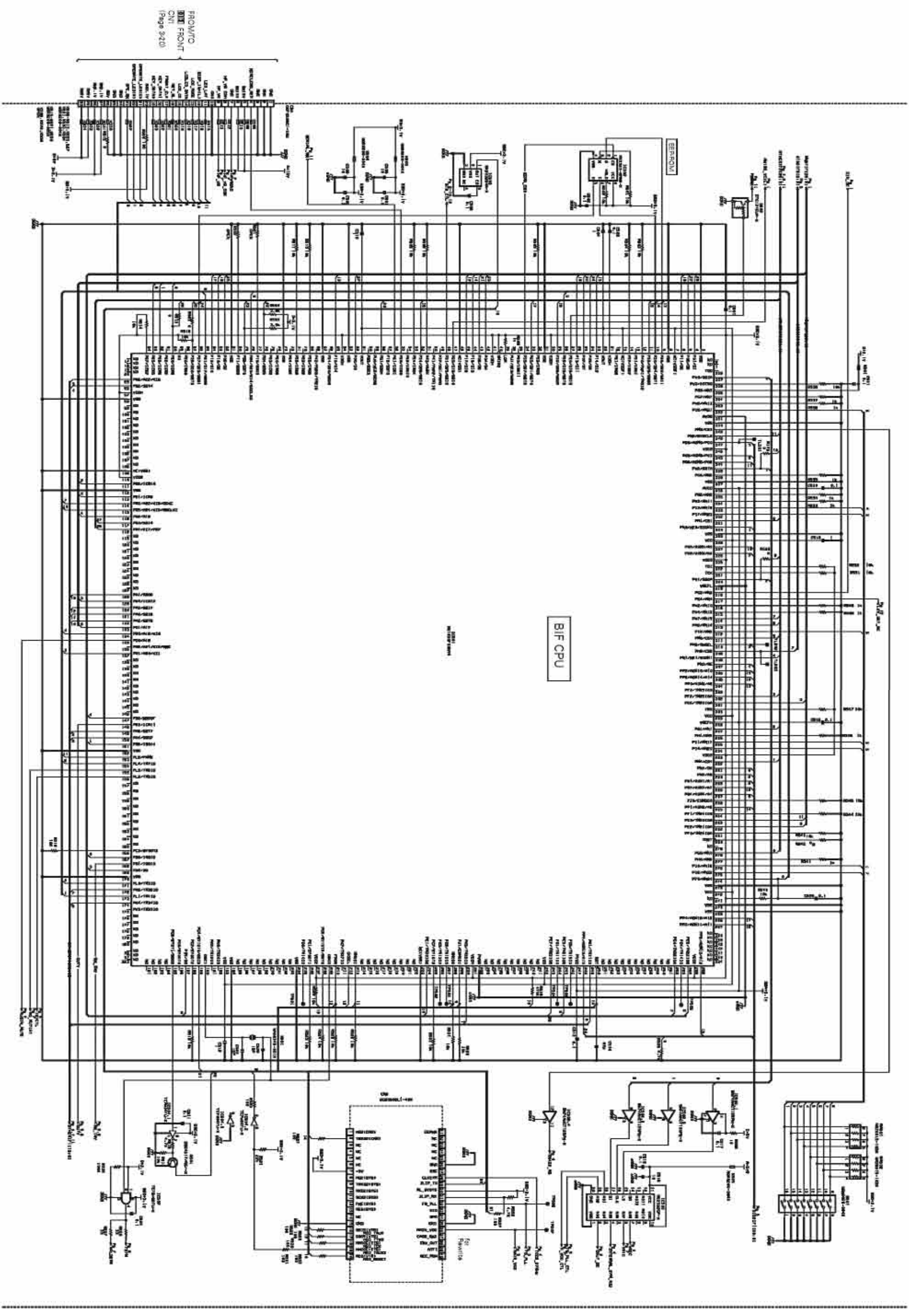




3-10

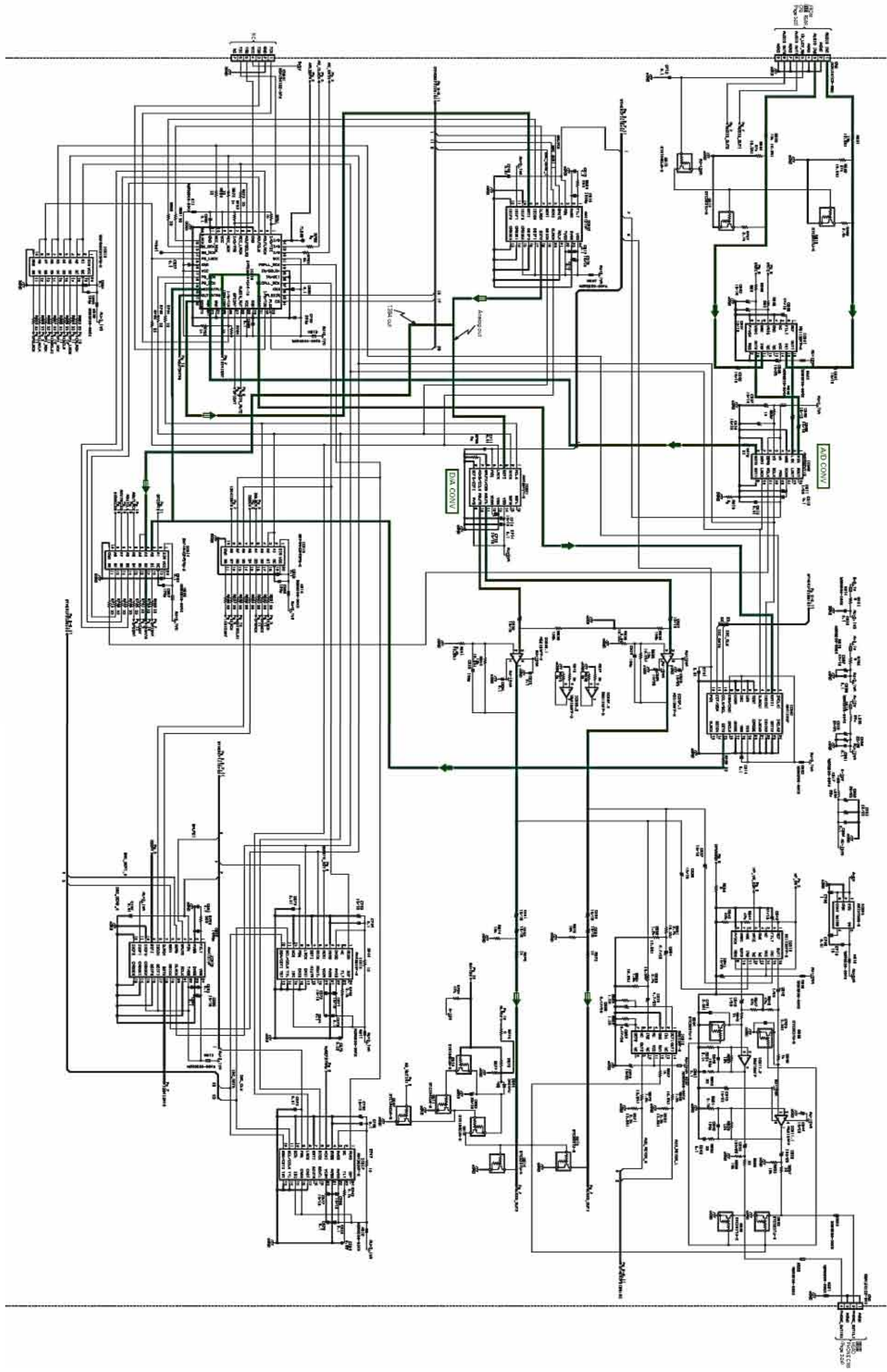
3-10



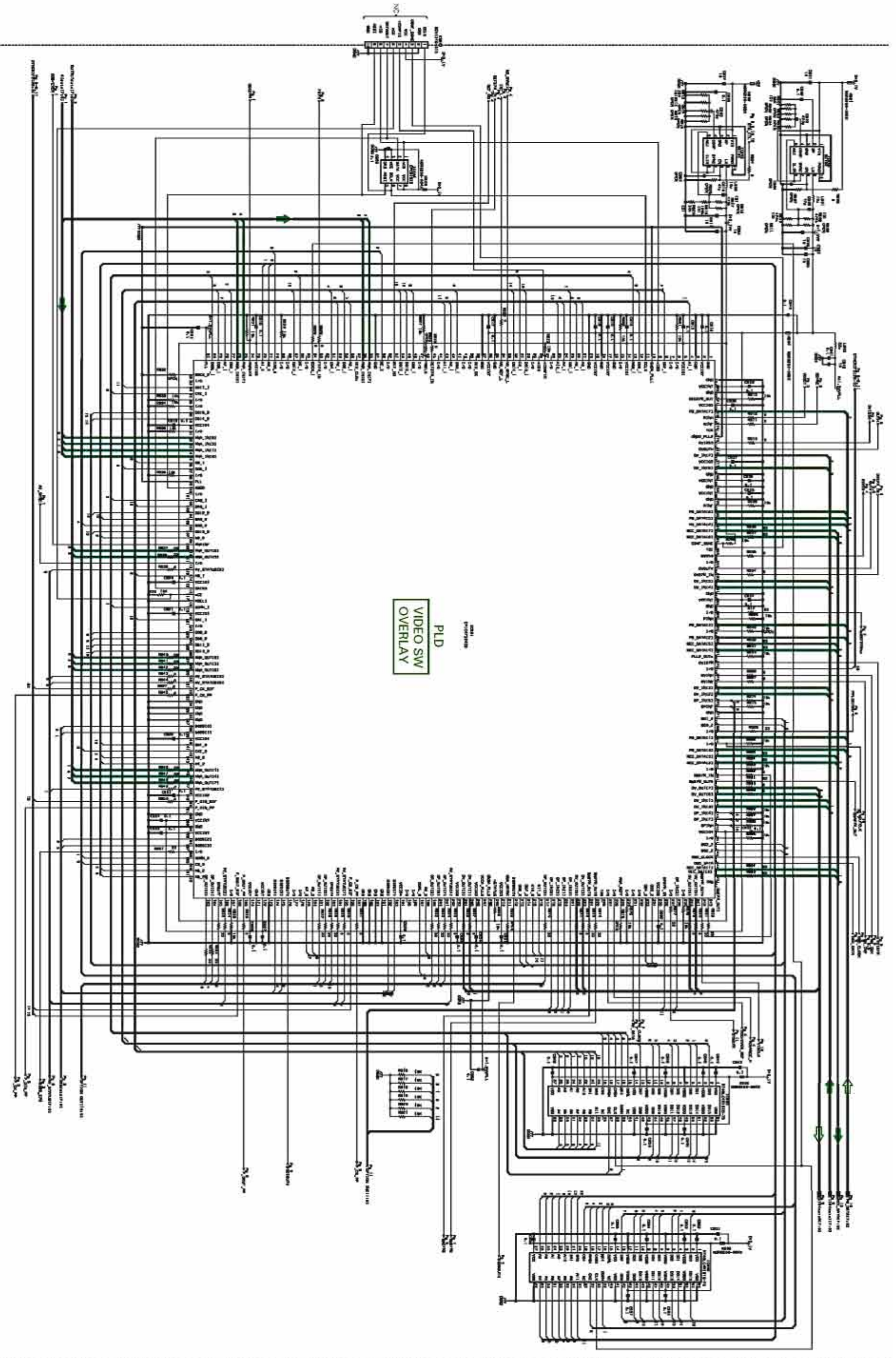


FROM/TO  
CNI  
CNI  
(Page 3 of 10)

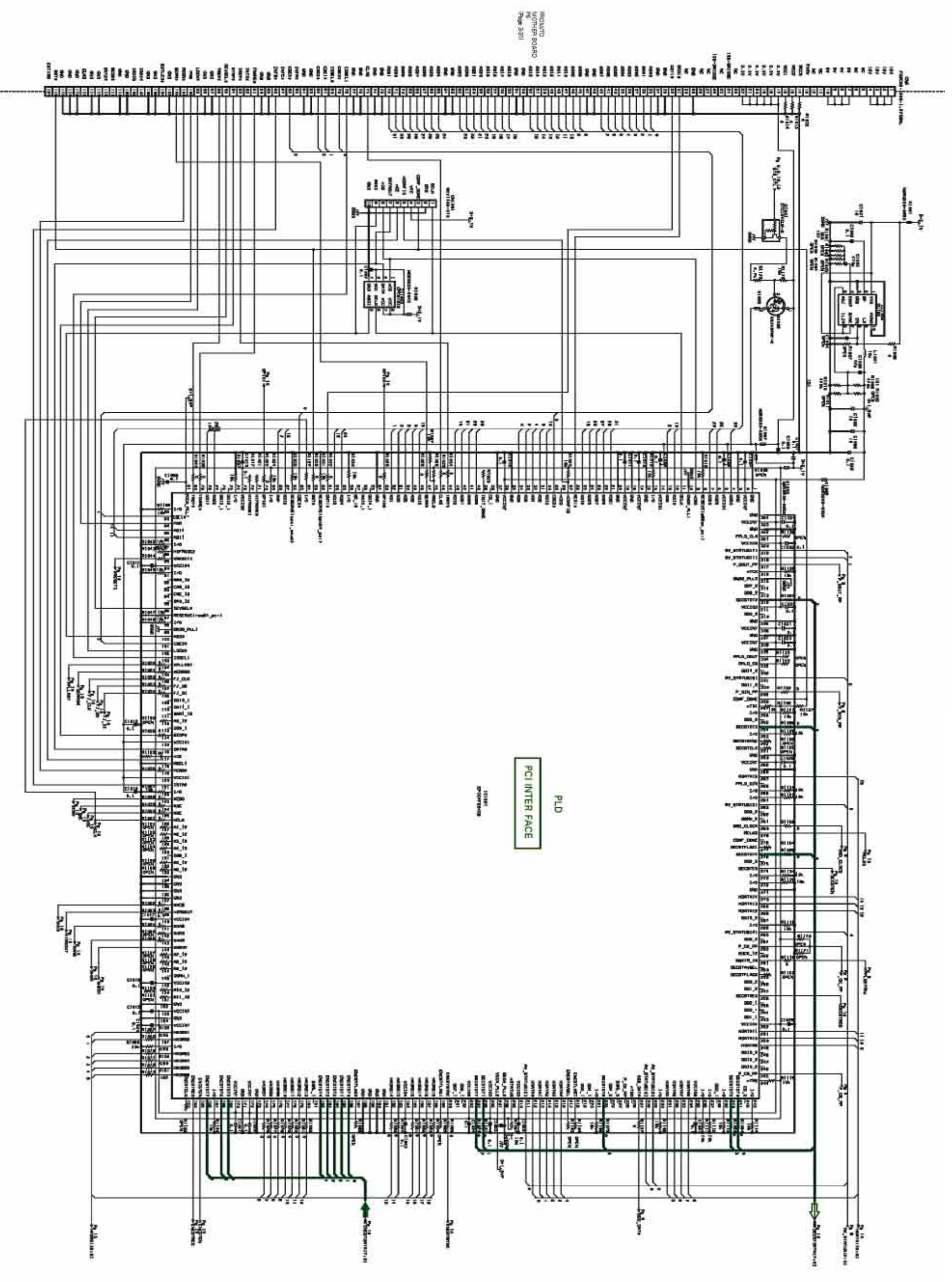










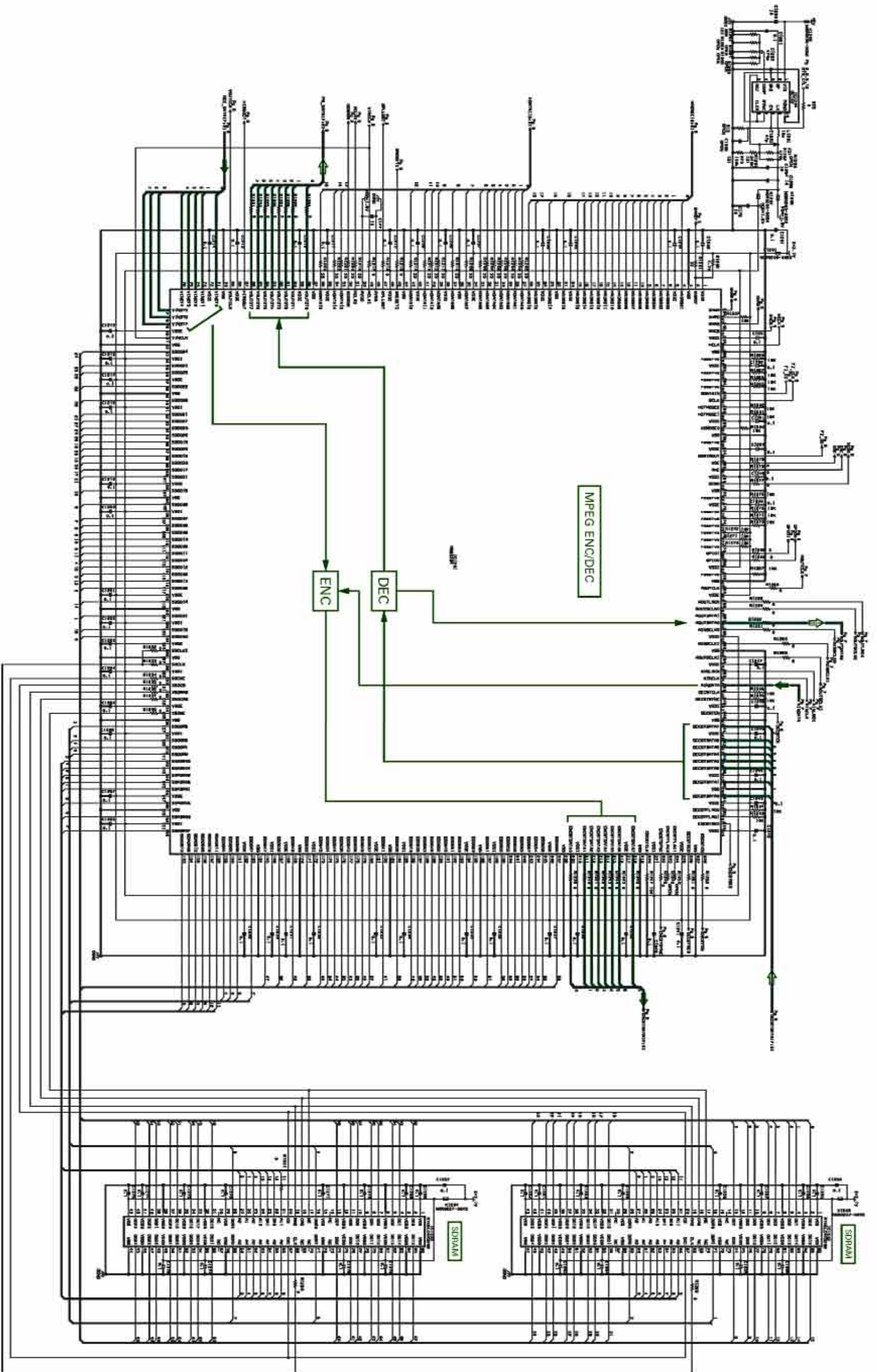


PCI INTERFACE

PLD

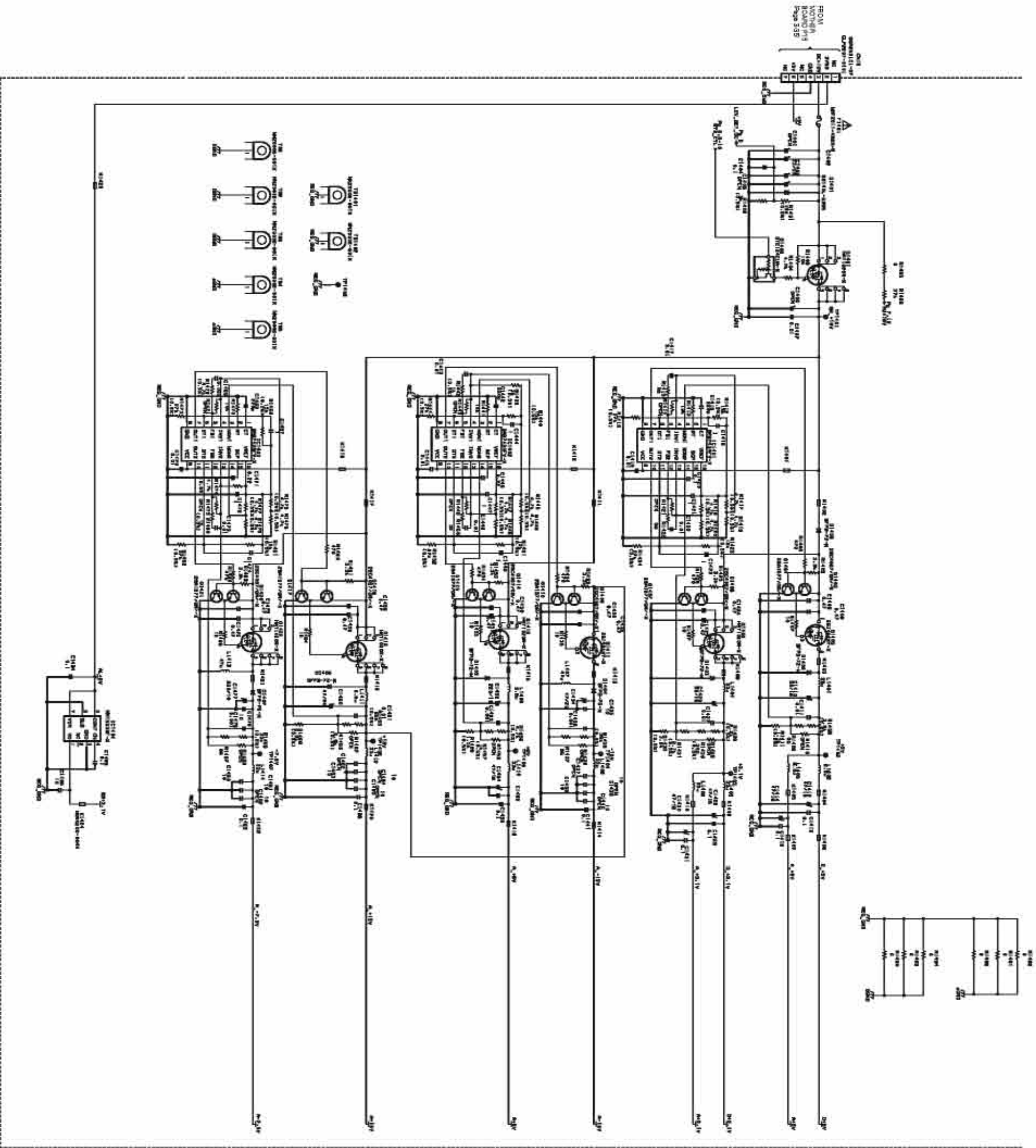
PROGRAM

INNOVATO  
MOTHER BOARD  
Rev 3211

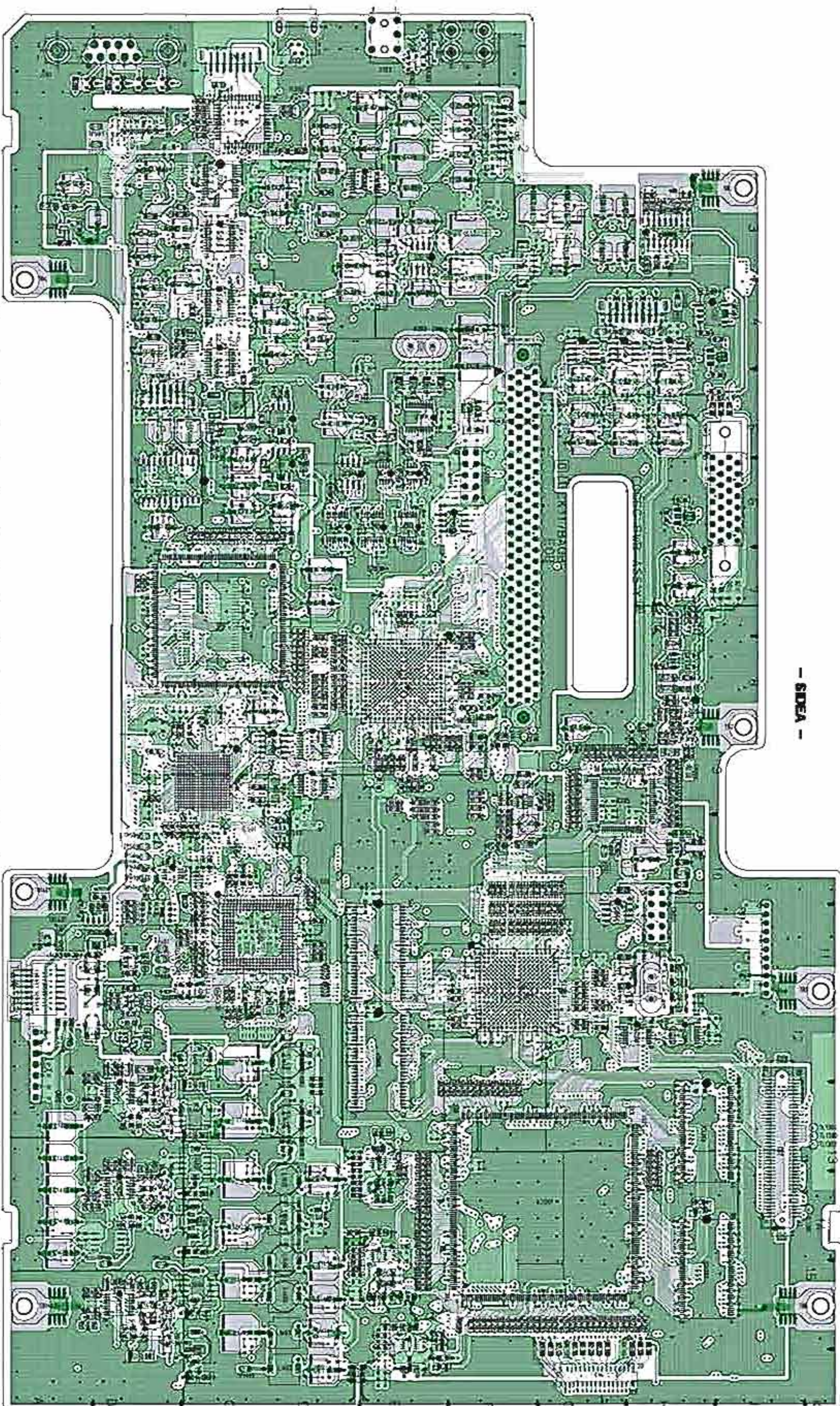












- SIDE A -

● ADDRESS TRAIL OF BOARD PARTS  
 Each address may have an address error by one channel.

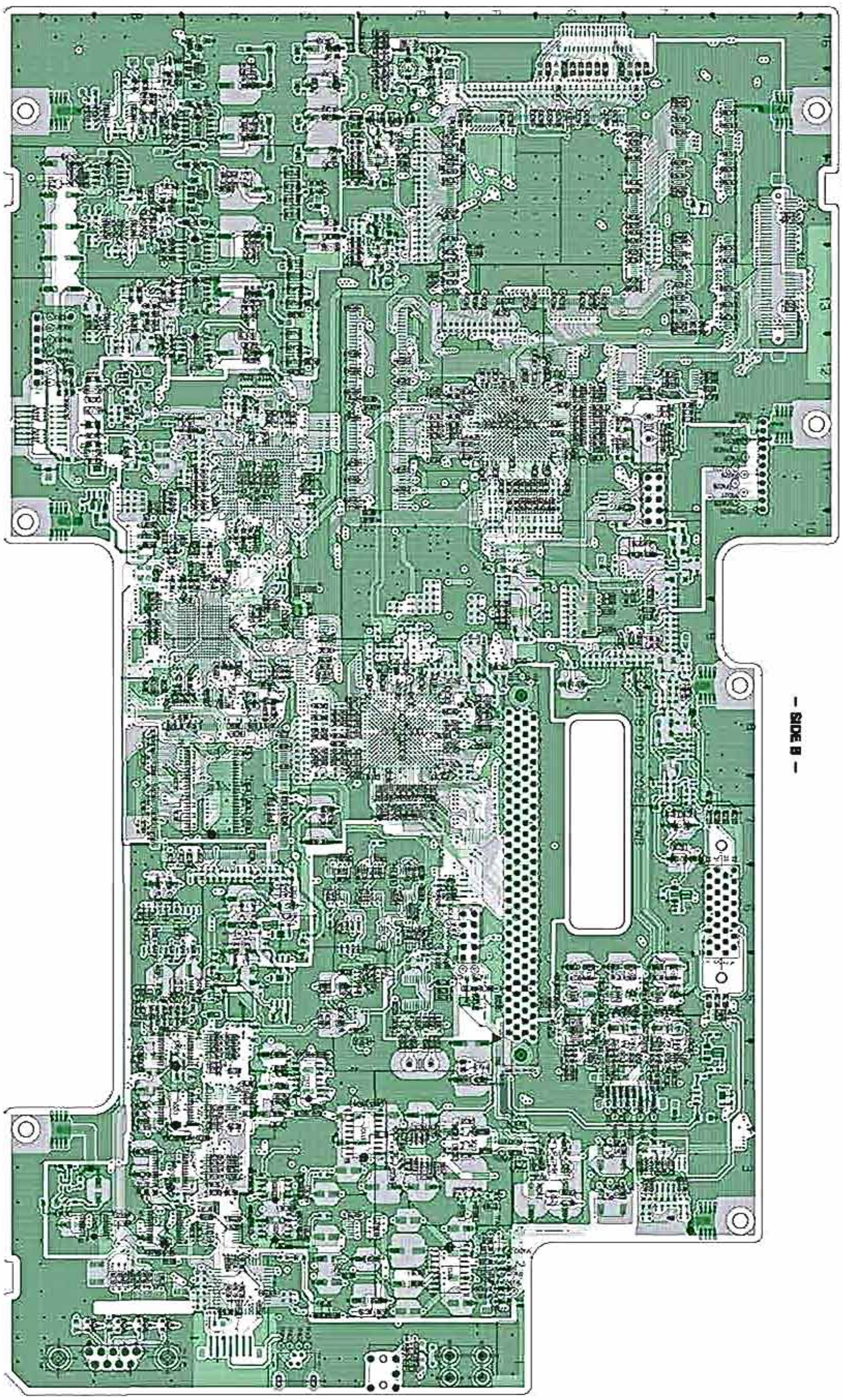


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3-18

3-18





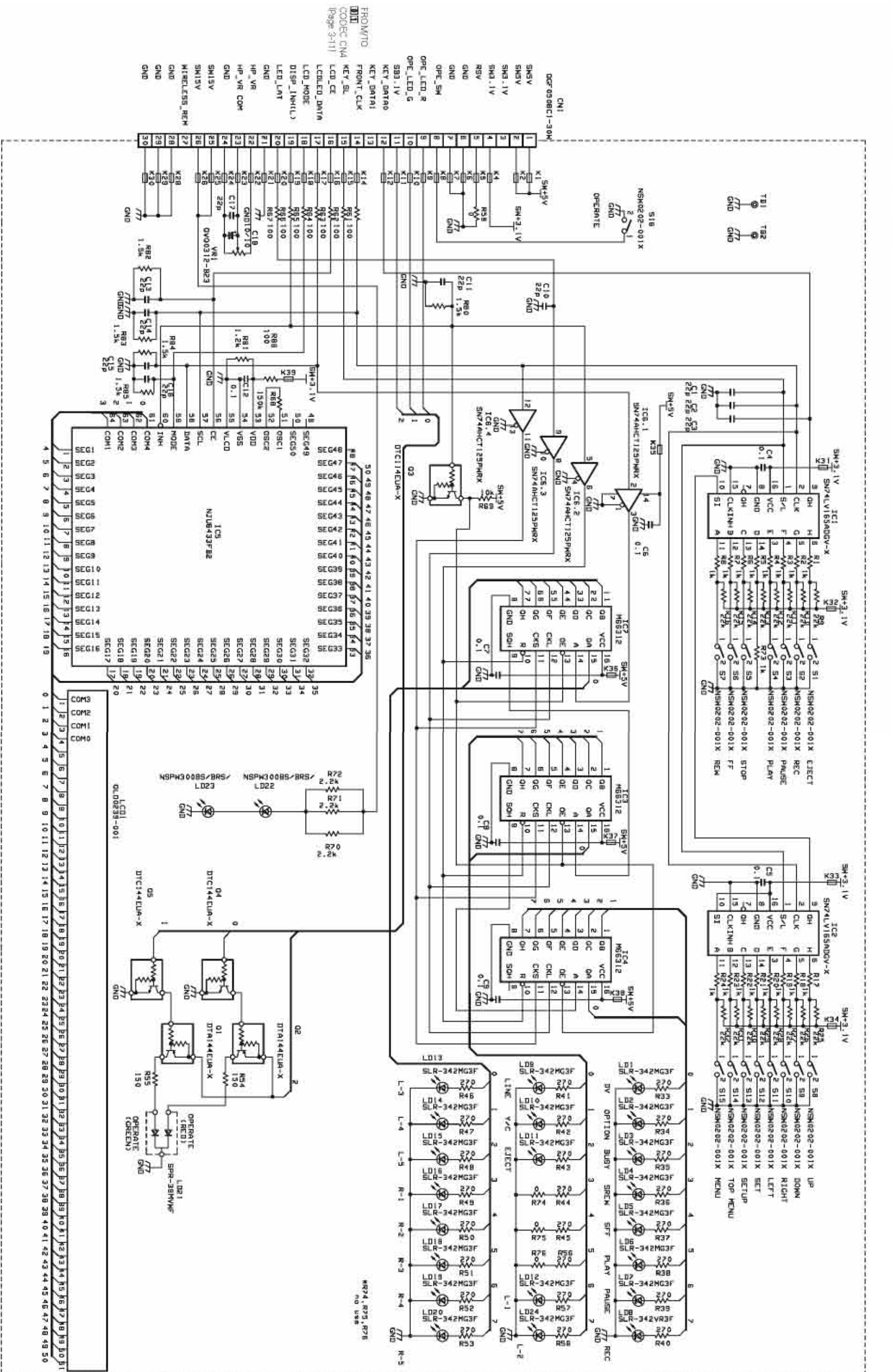
- SIDE B -

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3-19

3-19

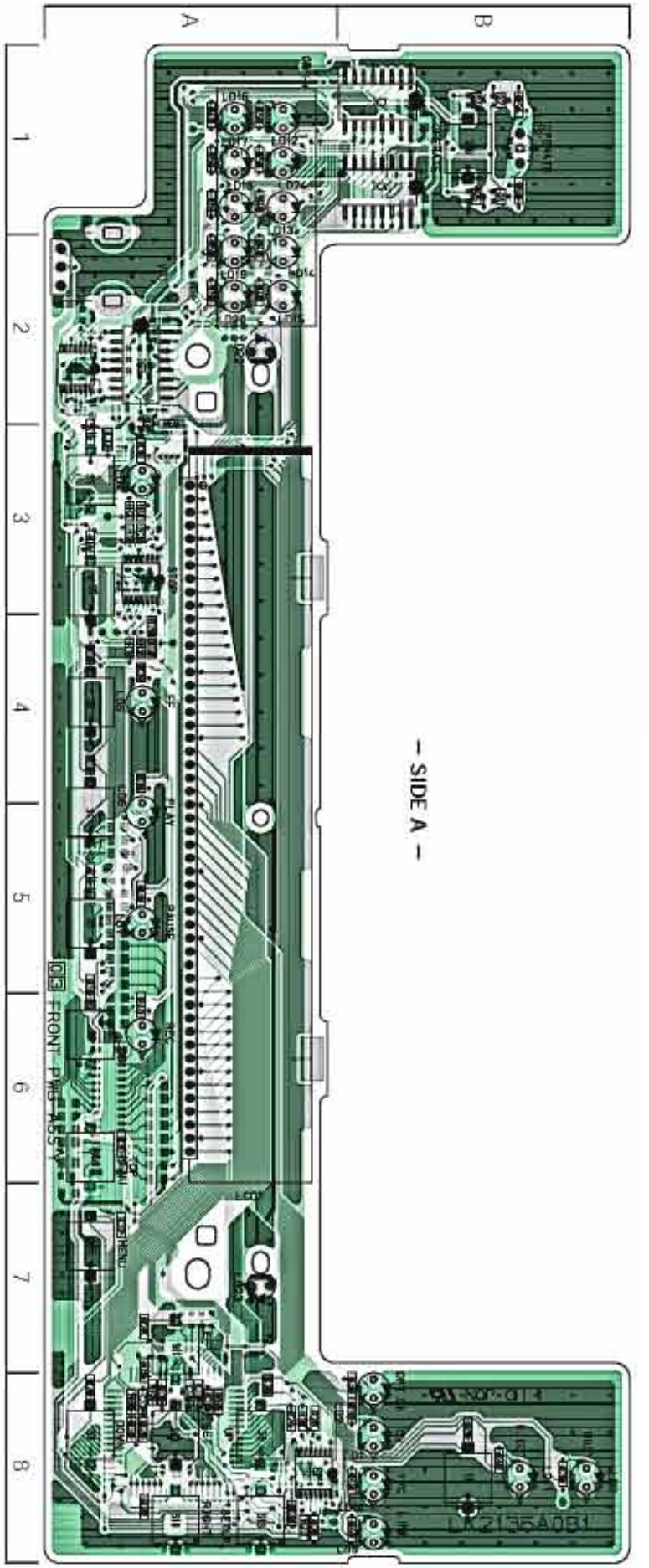




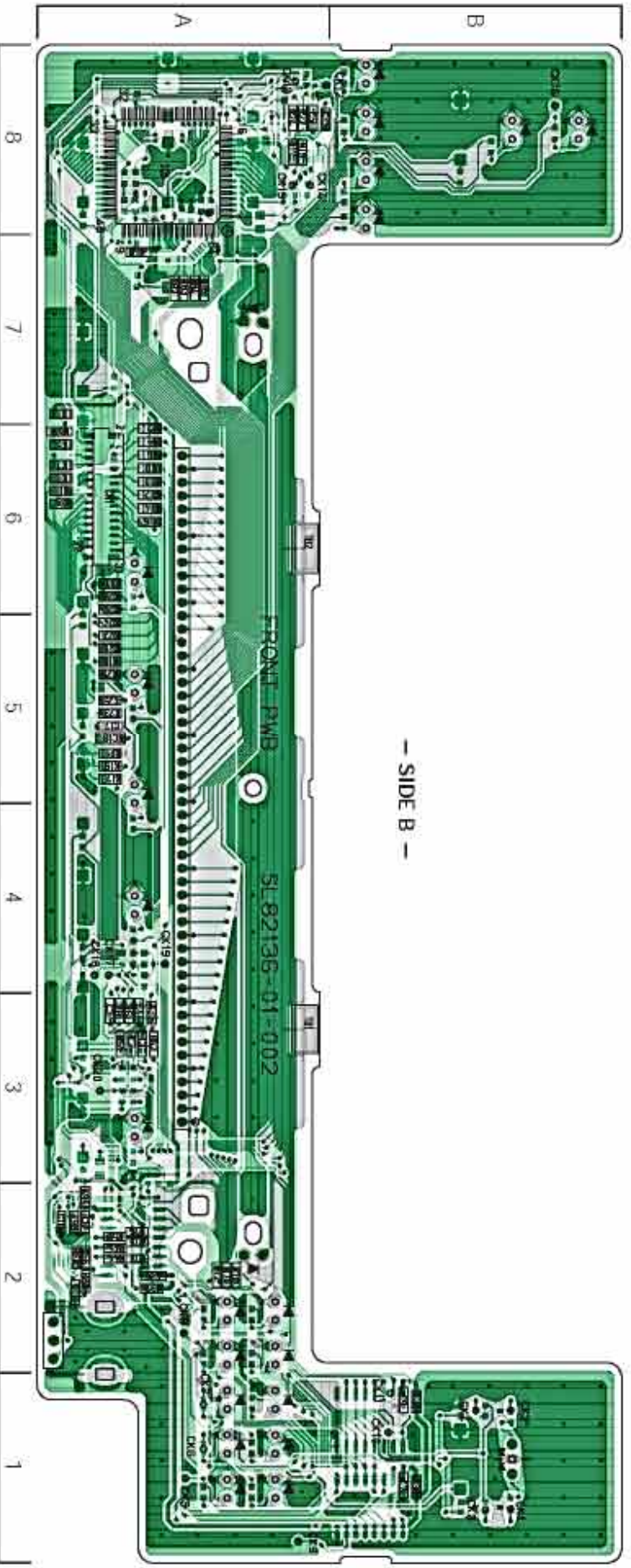
3-20

3-20





-- SIDE A --

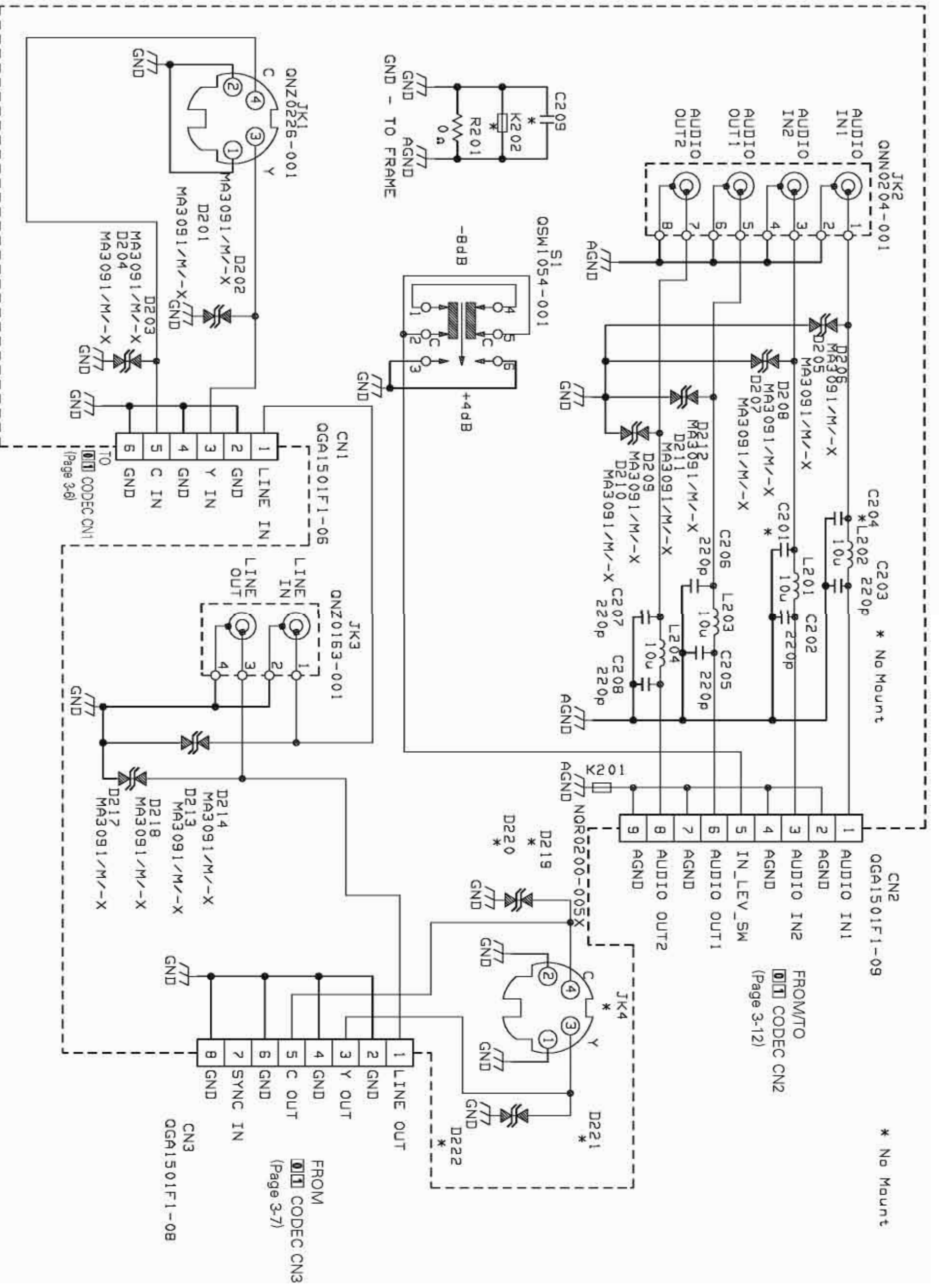


-- SIDE B --

● ADDRESS TABLE OF BOARD PARTS  
Each address may have an address error by one interval.



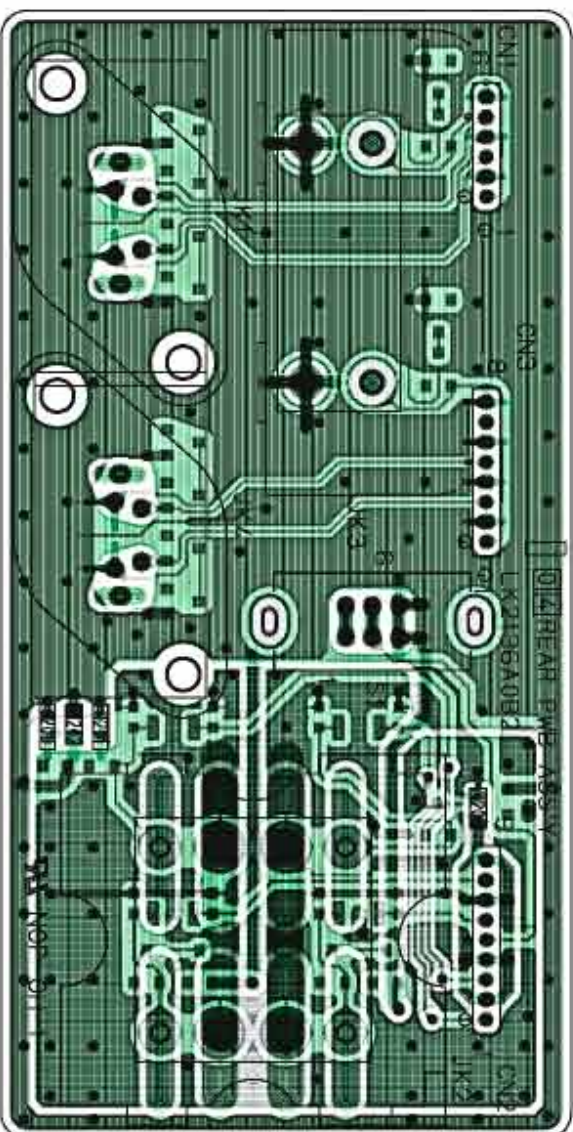
IC2	A:08	B3	A:3A	R18	A:0A	R33	A:8E	R48	A:2A	R54	B:2A	B:02	B:7A	CB	B:2A	LD4	A:3A	LD19	A:2A	S7	A:3A	K6	B:6A	R22	B:6A	R28	B:1B	CB8	B:2A		
IC3	A:2A	0A	A:3A	R19	B:0E	R34	A:8E	R49	A:1A	R65	A:0A	R93	B:7A	CB	B:1B	LD5	A:4A	LD20	A:2A	S8	A:0A	K7	B:6A	R23	B:6A	R29	A:0A	CB9	B:1A		
IC4	A:1B	05	A:4A	R20	A:8E	R35	A:8E	R50	A:1A	R66	B:2A	R94	B:7A	CB	B:2A	LD6	A:5A	LD21	A:1B	S9	A:8A	K8	B:6A	R24	K24	B:6A	CB10	B:1B			
IC5	B:0A	06	B:2A	R21	A:8E	R36	A:3A	R51	A:1A	R67	B:2A	R95	B:7A	CB	B:2A	LD7	A:6A	LD22	A:2A	S10	A:0A	K9	B:6A	R25	B:6A	LD201	A:6A	CB11	B:1B		
IC6	A:2A	R7	A:4A	R22	B:0E	R37	A:4A	R52	A:2A	R68	B:7A	R96	A:0A	CB2	A:0A	LD8	A:6A	LD23	A:7A	S11	A:7A	K10	B:6A	R26	K26	B:6A	CB12	B:0E	CB12	B:0E	
IC7	A:1B	08	B:3A	R23	A:8A	R38	A:4A	R53	A:2A	R69	A:2A	R97	A:2A	CB	A:8A	LD9	A:8E	LD24	A:1A	S12	A:8A	K11	B:6A	R27	K27	B:6A	CB13	B:0A	CB13	B:0A	
Q1	A:1B	09	A:00	R24	B:0A	R39	A:5A	R54	A:1B	R70	B:2A	VR0	A:2A	CB	A:0A	LD10	A:8E	CH1	B:0A	S13	A:0A	K12	B:6A	R28	K28	B:2A	TE2	B:0E	CB14	B:0E	
Q2	A:1B	R11	A:5A	R25	A:8A	R40	A:6A	R55	A:1B	R71	B:2A	CI	B:3A	CB	A:0A	LD11	A:8E	CH2	B:0A	S14	A:0A	K13	B:6A	R29	K29	B:2A	CB15	B:0A	CB15	B:0A	
Q3	A:2A	R12	A:4A	R26	A:8A	R41	A:8E	R56	B:2A	R72	B:2A	CI	B:3A	CB	A:0A	LD12	A:1A	S15	A:7A	K15	B:6A	R30	K30	B:2A	CB16	B:1B	CB16	B:1B	CB16	B:1B	
Q4	A:1B	R13	A:4A	R27	A:8A	R42	A:8E	R57	A:1A	R73	A:4A	CB	B:3A	CB	A:0A	LD13	A:1A	S1	A:8E	S16	A:7A	K16	B:6A	R31	K31	B:2A	CB17	B:1B	CB17	B:1B	
Q5	A:1B	R14	A:4A	R28	A:7A	R43	A:8E	R58	A:1A	R74	B:2A	CB	B:3A	CB	A:0A	LD14	A:2A	S2	A:8A	K17	B:7A	K17	B:6A	R32	B:8E	CB18	CB18	CB18	B:4A	CB18	B:4A
Q6	A:1B	R15	A:3A	R29	A:0A	R44	B:2A	R59	B:0A	R75	B:2A	CB	B:3A	CB	A:0A	LD15	A:2A	S3	A:5A	K1	B:7A	K18	B:6A	R33	K34	A:8A	CB19	B:1A	CB19	B:4A	
R1	A:3A	R16	A:4A	R30	A:8A	R45	B:2A	R60	B:2A	R76	B:2A	CB	B:0E	CB	A:0A	LD16	A:1A	S4	A:6A	K2	B:4A	K19	B:6A	R34	K35	B:2A	CB20	B:1A	CB20	B:3A	
R2	A:3A	R17	B:0A	R31	A:6A	R46	A:1A	R61	B:2A	R77	B:2A	CB	B:2A	CB	A:0A	LD17	A:1A	S5	A:3A	K4	B:6A	K20	B:6A	R35	K36	B:1B	CB21	B:1A	CB21	B:1A	
R3	A:3A	R18	B:0A	R32	A:7A	R47	A:2A	R62	A:0A	R78	A:7A	CB	B:1B	CB	A:0A	LD18	A:1A	S6	A:4A	K5	B:6A	K21	B:6A	R36	K37	B:2A	CB22	B:1A	CB22	B:1A	



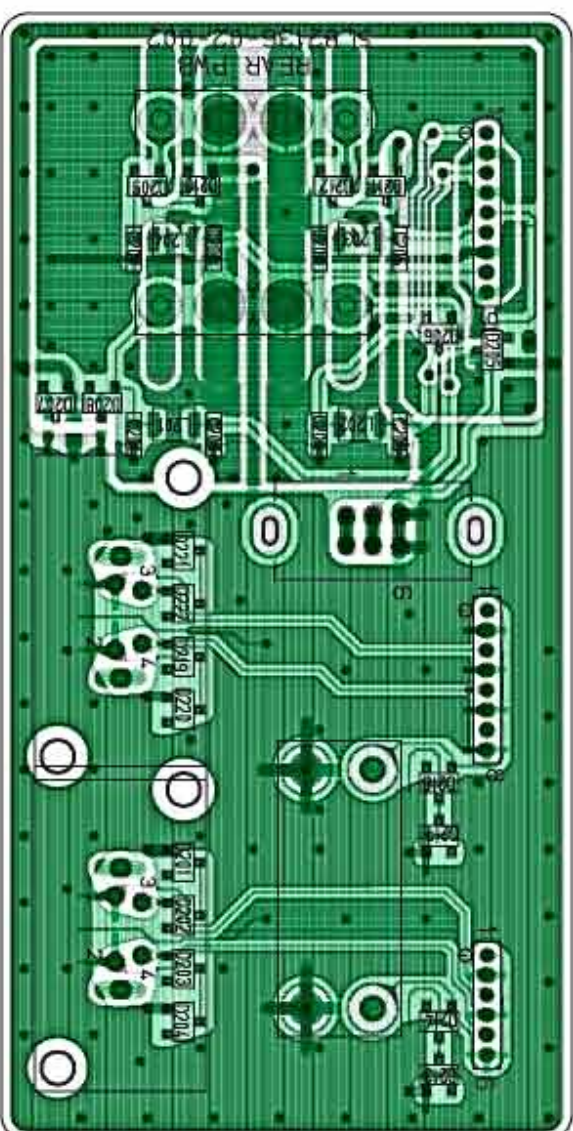


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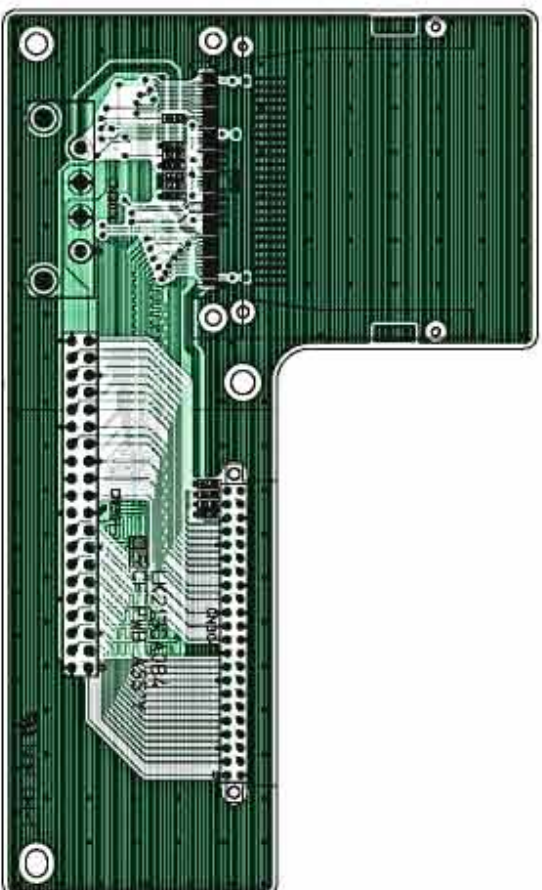


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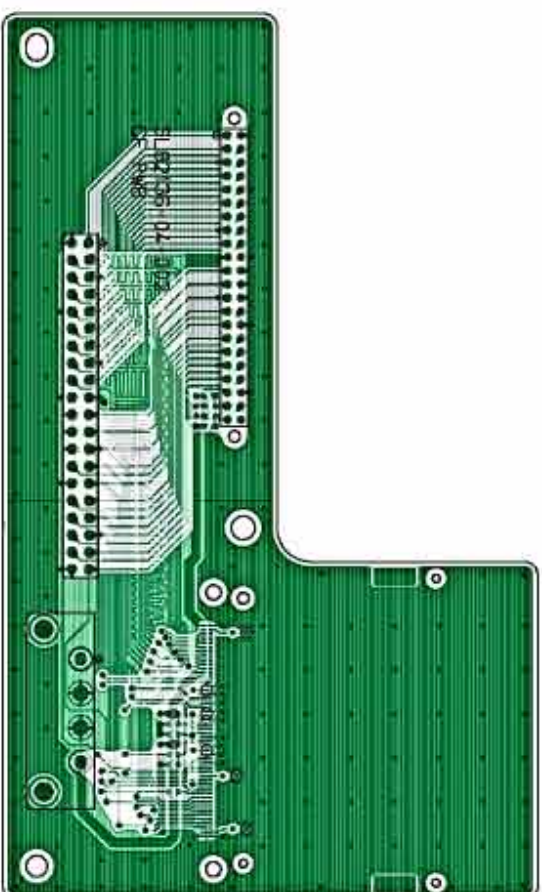


■ CF

-- SIDE A --

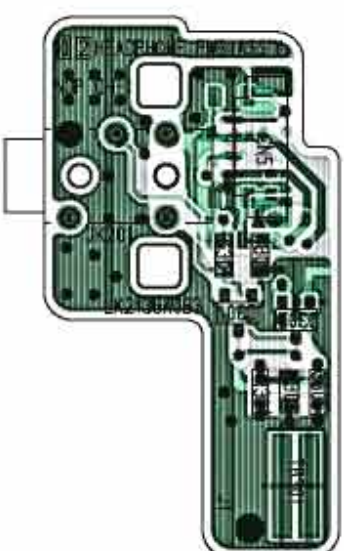


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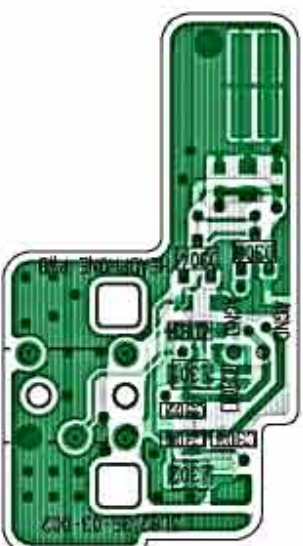


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-- SIDE A --

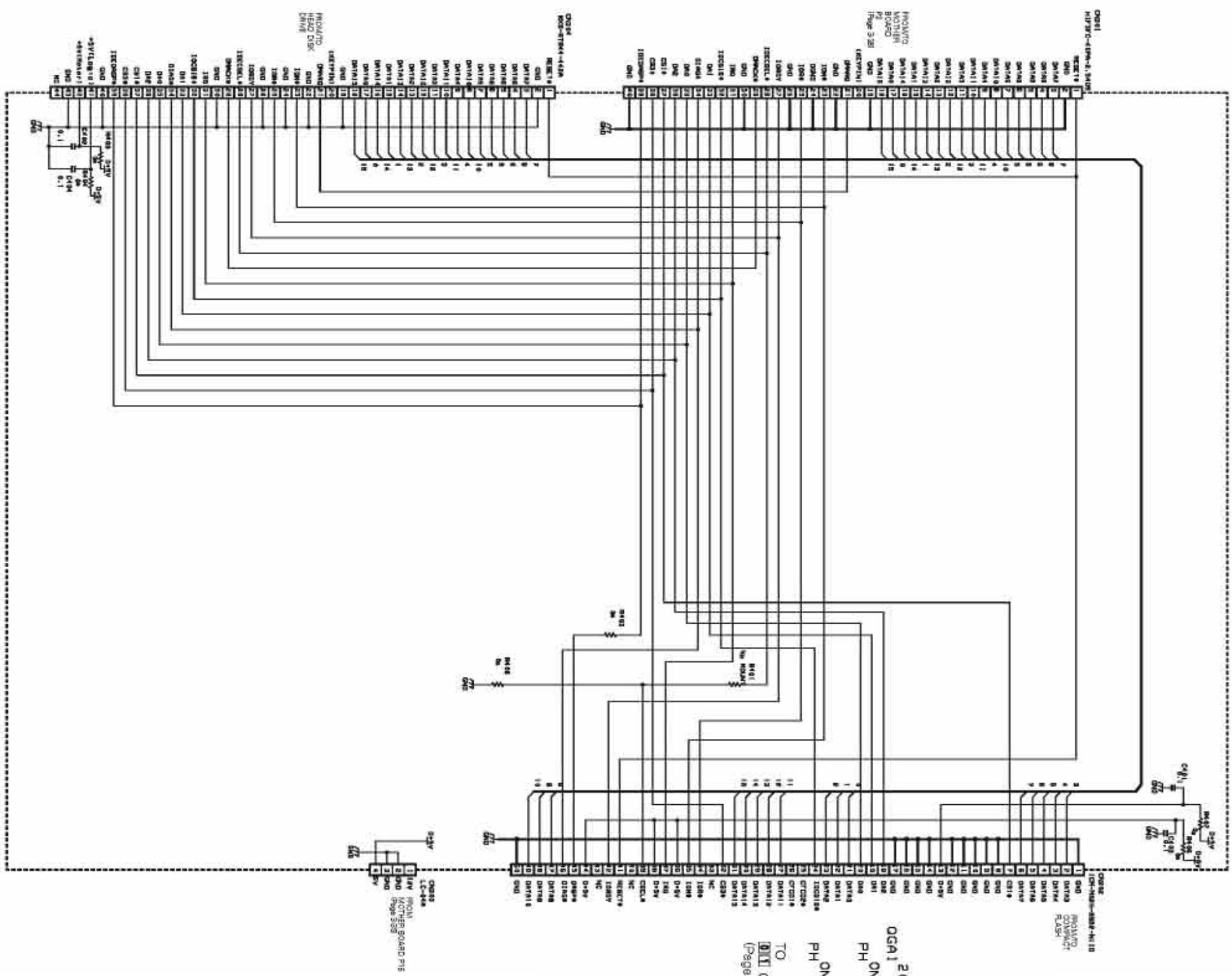


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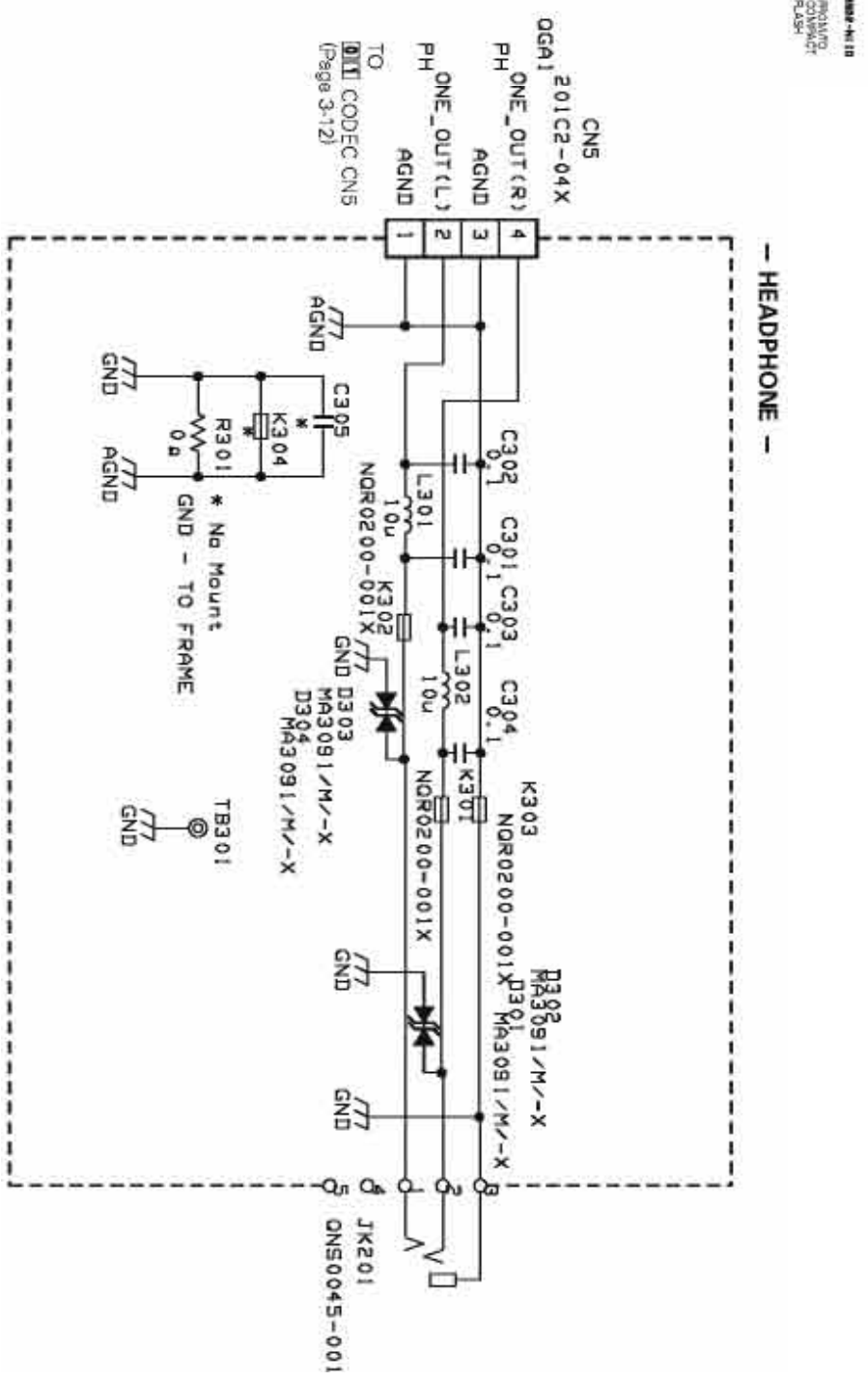


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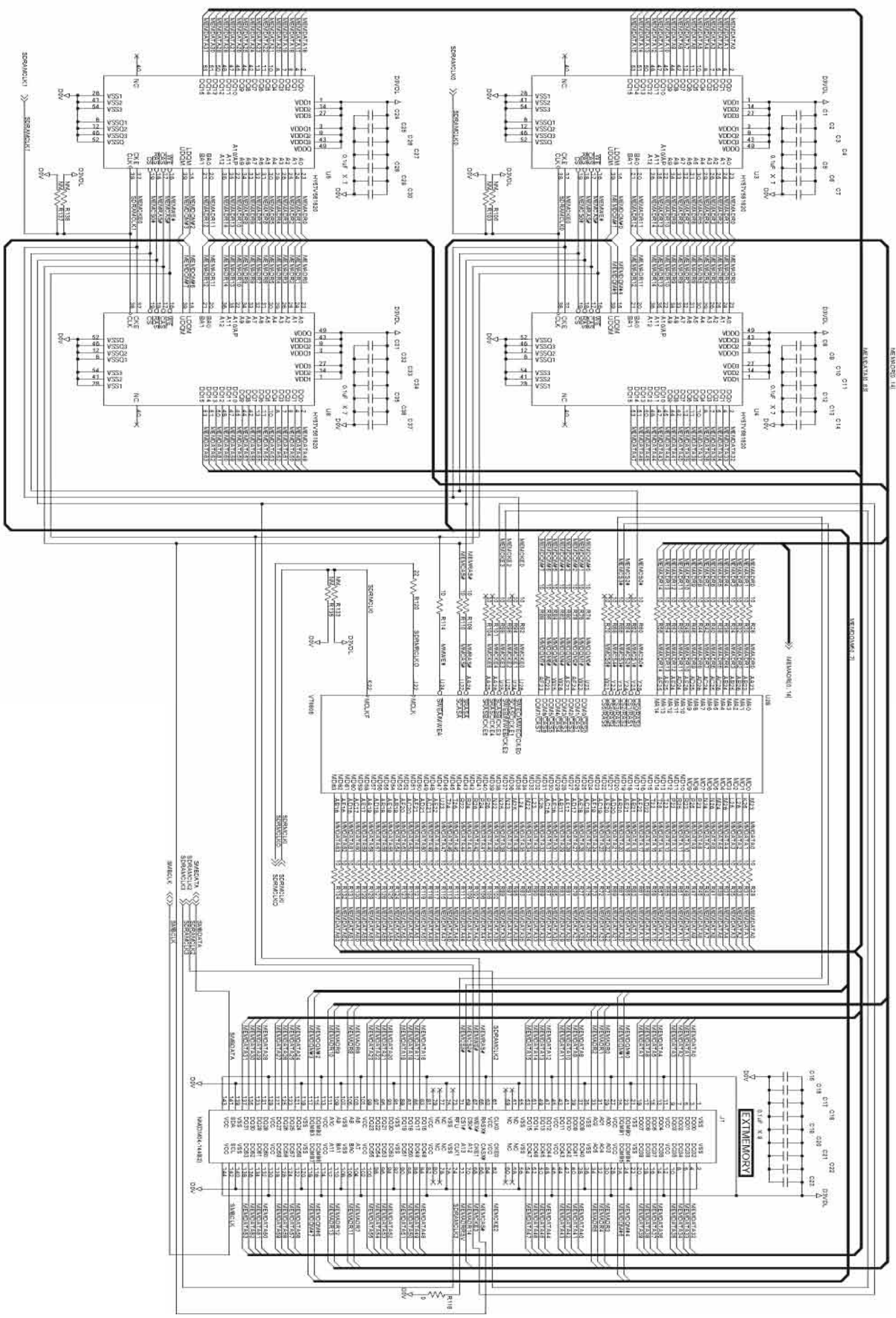
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3-24

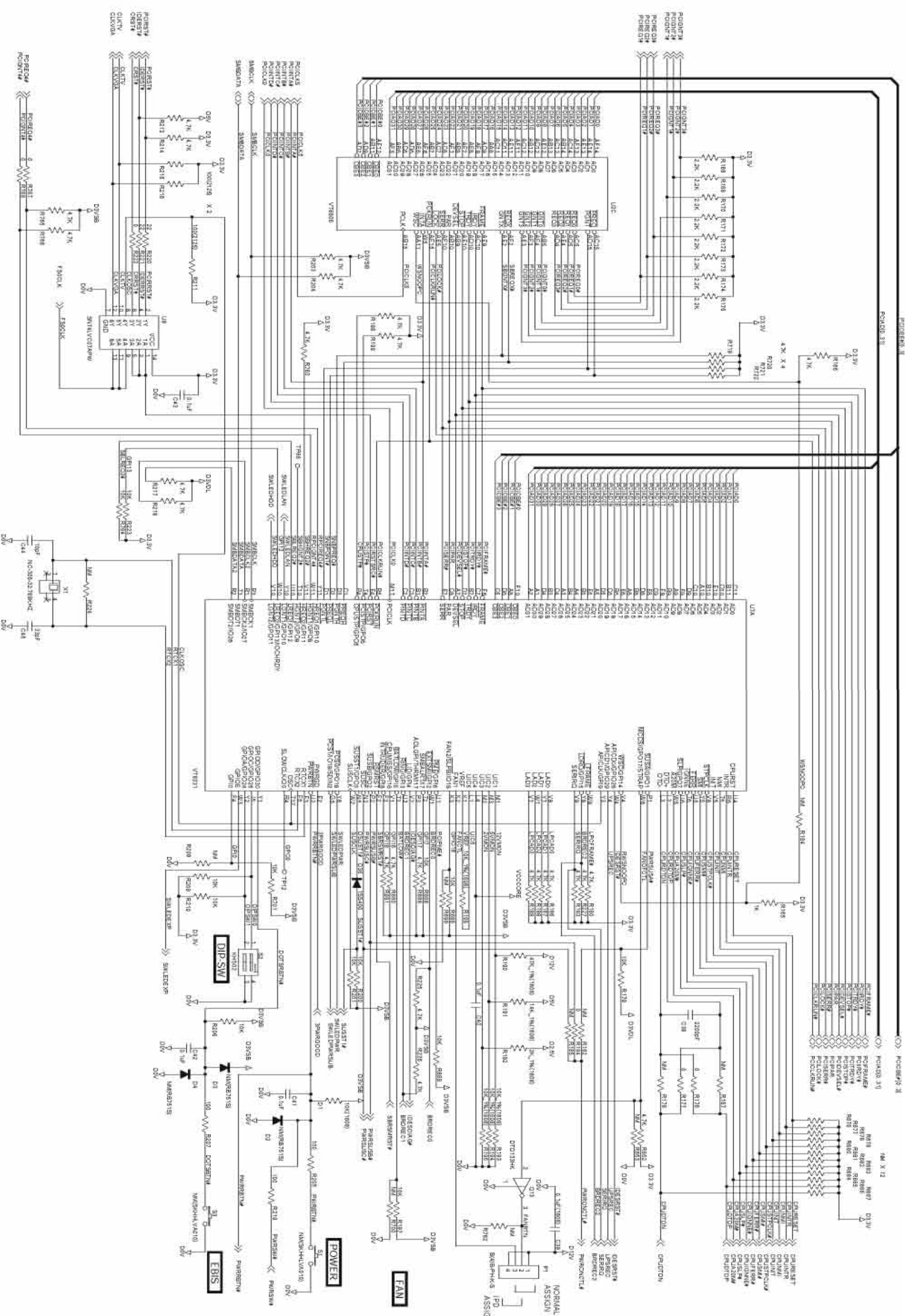


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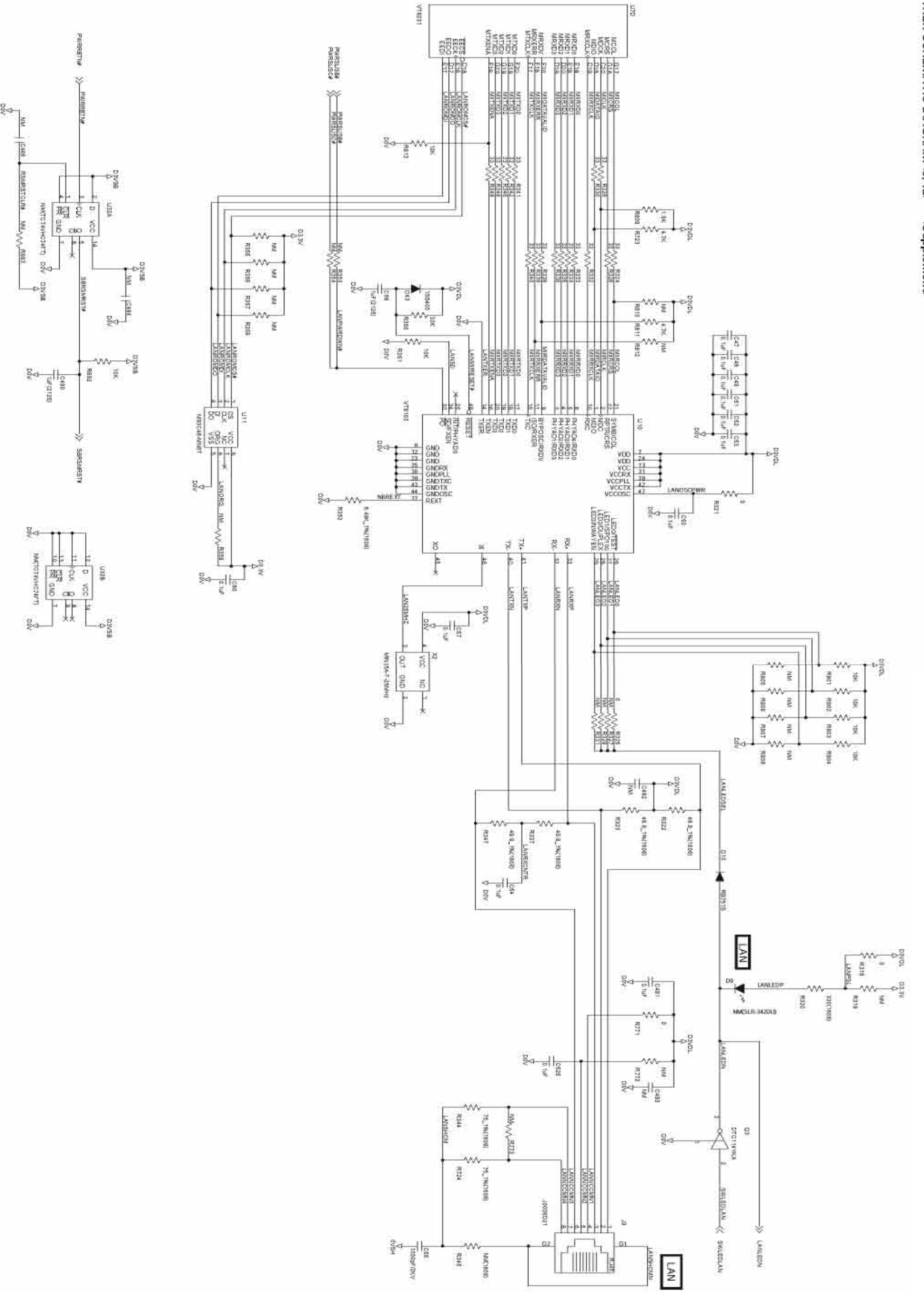


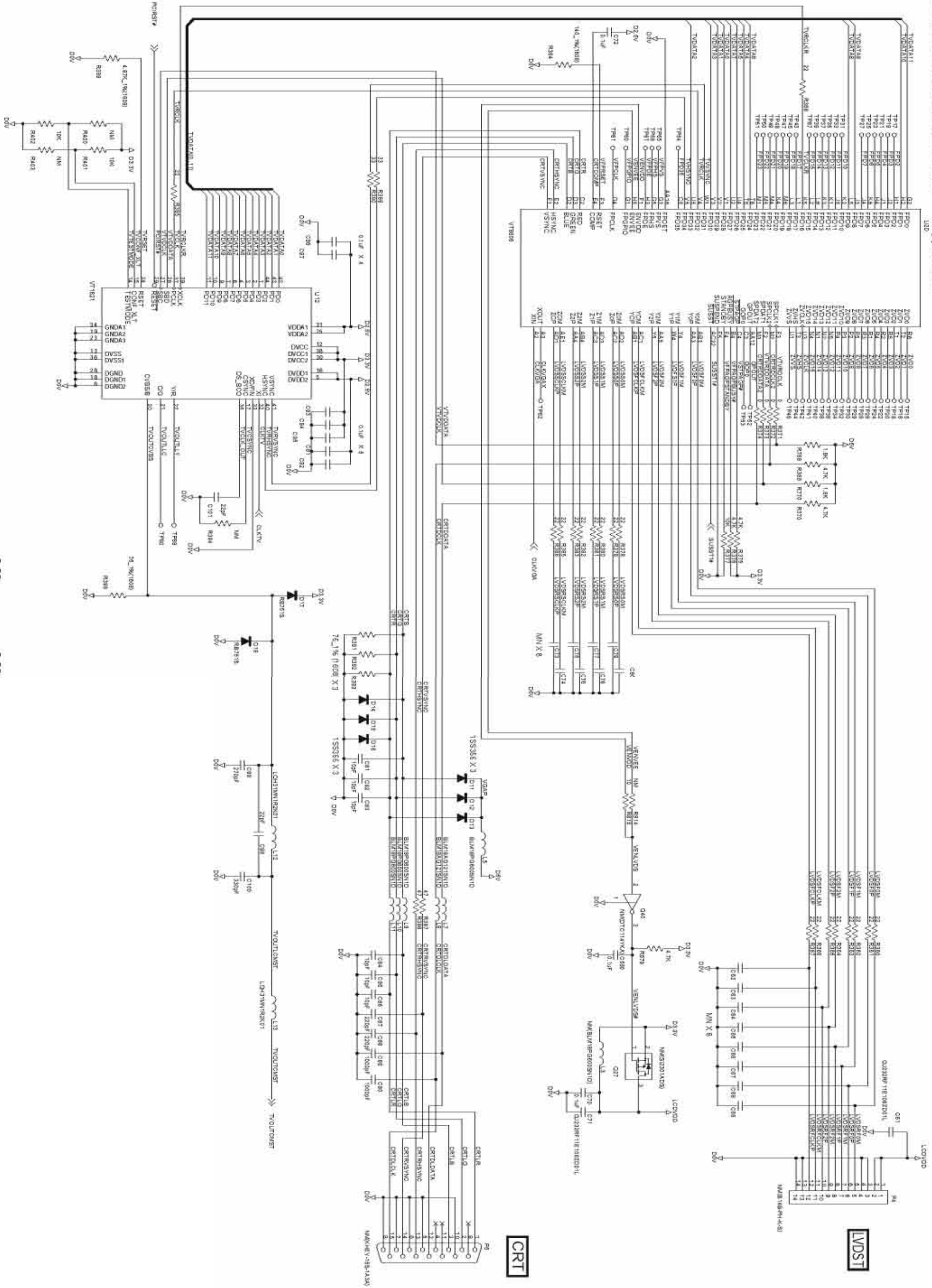
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3-27





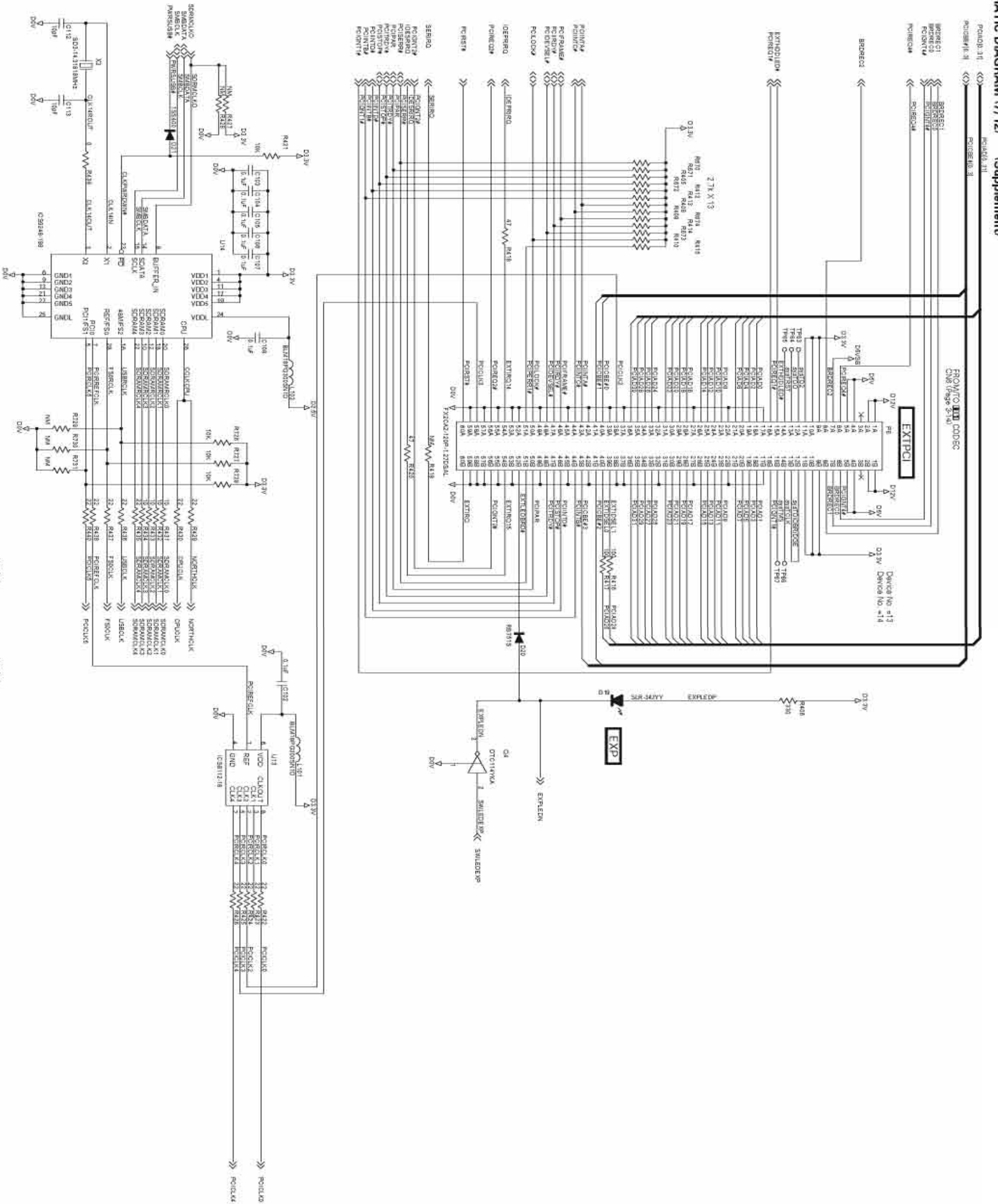


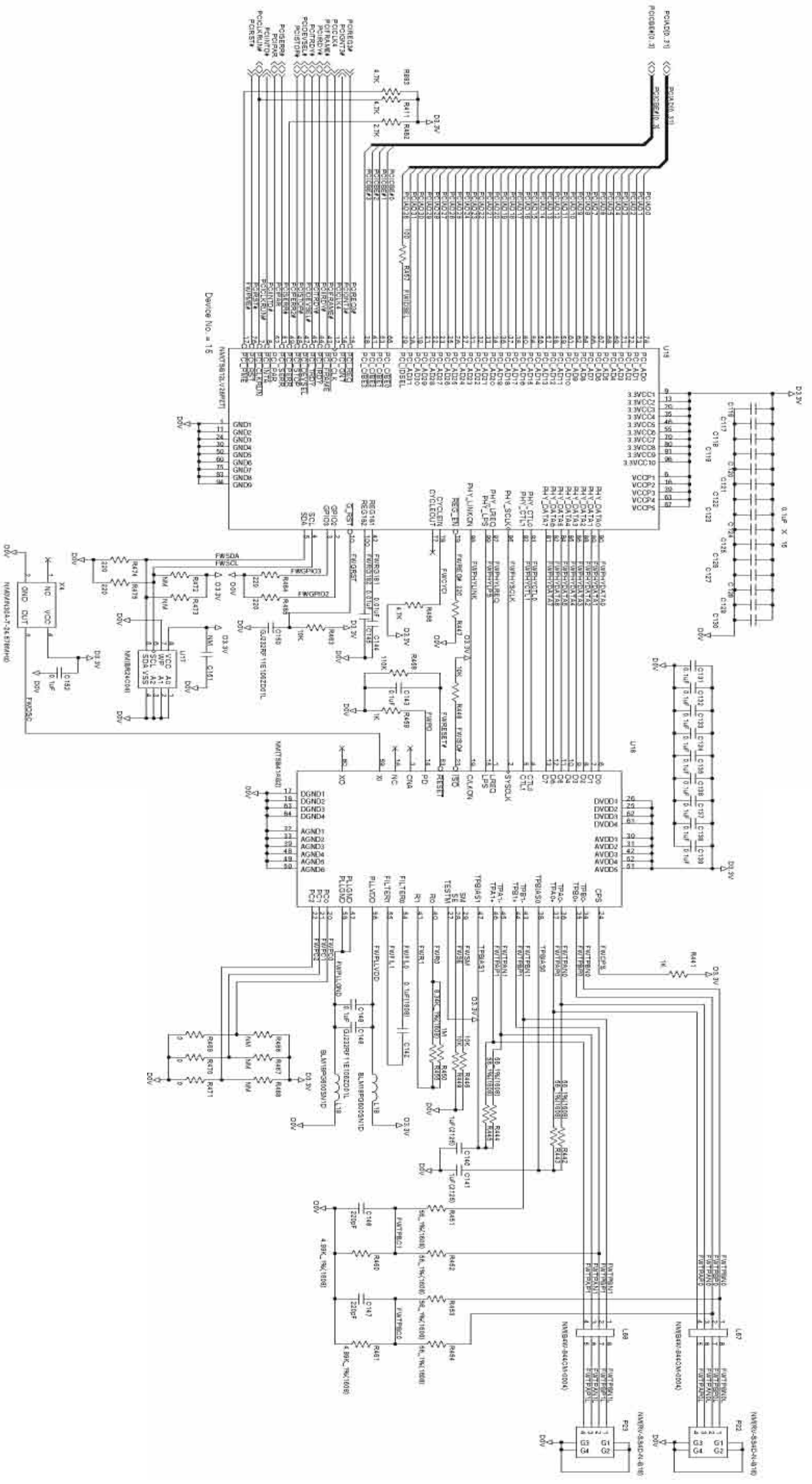


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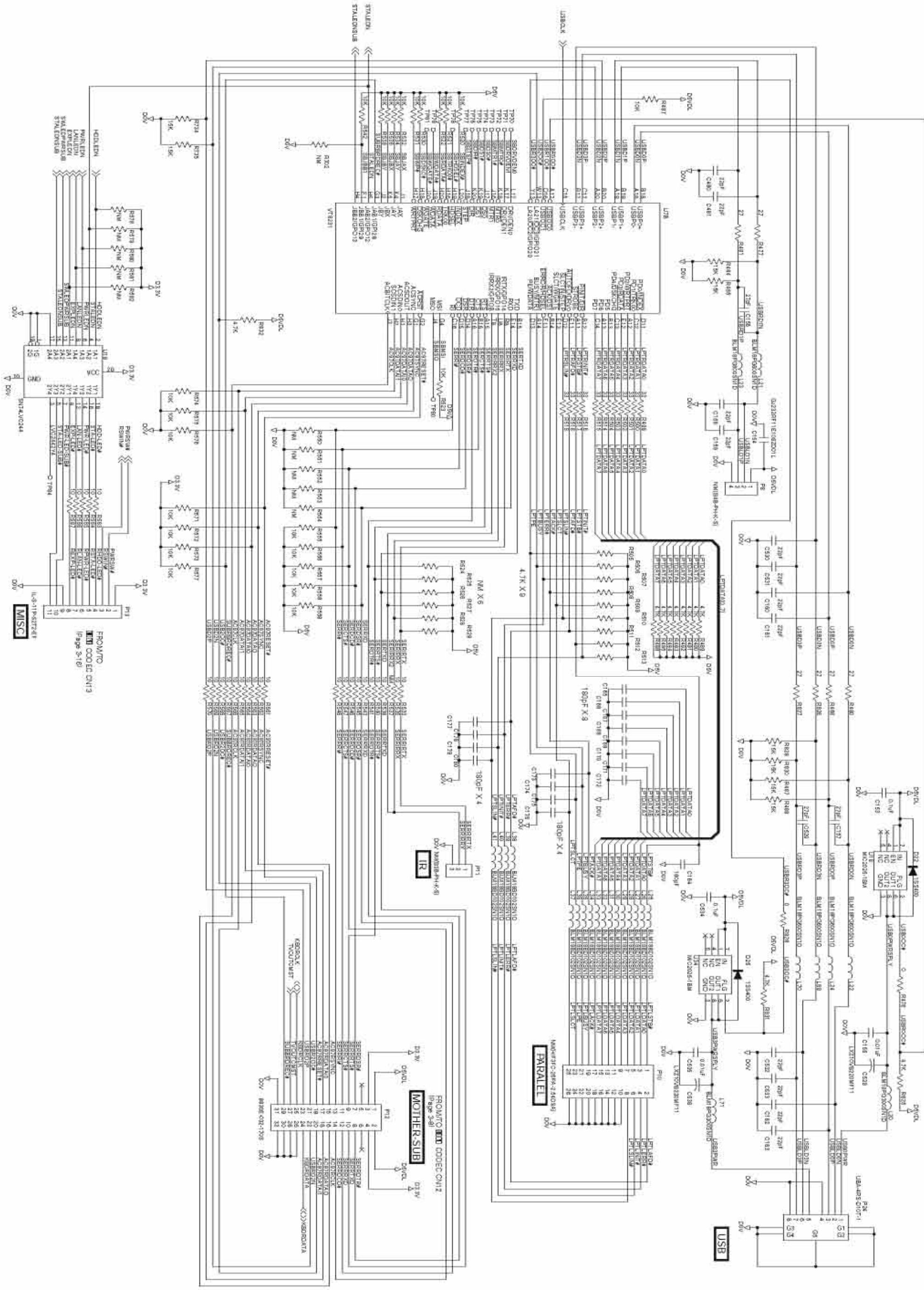
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CODEC CN13  
[page 3-16]

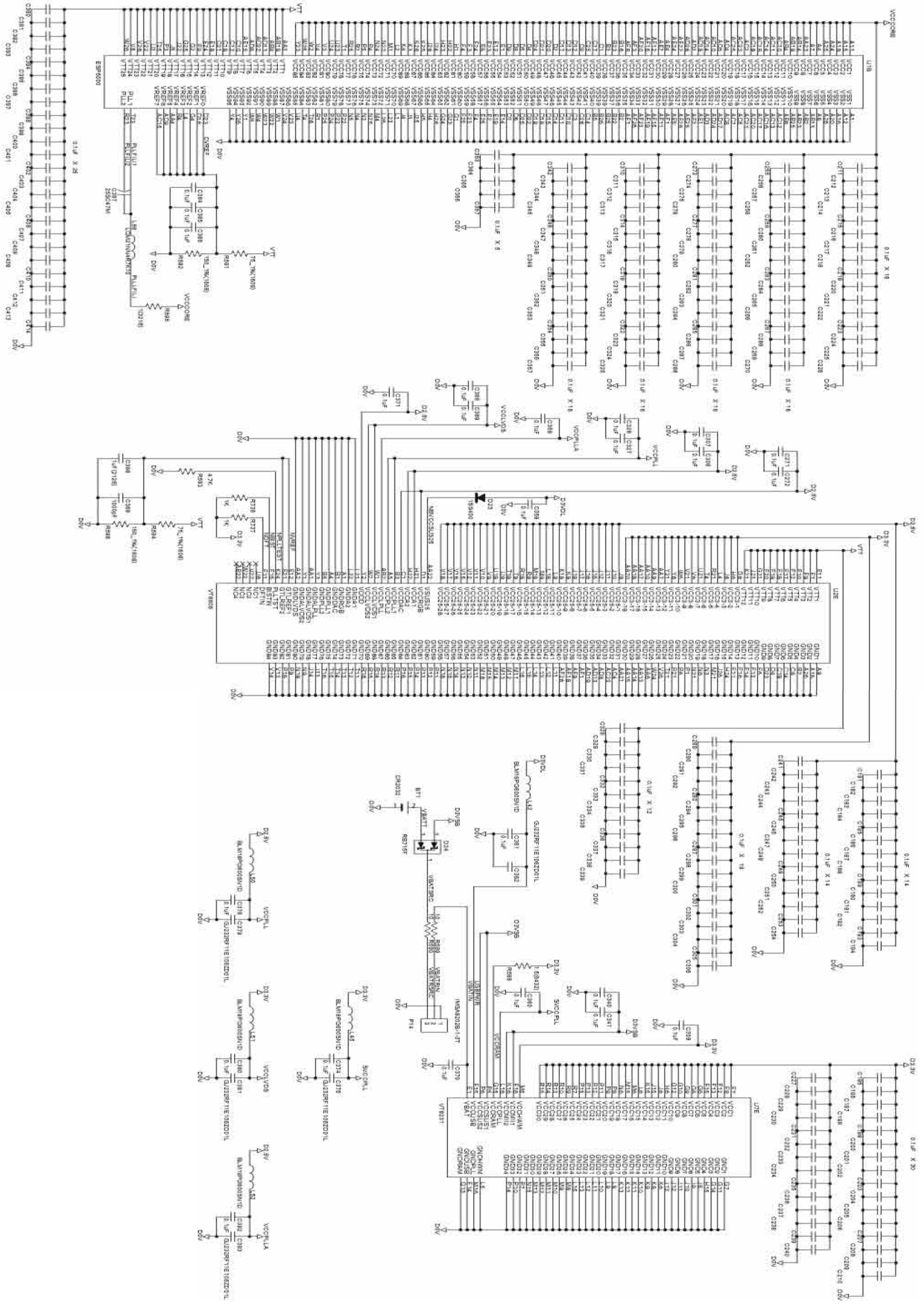
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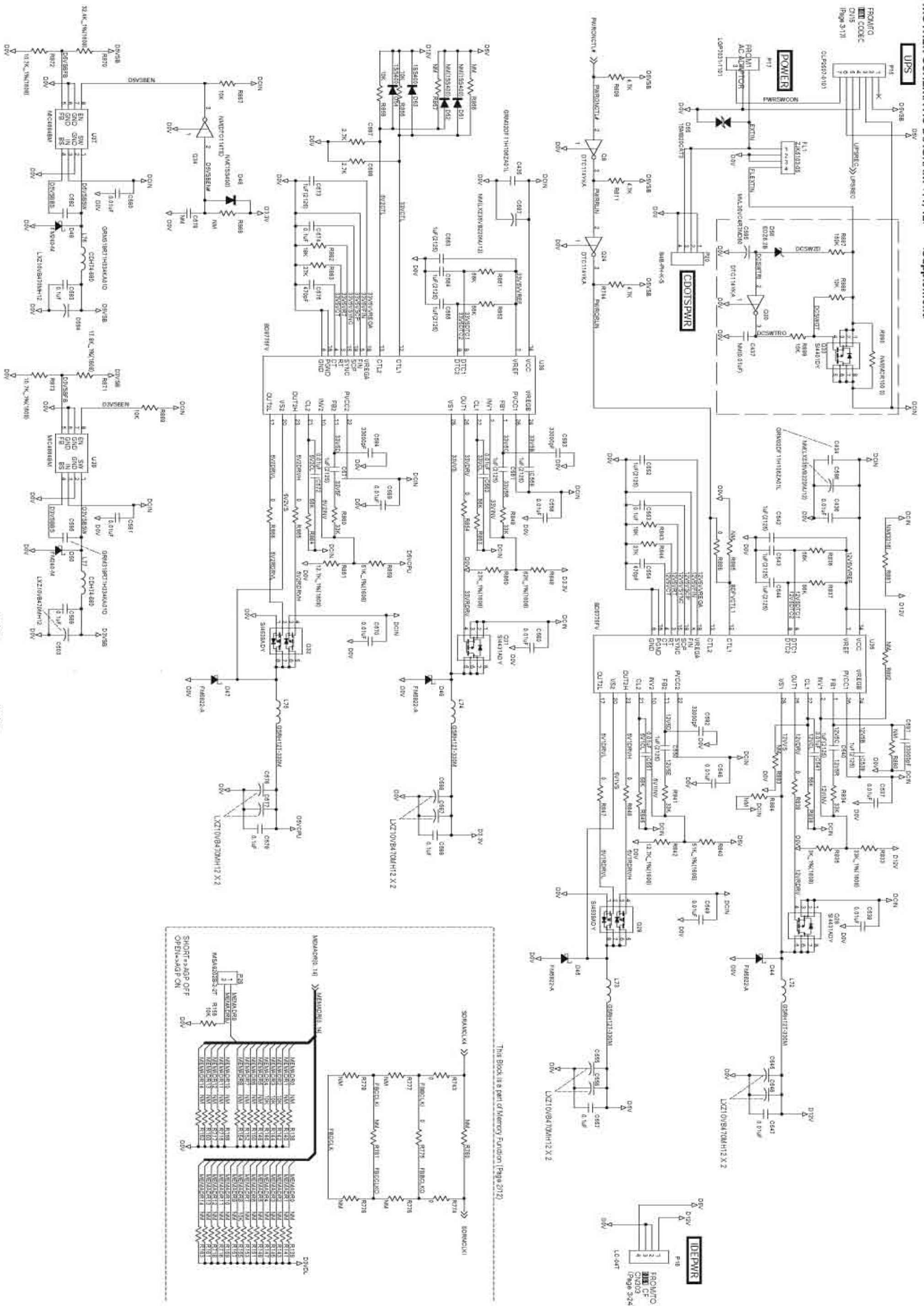
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PARALLEL



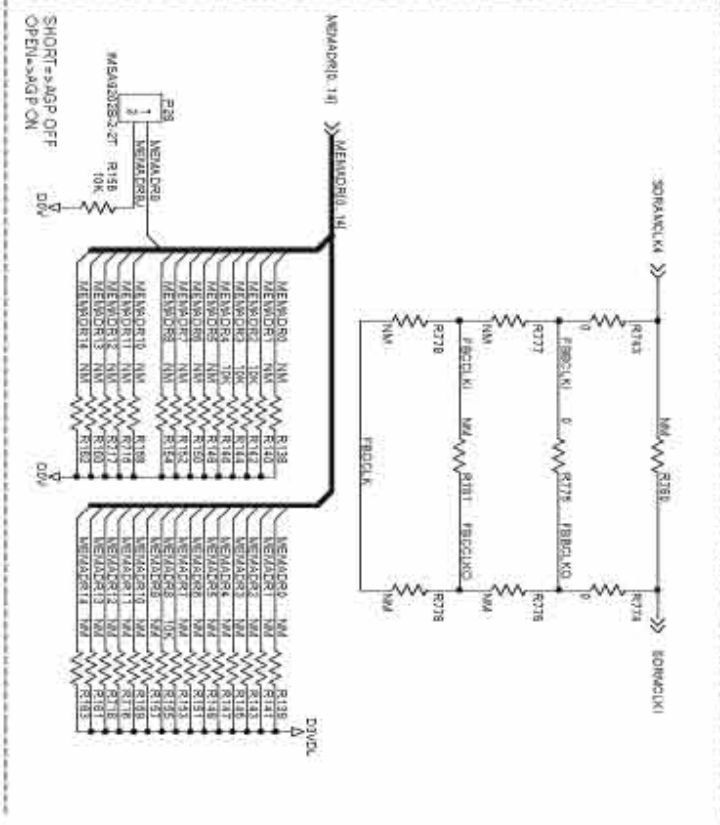


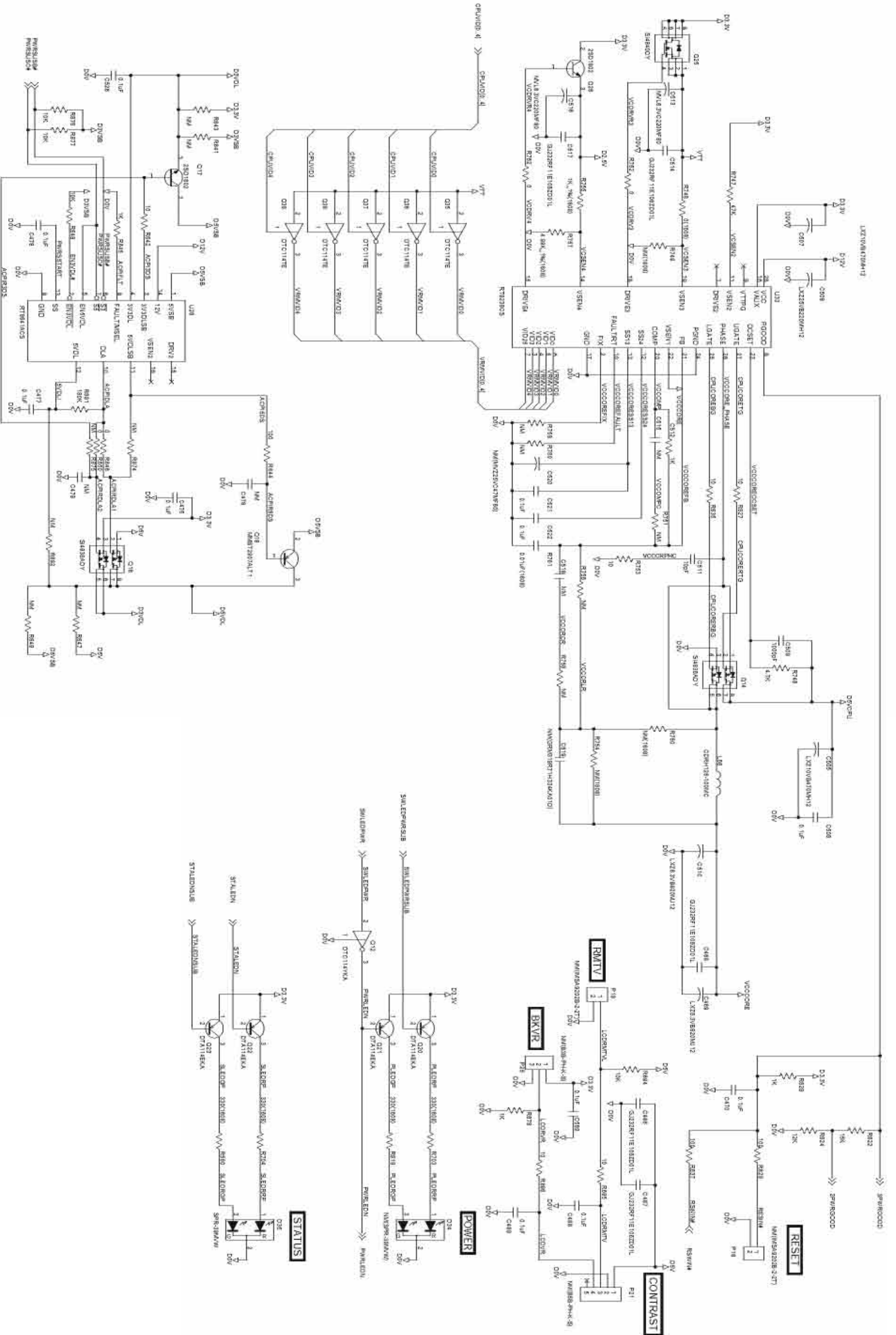


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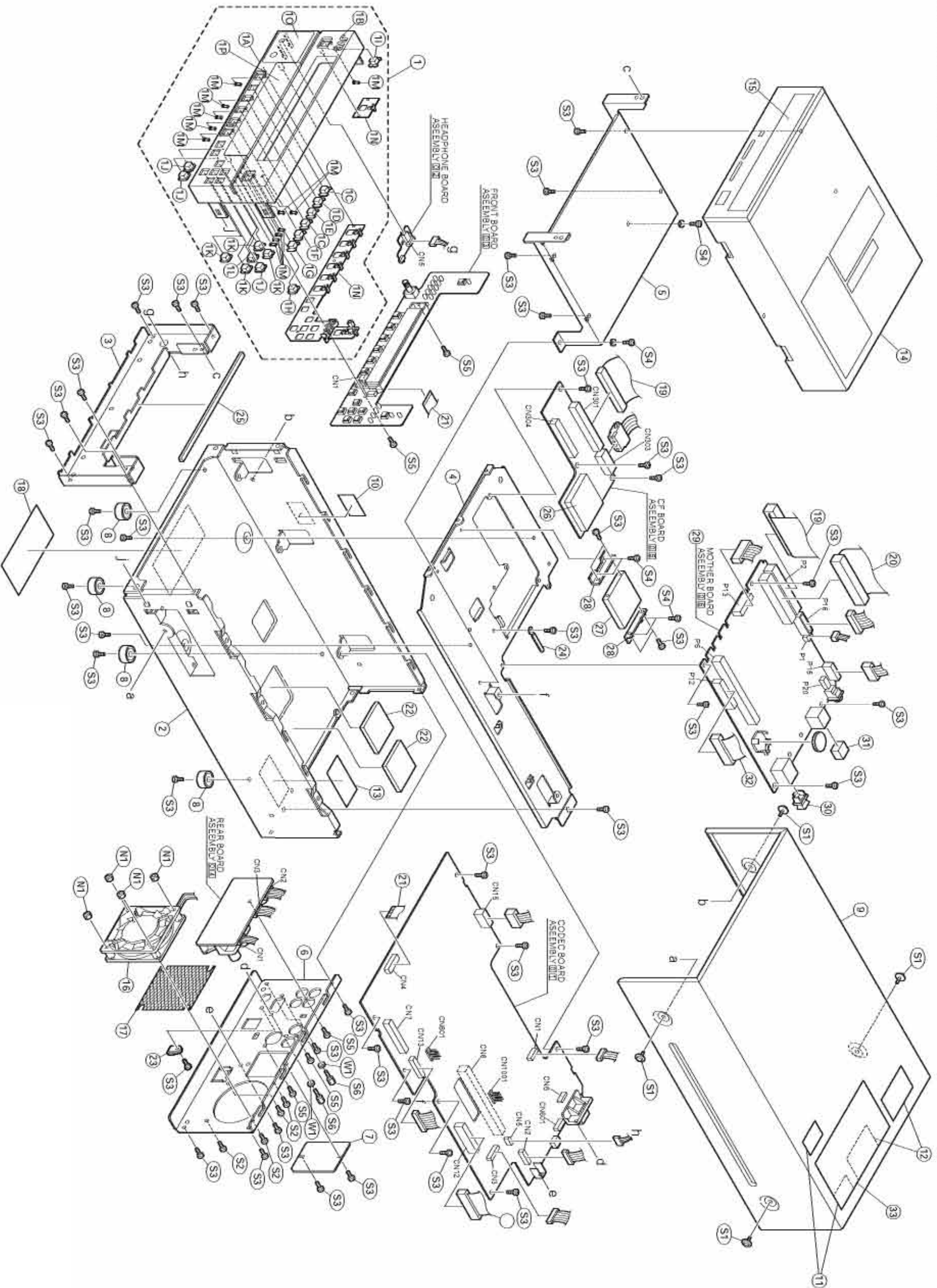
3-35

This Block is a part of Memory Function (Page 202).





### SECTION 4 EXPLODED VIEWS AND PARTS LIST





■ CABINET & CHASSIS ASSEMBLY PARTS LIST M2

M2MM    

Symbol No.	Part No.	Part Name	Description
△ 1 1A 1B 1C 1D	LL20119-002A LL10086-001A PGD30011-2 LL30378-001A LL30378-002A	F.PANEL ASSEMBLY FRONT PANEL JVC MARK BUTTON BUTTON	FF/REW STOP
1E 1F 1G 1H 1I	LL30378-003A LL30378-004A LL30378-005A LL30378-006A LL30378-007A	BUTTON BUTTON BUTTON BUTTON BUTTON	PLAY PAUSE REC EJECT I/O
△ 1J 1K 1L 1M 1N	LL30379-001A LL30379-002A LL30379-003A LL30320-001A-H LL20118-001A	BUTTON BUTTON BUTTON INDICATOR KNOB STOPPER	NON X 3 SLECT X 4 SET X 12
△ 1O △ 1P 2 3 4	LL40420-001A LL30371-001A LL10083-001A LL20115-001A LL10084-001A	SHEET WINDOW FRAME FRAME FRAME	MAIN FRONT SUB
5 6 7 8 9	LL20116-001A LL20114-001A LL30370-001A QZF2008-002 LL10085-001A	STAND REAR COVER PANEL FOOT TOP COVER	DVD  OPTION X 4
10 11 12 13 14	LL40423-001A LL40423-002A LL40424-002A LL40424-001A 1L771130-00	LABEL LABEL LABEL LABEL DVD UNIT	FOR FUSE FOR LASER FOR DOLBY FOR BATTERY
△ 15 △ 16 17 △ 18 △ 18	3M02362-00A 3E03514-00A 3M02370-00A LL30380-002A LL30380-003A	DVD UNIT PANEL FAN FAN GARD RATING LABEL RATING LABEL	BD-X200U BD-X200E
19 20 21 22 23	3E03517-00A 3E03519-00A 3E03526-00A 3M02374-00A SS45014-004	FFC WIRE FLAT CABLE FLAT CABLE RUBBER SHEET WIRE CLAMP	MOTHER/CF MOTHER/DVD FRONT/CODEC X 2, 35 X 35 X 4 FOR POWER SUPPLY
24 25 26 26 26	PU49485-3 3M02398-00A PLSL1162-V*-** PLSL1163-V*-** PLSL1165-V*-**	WIRE CLAMP GASKET CF CARD CF CARD CF CARD	147MM BD-X200U (HB28D032C8C) BD-X200E (HB28D032C8C) BD-X200HU (HB28D032C8C)
△ 26 27 28 29 30	PLSL1166-V*-** MHT2040AT LL40419-001A E951551-03A 3M024190	CF CARD HDD HDD BRACKET MOTHER BOARD ASSEMBLY LAN CAP	BD-X200HE (HB28D032C8C) BD-X200HU/200HE BD-X200HU/200HE
31 32 33 S1 S2	3M024200 3E03602-00A LL40422-001A QYSDST3006N QYSDSP3025M	USB CAP FLAT CABLE LABEL SCREW SCREW	CODEC/MOTHER BD-X200U X 4, M3 X 6 TOP COVER X 4, M3 X 25 FAN
N1 S3 S4 S5 S6	QYNNNS3000N QYSDST3006Z QYSPSPD3006Z QYSDSF3008Z PGZ01821	NUT SCREW SCREW SCREW SCREW	X 4, FAN X 42, M3 X 6 X 6, M3 X 8, DVD STAND, HDD X 5, M3 X 8 FRONT/REAR X 2, D-SUB
W1	QYWLS275306N	WASHER	X 2, D-SUB

## SECTION 5 ELECTRICAL PARTS LIST

### SAFETY PRECAUTION:

Parts identified by the  $\triangle$  symbol are critical for safety. Replace only with specified parts numbers.  
For maximum reliability and performance, all other replacement parts should be identical to those specified.

### NOTE:

- Parts not denoted by parts numbers are not supplied by JVC.
- Abbreviations in this list are as follows:

#### RESISTORS

In the "Description" column:

- All resistance values are in ohms ( $\Omega$ ).
- k expresses kilo-ohm (1 000 ohms,  $k\Omega$ ).
- M expresses mega-ohm ( $10^6$  ohms,  $M\Omega$ ).

In the "Parts Name" column:

- CAR.RESISTOR : Carbon Resistor
- C.M.F.RESISTOR : Constant Metalized Film Resistor
- COMP.RESISTOR : Composition Resistor
- FUSI.RESISTOR : Fusible Resistor
- M.F.RESISTOR : Metal Film Resistor
- M.G.RESISTOR : Metal Graze Resistor
- M.P.RESISTOR : Metal Plate Resistor
- O.M.F.RESISTOR : Oxide Metalized Film Resistor
- TRIM.RESISTOR : Trimerer Resistor
- U.F.RESISTOR : Non-inflammable Resistor
- VAL.RESISTOR : Valiable Resistor
- W.W.RESISTOR : Wire Wound Resistor

#### CAPACITORS

In the "Description" column:

- All capacitance values are in microfarad ( $\mu F$ ) unless otherwise indicated.
- p expresses picofarad ( $10^{-12}$  farad, pF).

In the "Parts Name" column:

- CER.CAPACITOR : Ceramic Capacitor
- E.CAPACITOR : Electrolytic Capacitor
- FILM CAPACITOR : Film Capacitor
- M.F.CAPACITOR : Metalized Film Capacitor
- MICA CAPACITOR : Mica Capacitor
- MPP CAPACITOR : Metalized PolyPropylene Capacitor
- MPPS CAPACITOR : Metalized PolyPhenylene Sulfied film Capacitor
- M.M.CAPACITOR : Metalized Mylar Capacitor
- MYLAR CAPACITOR : Mylar Capacitor
- N.P.CAPACITOR : Non-Poler electrolytic Capacitor
- P.P.CAPACITOR : PolyPropylene Capacitor
- PPS CAPACITOR : PolyPhenylene Sulfied film Capacitor
- P.S.CAPACITOR : PolyStyrene Capacitor
- TAN.CAPACITOR : Tantal Capacitor
- TRIM.CAPACITOR : Trimer Capacitor
- VAL.CAPACITOR : Valiable Capacitor

5.1 CODEC BOARD ASSEMBLY PART LIST 0 1

LK1178A0B (U)

LK1178E0B (E)

0 1

Symbol No.	Part No.	Part Name	Description
IC1	AN13300A-X	I.C.(M)	MATSUSHITA
IC6	MM1561JF-X	I.C.(M)	MITSUMI
IC7	MM1565AF-X	I.C.(M)	MITSUMI
IC8	BA033FP-X	I.C.(M)	ROHM
IC9	MN673744HL	I.C.(M)	MATSUSHITA
IC10	K4S161622H-UC60	I.C.(M)	SAMSUNG
IC102	MM1565AF-X	I.C.(M)	MITSUMI
IC103	NJM79L05UA-X	I.C.(M)	JRC
IC107	AD817AR-X	I.C.(M)	FUJI
IC203	NJM79L05UA-X	I.C.(M)	JRC
IC204	MM1571JN-X	I.C.(M)	MITSUMI
IC205	JCP8029	I.C.(M)	SANYO
IC302	DS8922M-X	I.C.(M)	NATIONAL SEMICO
IC317	SN74AHC1GU04K-X	I.C.(M)	TEXAS
IC318	SN74LVC245APW-X	I.C.(M)	TEXAS
IC401	MM1572KN-X	I.C.(M)	MITSUMI
IC402	MM1571JN-X	I.C.(M)	MITSUMI
IC403	MM1572FN-X	I.C.(M)	MITSUMI
IC404	JCY0152	I.C.(M)	FUJITSU
IC501	PLSL1161	CPU	MN103SF33NY4
IC502	M95320-WMN6-X	I.C.(M)	STM
IC503	RN5VD26AA-X	I.C.(M)	RICOH
IC504	TC7W04FU-X	I.C.(M)	TOSHIBA
IC505	M62352GP-W	I.C.(M)	MITSUBISHI
IC506	SN74AHC125PW-X	I.C.(M)	TEXAS
IC507	TC7SH08FU-X	I.C.(M)	TOSHIBA
IC601	M51132FP-X	I.C.(M)	MITSUBISHI
IC602	AK4552VT-X	I.C.(M)	ASAHIKASEI
IC603	AK4120VF	I.C.(M)	ASAHIKASEI
IC604	AK4121VF	I.C.(M)	ASAHIKASEI
IC607	M5218AFP-X	I.C.(M)	MITSUBISHI
IC609	M5218AFP-X	I.C.(M)	MITSUBISHI
IC610	M51132FP-X	I.C.(M)	MITSUBISHI
IC611	M5218AFP-X	I.C.(M)	MITSUBISHI
IC612	BA6138F-X	I.C.(M)	ROHM
IC613	SN74AHC245PWR-X	I.C.(M)	TEXAS
IC614	SN74AHC245PWR-X	I.C.(M)	TEXAS
IC615	SN74AHC245PWR-X	I.C.(M)	TEXAS
IC616	AK4363VF-X	I.C.(M)	ASAHIKASEI
IC617	AK4363VF-X	I.C.(M)	ASAHIKASEI
IC618	AK4121VF	I.C.(M)	ASAHIKASEI
IC619	EPM3064ATC44-10	I.C.(M)	ALTERA
IC620	MM1575AN-X	I.C.(M)	MITSUMI
IC621	AK4384VT-X	I.C.(M)	ASAHIKASEI
IC801	EPI C4F324CB	I.C.(M)	ALTERA
IC802	SC192-X	I.C.(M)	SEMTECH
IC803	SC192-X	I.C.(M)	SEMTECH
IC804	EPCS1S18N-002	I.C.(M)	ALTERA
IC805	K4S641632H-UC75	I.C.(M)	SAMSUNG
IC806	K4S641632H-UC75	I.C.(M)	SAMSUNG
IC1001	EPI C4F324CB	I.C.(M)	ALTERA
IC1002	SC192-X	I.C.(M)	SEMTECH
IC1003	EPCS1S18N-001	I.C.(M)	ALTERA
IC1201	MB86394	I.C.(M)	FUJITSU
IC1202	MT48LC4M32B2-X	I.C.(M)	FUJITSU
IC1203	MT48LC4M32B2-X	I.C.(M)	FUJITSU
IC1204	SC192-X	I.C.(M)	SEMTECH
IC1401	BA9743AFV-X	I.C.(M)	ROHM
IC1402	BA9743AFV-X	I.C.(M)	ROHM
IC1403	BA9743AFV-X	I.C.(M)	ROHM
IC1404	MM1563BF-X	I.C.(M)	MITSUMI
Q103	2SC4617/RS-X	TRANSISTOR	ROHM
Q104	2SA1774/ORS-X	TRANSISTOR	ROHM
Q105	2SC4617/RS-X	TRANSISTOR	ROHM
Q106	2SA1774/ORS-X	TRANSISTOR	ROHM
Q107	2SC4617/RS-X	TRANSISTOR	ROHM
Q108	2SA1774/ORS-X	TRANSISTOR	ROHM
Q109	2SC4617/RS-X	TRANSISTOR	ROHM
Q202	2SC4617/RS-X	TRANSISTOR	ROHM
Q203	2SC4617/RS-X	TRANSISTOR	ROHM
Q204	2SA1774/ORS-X	TRANSISTOR	ROHM
Q205	2SC4617/RS-X	TRANSISTOR	ROHM
Q206	2SC4617/RS-X	TRANSISTOR	ROHM
Q304	DTC124EUA-X	TRANSISTOR	ROHM
Q501	2SC4617/RS-X	TRANSISTOR	ROHM
Q502	DTC124EUA-X	TRANSISTOR	ROHM
Q602	DTC323TU-X	TRANSISTOR	ROHM
Q603	DTC323TU-X	TRANSISTOR	ROHM
Q604	DTC323TU-X	TRANSISTOR	ROHM

Symbol No.	Part No.	Part Name	Description
Q605	DTC323TU-X	TRANSISTOR	ROHM
Q607	DTC124EUA-X	TRANSISTOR	ROHM
Q610	DTA124EUA-X	TRANSISTOR	ROHM
Q611	DTC124EUA-X	TRANSISTOR	ROHM
Q612	DTA124EUA-X	TRANSISTOR	ROHM
Q613	DTC323TU-X	TRANSISTOR	ROHM
Q614	DTC323TU-X	TRANSISTOR	ROHM
Q615	DTA124EUA-X	TRANSISTOR	ROHM
Q616	DTC323TU-X	TRANSISTOR	ROHM
Q617	DTC323TU-X	TRANSISTOR	ROHM
Q1401	HAT1020R-X	TRANSISTOR	HITACHI
Q1402	DTC124EUA-X	TRANSISTOR	ROHM
Q1403	2SC4097/QR-X	TRANSISTOR	ROHM
Q1404	2SA1577/QR-X	TRANSISTOR	ROHM
Q1405	2SJ484WY-X	FET	HITACHI
Q1406	2SC4097/QR-X	TRANSISTOR	ROHM
Q1407	2SA1577/QR-X	TRANSISTOR	ROHM
Q1408	HAT1020R-X	TRANSISTOR	HITACHI
Q1409	2SC4097/QR-X	TRANSISTOR	ROHM
Q1410	2SA1577/QR-X	TRANSISTOR	ROHM
Q1411	2SJ484WY-X	FET	HITACHI
Q1414	2SC4097/QR-X	TRANSISTOR	ROHM
Q1415	2SA1577/QR-X	TRANSISTOR	ROHM
Q1416	HAT1020R-X	TRANSISTOR	HITACHI
Q1417	2SA1577/QR-X	TRANSISTOR	ROHM
Q1418	2SC4097/QR-X	TRANSISTOR	ROHM
Q1419	HAT1020R-X	TRANSISTOR	HITACHI
Q1420	2SC4097/QR-X	TRANSISTOR	ROHM
Q1421	2SA1577/QR-X	TRANSISTOR	ROHM
Q1422	HAT1020R-X	TRANSISTOR	HITACHI
D001	DAN202U-X	DIODE	ROHM
D301	MA3240/MFX	ZENER DIODE	MATSUSHITA
D302	MA3240/MFX	ZENER DIODE	MATSUSHITA
D303	MA3240/MFX	ZENER DIODE	MATSUSHITA
D304	MA3240/MFX	ZENER DIODE	MATSUSHITA
D305	MA3240/MFX	ZENER DIODE	MATSUSHITA
D306	MA3240/MFX	ZENER DIODE	MATSUSHITA
D307	MA3240/MFX	ZENER DIODE	MATSUSHITA
D308	MA3240/MFX	ZENER DIODE	MATSUSHITA
D314	MA335-X	DIODE	MATSUSHITA
D315	MA335-X	DIODE	MATSUSHITA
D316	MA335-X	DIODE	MATSUSHITA
D317	MA335-X	DIODE	MATSUSHITA
D401	EC2C01C-TR-X	S.B. DIODE	SANYO
D402	EC2C01C-TR-X	S.B. DIODE	SANYO
D403	EC2C01C-TR-X	S.B. DIODE	SANYO
D601	DA204U-X	DIODE	ROHM
D1401	SB140L-6395	S.B. DIODE	KANEMATSU
D1402	SFPB-72-W	S.B. DIODE	SANKEN
D1403	SFPB-72-W	S.B. DIODE	SANKEN
D1404	SFPB-78-W	S.B. DIODE	SANKEN
D1405	SFPB-72-W	S.B. DIODE	SANKEN
D1406	SFPB-72-W	S.B. DIODE	SANKEN
D1407	SFPB-78-W	S.B. DIODE	SANKEN
D1408	SFPB-72-W	S.B. DIODE	SANKEN
R1	NRSA63D-151X	M.G. RESISTOR	150 1/16W
R2	NRSA63D-151X	M.G. RESISTOR	150 1/16W
R3	NRSA63D-151X	M.G. RESISTOR	150 1/16W
R4	NRSA63D-151X	M.G. RESISTOR	150 1/16W
R5	NRSA63J-33X	M.G. RESISTOR	33k 1/16W
R6	NRSA63J-68X	M.G. RESISTOR	68k 1/16W
R7	NRSA63J-151X	M.G. RESISTOR	150 1/16W
R8	NRSA63J-151X	M.G. RESISTOR	150 1/16W
R15	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R17	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R21	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R22	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R23	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R24	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R25	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R26	NRSA63J-220X	M.G. RESISTOR	22 1/16W
R27	NRSA63J-220X	M.G. RESISTOR	22 1/16W
R28	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R29	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R30	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R31	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R32	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R33	NRSA63J-330X	M.G. RESISTOR	33 1/16W



[CODEC]

[0] [1] [MAIN]

Symbol No.	Part No.	Part Name	Description
R34	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R35	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R36	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R37	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R38	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R39	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R40	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R41	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R42	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R75	NRSA63D-104X	M.G. RESISTOR	100k 1/16W
R129	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R130	NRSA63J-220X	M.G. RESISTOR	22 1/16W
R131	NRSA63D-102X	M.G. RESISTOR	1k 1/16W
R132	NRSA63D-302X	M.G. RESISTOR	3k 1/16W
R133	NRSA63D-151X	M.G. RESISTOR	150 1/16W
R134	NRSA63D-151X	M.G. RESISTOR	150 1/16W
R137	NRSA63J-222X	M.G. RESISTOR	2.2k 1/16W
R138	NRSA63D-751X	M.G. RESISTOR	750 1/16W
R139	NRSA63D-222X	M.G. RESISTOR	2.2k 1/16W
R140	NRSA63J-222X	M.G. RESISTOR	2.2k 1/16W
R147	NRSA63J-222X	M.G. RESISTOR	2.2k 1/16W
R148	NRSA63D-751X	M.G. RESISTOR	750 1/16W
R149	NRSA63D-222X	M.G. RESISTOR	2.2k 1/16W
R150	NRSA63J-222X	M.G. RESISTOR	2.2k 1/16W
R159	NRSA63D-561X	M.G. RESISTOR	560 1/16W
R160	NRSA63D-561X	M.G. RESISTOR	560 1/16W
R162	NRSA63D-331X	M.G. RESISTOR	330 1/16W
R163	NRSA63J-220X	M.G. RESISTOR	22 1/16W
R164	NRSA63D-102X	M.G. RESISTOR	1k 1/16W
R165	NRSA63D-122X	M.G. RESISTOR	1.2k 1/16W
R166	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R167	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R168	NRSA63J-222X	M.G. RESISTOR	2.2k 1/16W
R179	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R180	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R201	NRSA63D-151X	M.G. RESISTOR	150 1/16W
R202	NRSA63D-151X	M.G. RESISTOR	150 1/16W
R210	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R211	NRSA63J-152X	M.G. RESISTOR	1.5k 1/16W
R213	NRSA63D-751X	M.G. RESISTOR	750 1/16W
R214	NRSA63D-222X	M.G. RESISTOR	2.2k 1/16W
R215	NRSA63J-333X	M.G. RESISTOR	33k 1/16W
R216	NRSA63J-273X	M.G. RESISTOR	27k 1/16W
R217	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R218	NRSA63D-331X	M.G. RESISTOR	330 1/16W
R219	NRSA63D-821X	M.G. RESISTOR	820 1/16W
R220	NRSA63D-102X	M.G. RESISTOR	1k 1/16W
R221	NRSA63D-102X	M.G. RESISTOR	1k 1/16W
R222	NRSA63D-101X	M.G. RESISTOR	100 1/16W
R223	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R224	NRSA63D-471X	M.G. RESISTOR	470 1/16W
R225	NRSA63J-122X	M.G. RESISTOR	1.2k 1/16W
R226	NRSA63J-684X	M.G. RESISTOR	680k 1/16W
R227	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R228	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R229	NRSA63D-221X	M.G. RESISTOR	220 1/16W
R230	NRSA63D-221X	M.G. RESISTOR	220 1/16W
R231	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R232	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R258	NRSA63J-272X	M.G. RESISTOR	2.7k 1/16W
R259	NRSA63J-152X	M.G. RESISTOR	1.5k 1/16W
R260	NRSA63J-821X	M.G. RESISTOR	820 1/16W
R261	NRSA63J-221X	M.G. RESISTOR	220 1/16W
R262	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R263	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R264	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R265	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R266	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R267	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R268	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R269	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R270	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R271	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R272	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R273	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R274	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R283	NRSA63J-220X	M.G. RESISTOR	22 1/16W
R287	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R288	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R289	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W

Symbol No.	Part No.	Part Name	Description
R290	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R291	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R293	NRSA63J-821X	M.G. RESISTOR	820 1/16W
R294	NRSA63J-221X	M.G. RESISTOR	220 1/16W
R295	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R296	NRSA63J-221X	M.G. RESISTOR	220 1/16W
R297	NRSA63J-152X	M.G. RESISTOR	1.5k 1/16W
R298	NRSA63J-272X	M.G. RESISTOR	2.7k 1/16W
R301	NRSA63J-221X	M.G. RESISTOR	220 1/16W
R302	NRSA63J-221X	M.G. RESISTOR	220 1/16W
R308	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R309	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R310	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R311	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R312	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R313	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R358	NRSA63J-123X	M.G. RESISTOR	12k 1/16W
R359	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R360	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R361	NRSA63J-393X	M.G. RESISTOR	39k 1/16W
R362	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R363	NRSA63J-104X	M.G. RESISTOR	100k 1/16W
R364	NRSA63J-221X	M.G. RESISTOR	220 1/16W
R365	NRSA63J-104X	M.G. RESISTOR	100k 1/16W
R366	NRSA63J-104X	M.G. RESISTOR	100k 1/16W
R367	NRSA63J-220X	M.G. RESISTOR	22 1/16W
R368	NQR0200-001X	FERRITE BEADS	
R374	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R375	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R377	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R378	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R379	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R380	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R381	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R382	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R383	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R384	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R385	NQR0200-001X	FERRITE BEADS	
R386	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R387	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R388	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R389	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R401	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R402	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R403	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R404	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R405	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R406	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R407	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R408	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R409	NRSA63J-151X	M.G. RESISTOR	150 1/16W
R410	NRSA63J-302X	M.G. RESISTOR	3k 1/16W
R411	NRSA63J-151X	M.G. RESISTOR	150 1/16W
R412	NRSA63J-302X	M.G. RESISTOR	3k 1/16W
R413	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R414	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R415	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R416	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R417	NRSA63J-153X	M.G. RESISTOR	15k 1/16W
R418	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R419	NRSA63J-224X	M.G. RESISTOR	220k 1/16W
R420	NRSA63J-273X	M.G. RESISTOR	27k 1/16W
R421	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R422	NRSA63J-242X	M.G. RESISTOR	2.4k 1/16W
R423	NRSA63J-392X	M.G. RESISTOR	3.9k 1/16W
R424	NRSA63J-392X	M.G. RESISTOR	3.9k 1/16W
R425	NRSA63J-560X	M.G. RESISTOR	56 1/16W
R426	NRSA63J-560X	M.G. RESISTOR	56 1/16W
R427	NRSA63J-333X	M.G. RESISTOR	33k 1/16W
R428	NRSA63J-560X	M.G. RESISTOR	56 1/16W
R429	NRSA63J-560X	M.G. RESISTOR	56 1/16W
R430	NRSA63J-512X	M.G. RESISTOR	5.1k 1/16W
R431	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R432	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R433	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R434	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R435	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R436	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R437	NRSA63J-330X	M.G. RESISTOR	33 1/16W
R438	NRSA63J-153X	M.G. RESISTOR	15k 1/16W











## [CODEC]

Symbol No.	Part No.	Part Name	Description
R1310	NRSA63J-332X	M.G. RESISTOR	3.3k 1/16W
R1401	NRSA63D-153X	M.G. RESISTOR	15k 1/16W
R1402	NRSA63D-302X	M.G. RESISTOR	3k 1/16W
R1403	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R1404	NRSA63J-472X	M.G. RESISTOR	4.7k 1/16W
R1405	NRSA63J-332X	M.G. RESISTOR	3.3k 1/16W
R1406	NRSA63J-471X	M.G. RESISTOR	470 1/16W
R1407	NRSA63J-100X	M.G. RESISTOR	10 1/16W
R1408	NRSA63D-392X	M.G. RESISTOR	3.9k 1/16W
R1409	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R1411	NRSA63D-132X	M.G. RESISTOR	1.3k 1/16W
R1412	NRSA63D-153X	M.G. RESISTOR	15k 1/16W
R1413	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R1415	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R1416	NRSA63D-273X	M.G. RESISTOR	27k 1/16W
R1417	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1418	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1419	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1420	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1422	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R1423	NRSA63D-123X	M.G. RESISTOR	12k 1/16W
R1424	NRSA63D-273X	M.G. RESISTOR	27k 1/16W
R1425	NRSA63J-332X	M.G. RESISTOR	3.3k 1/16W
R1426	NRSA63J-471X	M.G. RESISTOR	470 1/16W
R1427	NRSA63J-100X	M.G. RESISTOR	10 1/16W
R1428	NRSA63D-222X	M.G. RESISTOR	2.2k 1/16W
R1430	NRSA63D-391X	M.G. RESISTOR	390 1/16W
R1431	NRSA63D-272X	M.G. RESISTOR	2.7k 1/16W
R1432	NRSA63D-362X	M.G. RESISTOR	3.6k 1/16W
R1433	NRSA63D-332X	M.G. RESISTOR	3.3k 1/16W
R1434	NRSA63J-471X	M.G. RESISTOR	470 1/16W
R1435	NRSA63J-100X	M.G. RESISTOR	10 1/16W
R1436	NRSA63D-393X	M.G. RESISTOR	39k 1/16W
R1437	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R1439	NRSA63D-302X	M.G. RESISTOR	3k 1/16W
R1440	NRSA63D-153X	M.G. RESISTOR	15k 1/16W
R1441	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R1441	NRSA63D-102X	M.G. RESISTOR	1k 1/16W
R1444	NRSA63D-273X	M.G. RESISTOR	27k 1/16W
R1445	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1446	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1447	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1448	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1450	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R1451	NRSA63D-123X	M.G. RESISTOR	12k 1/16W
R1452	NRSA63D-273X	M.G. RESISTOR	27k 1/16W
R1453	NRSA63J-332X	M.G. RESISTOR	3.3k 1/16W
R1454	NRSA63J-471X	M.G. RESISTOR	470 1/16W
R1455	NRSA63J-100X	M.G. RESISTOR	10 1/16W
R1456	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1457	NRSA63D-102X	M.G. RESISTOR	1k 1/16W
R1459	NRSA63D-152X	M.G. RESISTOR	1.5k 1/16W
R1460	NRSA63J-471X	M.G. RESISTOR	470 1/16W
R1461	NRSA63J-332X	M.G. RESISTOR	3.3k 1/16W
R1464	NRSA63J-100X	M.G. RESISTOR	10 1/16W
R1465	NRSA63D-683X	M.G. RESISTOR	68k 1/16W
R1466	NRSA63D-682X	M.G. RESISTOR	6.8k 1/16W
R1468	NRSA63D-682X	M.G. RESISTOR	6.8k 1/16W
R1469	NRSA63D-153X	M.G. RESISTOR	15k 1/16W
R1470	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R1472	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1473	NRSA63D-273X	M.G. RESISTOR	27k 1/16W
R1474	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1475	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1476	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1477	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1478	NRSA63D-472X	M.G. RESISTOR	4.7k 1/16W
R1480	NRSA63D-102X	M.G. RESISTOR	1k 1/16W
R1481	NRSA63D-153X	M.G. RESISTOR	15k 1/16W
R1482	NRSA63D-273X	M.G. RESISTOR	27k 1/16W
R1483	NRSA63J-332X	M.G. RESISTOR	3.3k 1/16W
R1484	NRSA63J-471X	M.G. RESISTOR	470 1/16W
R1485	NRSA63J-100X	M.G. RESISTOR	10 1/16W
R1486	NRSA63D-333X	M.G. RESISTOR	33k 1/16W
R1487	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R1489	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R1490	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R1491	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R1492	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R1493	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W

Symbol No.	Part No.	Part Name	Description
R1494	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R1495	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R1496	NRSA63D-273X	M.G. RESISTOR	27k 1/16W
R1600	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R1601	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R1602	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R1603	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R1604	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R1605	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R1606	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R1607	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R1608	NRSA63J-472X	M.G. RESISTOR	4.7k 1/16W
RA401	NRZ0015-102X	RESISTOR ARRAY	1k
RA402	NRZ0015-103X	RESISTOR ARRAY	10k
RA403	NRZ0015-103X	RESISTOR ARRAY	10k
RA404	NRZ0015-330X	RESISTOR ARRAY	33
RA405	NRZ0015-330X	RESISTOR ARRAY	33
RA501	NRZ0015-103X	RESISTOR ARRAY	10k
RA502	NRZ0015-103X	RESISTOR ARRAY	10k
C1	NEHM0JM-476X	E CAPACITOR	47 6.3V
C2	NEHM0JM-476X	E CAPACITOR	47 6.3V
C3	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C4	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C5	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C6	NEHM0JM-476X	E CAPACITOR	47 6.3V
C7	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C8	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C9	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C10	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C11	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C12	NEHM0JM-476X	E CAPACITOR	47 6.3V
C13	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C14	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C15	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C16	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C17	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C20	NCB11AK-106X	CER. CAPACITOR	10 10V
C25	NCB11AK-106X	CER. CAPACITOR	10 10V
C26	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C27	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C28	NCB11AK-106X	CER. CAPACITOR	10 10V
C30	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C31	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C32	NCB11AK-106X	CER. CAPACITOR	10 10V
C33	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C34	NCB11AK-106X	CER. CAPACITOR	10 10V
C35	NDC31HJ-121X	CER. CAPACITOR	120p 50V
C36	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C38	NCB11AK-106X	CER. CAPACITOR	10 10V
C39	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C40	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C41	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C42	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C43	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C44	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C45	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C46	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C47	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C48	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C49	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C50	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C51	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C52	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C54	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C55	NEHM0JM-476X	E CAPACITOR	47 6.3V
C56	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C58	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C59	NEHM0JM-476X	E CAPACITOR	47 6.3V
C60	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C61	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C62	NEHM0JM-476X	E CAPACITOR	47 6.3V
C63	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C64	NEHM0JM-476X	E CAPACITOR	47 6.3V
C66	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C67	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C68	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C69	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C70	NCB31CK-104X	CER. CAPACITOR	0.1 16V



Symbol No.	Part No.	Part Name	Description	
C71	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C72	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C73	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C74	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C75	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C76	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C77	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C78	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C79	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C80	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C81	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C82	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C83	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C84	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C85	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C86	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C87	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C88	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C89	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C90	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C91	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C92	NDC31HJ-101X	CER.CAPACITOR	100p	50V
C93	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C94	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C96	NEHM0JM-476X	E.CAPACITOR	47	6.3V
C97	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C99	NEHM0JM-476X	E.CAPACITOR	47	6.3V
C100	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C104	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C105	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C106	NCB11AK-106X	CER.CAPACITOR	10	10V
C107	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C108	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C127	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C128	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C129	NEHM0JM-476X	E.CAPACITOR	47	6.3V
C130	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C131	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C132	NEX50JM-476X	E.CAPACITOR	47	6.3V
C136	NEH90JM-476X	E.CAPACITOR	47	6.3V
C137	NDC31HJ-1R0X	CER.CAPACITOR	1p	50V
C138	NDC31HJ-100X	CER.CAPACITOR	10p	50V
C139	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C140	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C141	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C142	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C143	NEHM0JM-476X	E.CAPACITOR	47	6.3V
C144	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C145	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C146	NEHM0JM-476X	E.CAPACITOR	47	6.3V
C147	NDC31HJ-8R0X	CER.CAPACITOR	8p	50V
C148	NDC31HJ-390X	CER.CAPACITOR	39p	50V
C149	NDC31HJ-330X	CER.CAPACITOR	33p	50V
C155	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C156	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C157	NEHM0JM-476X	E.CAPACITOR	47	6.3V
C158	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C159	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C160	NEHM0JM-476X	E.CAPACITOR	47	6.3V
C161	NDC31HJ-8R0X	CER.CAPACITOR	8p	50V
C162	NDC31HJ-390X	CER.CAPACITOR	39p	50V
C163	NDC31HJ-330X	CER.CAPACITOR	33p	50V
C172	NDC31HJ-100X	CER.CAPACITOR	10p	50V
C173	NDC31HJ-120X	CER.CAPACITOR	12p	50V
C174	NDC31HJ-150X	CER.CAPACITOR	15p	50V
C176	NCB11AK-106X	CER.CAPACITOR	10	10V
C177	NCB11AK-106X	CER.CAPACITOR	10	10V
C178	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C201	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C202	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C203	NEHM0JM-476X	E.CAPACITOR	47	6.3V
C204	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C205	NEHM0JM-476X	E.CAPACITOR	47	6.3V
C206	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C211	NDC31HJ-8R0X	CER.CAPACITOR	8p	50V
C212	NDC31HJ-150X	CER.CAPACITOR	15p	50V
C213	NDC31HJ-390X	CER.CAPACITOR	39p	50V
C214	NDC31HJ-330X	CER.CAPACITOR	33p	50V
C215	NCB11AK-106X	CER.CAPACITOR	10	10V
C216	NCB11AK-106X	CER.CAPACITOR	10	10V

Symbol No.	Part No.	Part Name	Description	
C217	NDC31HJ-330X	CER.CAPACITOR	33p	50V
C219	NCB11AK-475X	CER.CAPACITOR	4.7	10V
C244	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C245	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C249	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C250	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C251	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C252	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C254	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C255	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C256	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C257	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C258	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C259	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C260	NEHM0JM-476X	E.CAPACITOR	47	6.3V
C261	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C262	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C263	NCB21AK-105X	CER.CAPACITOR	1	10V
C264	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C265	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C266	NCB11AK-106X	CER.CAPACITOR	10	10V
C267	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C268	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C269	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C270	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C271	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C272	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C273	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C274	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C275	NEHM0JM-476X	E.CAPACITOR	47	6.3V
C276	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C296	NEHM1CM-106X	E.CAPACITOR	10	16V
C301	NCB11AK-106X	CER.CAPACITOR	10	10V
C308	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C309	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C351	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C353	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C354	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C355	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C356	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C357	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C404	NCB21AK-105X	CER.CAPACITOR	1	10V
C405	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C406	NCB11AK-106X	CER.CAPACITOR	10	10V
C410	NCB21AK-105X	CER.CAPACITOR	1	10V
C411	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C412	NCB11AK-106X	CER.CAPACITOR	10	10V
C413	NCB21AK-105X	CER.CAPACITOR	1	10V
C414	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C415	NCB11AK-106X	CER.CAPACITOR	10	10V
C419	NCB11AK-106X	CER.CAPACITOR	10	10V
C420	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C421	NDC31HJ-102X	CER.CAPACITOR	1000p	50V
C422	NCB11AK-106X	CER.CAPACITOR	10	10V
C423	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C424	NCB11AK-106X	CER.CAPACITOR	10	10V
C425	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C426	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C427	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C428	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C429	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C430	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C431	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C432	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C433	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C434	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C435	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C436	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C437	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C438	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C439	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C440	NDC31HJ-390X	CER.CAPACITOR	39p	50V
C441	NDC31HJ-102X	CER.CAPACITOR	1000p	50V
C442	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C443	NCB31CK-104X	CER.CAPACITOR	0.1	16V
C444	NCB21AK-105X	CER.CAPACITOR	1	10V
C445	NCB10JK-475X	CER.CAPACITOR	4.7	6.3V
C446	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C447	NDC31HJ-271X	CER.CAPACITOR	270p	50V
C449	NCB31CK-473X	CER.CAPACITOR	0.047	16V



## [CODEC]

Symbol No.	Part No.	Part Name	Description
C450	NDC31HJ-222X	CER. CAPACITOR	2200p 50V
C451	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C452	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C453	NDC31HJ-102X	CER. CAPACITOR	1000p 50V
C454	NDC31HJ-390X	CER. CAPACITOR	39p 50V
C455	NDC31HJ-102X	CER. CAPACITOR	1000p 50V
C456	NDC31HJ-390X	CER. CAPACITOR	39p 50V
C457	NDC31HJ-6R0X	CER. CAPACITOR	6p 50V
C458	NDC31HJ-6R0X	CER. CAPACITOR	6p 50V
C459	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C460	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C501	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C502	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C503	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C504	NCB21AK-105X	CER. CAPACITOR	1 10V
C505	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C506	NCB11AK-106X	CER. CAPACITOR	10 10V
C507	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C508	NCB11AK-106X	CER. CAPACITOR	10 10V
C509	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C510	NCB21AK-105X	CER. CAPACITOR	1 10V
C511	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C512	NCB21AK-105X	CER. CAPACITOR	1 10V
C513	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C514	NDC31HJ-220X	CER. CAPACITOR	22p 50V
C515	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C516	NCB11AK-106X	CER. CAPACITOR	10 10V
C517	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C518	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C519	NCB21AK-105X	CER. CAPACITOR	1 10V
C520	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C521	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C522	NDC31HJ-150X	CER. CAPACITOR	15p 50V
C523	NDC31HJ-150X	CER. CAPACITOR	15p 50V
C524	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C525	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C601	NEHM1CM-106X	E. CAPACITOR	10 16V
C602	NEHM1CM-106X	E. CAPACITOR	10 16V
C603	NEHM1CM-106X	E. CAPACITOR	10 16V
C604	NEHM1CM-106X	E. CAPACITOR	10 16V
C605	NEHM1CM-476X	E. CAPACITOR	47 16V
C606	NEHM1EM-106X	E. CAPACITOR	10 25V
C607	NEHM1CM-106X	E. CAPACITOR	10 16V
C608	NEHM1CM-106X	E. CAPACITOR	10 16V
C609	NEHM1CM-106X	E. CAPACITOR	10 16V
C610	NEHM1CM-106X	E. CAPACITOR	10 16V
C611	NEHM1HM-105X	E. CAPACITOR	1 50V
C612	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C613	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C614	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C615	NCB10JK-475X	CER. CAPACITOR	4.7 6.3V
C616	NDC31HJ-102X	CER. CAPACITOR	1000p 50V
C617	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C618	NEHM1CM-106X	E. CAPACITOR	10 16V
C619	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C627	NEHM1CM-106X	E. CAPACITOR	10 16V
C628	NEHM1EM-106X	E. CAPACITOR	10 25V
C629	NEHM1EM-106X	E. CAPACITOR	10 25V
C630	NDC31HJ-101X	CER. CAPACITOR	100p 50V
C632	NEHM1CM-106X	E. CAPACITOR	10 16V
C633	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C634	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C635	NDC31HJ-101X	CER. CAPACITOR	100p 50V
C637	NEHM1CM-106X	E. CAPACITOR	10 16V
C638	NEHM1CM-106X	E. CAPACITOR	10 16V
C640	NEHM1CM-476X	E. CAPACITOR	47 16V
C641	NEHM1EM-106X	E. CAPACITOR	10 25V
C642	NEHM1HM-105X	E. CAPACITOR	1 50V
C643	NEHM1HM-105X	E. CAPACITOR	1 50V
C644	NEHM1EM-106X	E. CAPACITOR	10 25V
C645	NEHM1EM-106X	E. CAPACITOR	10 25V
C646	NDC31HJ-101X	CER. CAPACITOR	100p 50V
C648	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C649	NDC31HJ-101X	CER. CAPACITOR	100p 50V
C651	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C652	NEN71EM-107X	E. CAPACITOR	100 25V
C653	NEN71EM-107X	E. CAPACITOR	100 25V
C654	NEHM1EM-475X	E. CAPACITOR	4.7 25V
C655	NEHM1EM-475X	E. CAPACITOR	4.7 25V
C656	NEHM1HM-474X	E. CAPACITOR	0.47 50V

Symbol No.	Part No.	Part Name	Description
C657	NEHM1HM-474X	E. CAPACITOR	0.47 50V
C658	NEHM1EM-106X	E. CAPACITOR	10 25V
C659	NEHM1CM-106X	E. CAPACITOR	10 16V
C660	NEHM1CM-106X	E. CAPACITOR	10 16V
C661	NEHM1CM-106X	E. CAPACITOR	10 16V
C662	NEHM1CM-106X	E. CAPACITOR	10 16V
C663	NEHM1CM-336X	E. CAPACITOR	33 16V
C664	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C665	NDC31HJ-121X	CER. CAPACITOR	120p 50V
C666	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C667	NDC31HJ-121X	CER. CAPACITOR	120p 50V
C668	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C669	NDC31HJ-121X	CER. CAPACITOR	120p 50V
C670	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C671	NEHM1CM-106X	E. CAPACITOR	10 16V
C672	NEHM1CM-106X	E. CAPACITOR	10 16V
C673	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C674	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C675	NCB31AK-224X	CER. CAPACITOR	0.22 10V
C676	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C677	NEHM1CM-106X	E. CAPACITOR	10 16V
C678	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C679	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C680	NCB31AK-224X	CER. CAPACITOR	0.22 10V
C681	NCB10JK-475X	CER. CAPACITOR	4.7 6.3V
C682	NDC31HJ-102X	CER. CAPACITOR	1000p 50V
C683	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C684	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C685	NEHM1CM-106X	E. CAPACITOR	10 16V
C686	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C687	NEHM1CM-476X	E. CAPACITOR	47 16V
C688	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C689	NEHM1EM-226X	E. CAPACITOR	22 25V
C690	NEHM1EM-226X	E. CAPACITOR	22 25V
C691	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C692	NEHM1EM-226X	E. CAPACITOR	22 25V
C693	NEHM1EM-226X	E. CAPACITOR	22 25V
C694	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C696	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C697	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C698	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C699	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C700	NDC31HJ-221X	CER. CAPACITOR	220p 50V
C701	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C702	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C703	NEHM1CM-106X	E. CAPACITOR	10 16V
C704	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C705	NEHM1CM-106X	E. CAPACITOR	10 16V
C706	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C707	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C708	NCB21AK-105X	CER. CAPACITOR	1 10V
C709	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C710	NCB11AK-106X	CER. CAPACITOR	10 10V
C711	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C712	NEHM1CM-106X	E. CAPACITOR	10 16V
C713	NEHM1CM-106X	E. CAPACITOR	10 16V
C714	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C719	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C720	NDC31HJ-102X	CER. CAPACITOR	1000p 50V
C721	NDC31HJ-102X	CER. CAPACITOR	1000p 50V
C801	NCB11AK-106X	CER. CAPACITOR	10 10V
C802	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C803	NDC31HJ-471X	CER. CAPACITOR	470p 50V
C805	NDC31HJ-470X	CER. CAPACITOR	47p 50V
C806	NCB11AK-106X	CER. CAPACITOR	10 10V
C807	NCB11AK-106X	CER. CAPACITOR	10 10V
C808	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C809	NDC31HJ-471X	CER. CAPACITOR	470p 50V
C810	NDC31HJ-470X	CER. CAPACITOR	47p 50V
C811	NCB11AK-106X	CER. CAPACITOR	10 10V
C812	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C813	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C814	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C815	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C816	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C817	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C818	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C819	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C820	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C821	NCB31CK-104X	CER. CAPACITOR	0.1 16V





## [CODEC]

Symbol No.	Part No.	Part Name	Description
C1280	NCB11AK-106X	CER. CAPACITOR	10 10V
C1281	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1282	NDC31HJ-471X	CER. CAPACITOR	470p 50V
C1283	NDC31HJ-470X	CER. CAPACITOR	47p 50V
C1284	NCB11AK-106X	CER. CAPACITOR	10 10V
C1286	NCB11AK-106X	CER. CAPACITOR	10 10V
C1403	NEHM1EM-336X	E. CAPACITOR	33 25V
C1404	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1407	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C1408	NCF21EZ-474X	CER. CAPACITOR	0.47 25V
C1409	NCF21EZ-474X	CER. CAPACITOR	0.47 25V
C1410	NEX51CM-566X	E. CAPACITOR	56 16V
C1411	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C1412	NEHM1CM-476X	E. CAPACITOR	47 16V
C1413	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1414	NEHM1CM-476X	E. CAPACITOR	47 16V
C1415	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1416	NCS31HJ-221X	CER. CAPACITOR	220p 50V
C1417	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C1418	NCB11CK-105X	CER. CAPACITOR	1 16V
C1419	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C1420	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1421	NCB11CK-105X	CER. CAPACITOR	1 16V
C1422	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C1423	NCB11CK-105X	CER. CAPACITOR	1 16V
C1424	NCF21EZ-474X	CER. CAPACITOR	0.47 25V
C1425	NCF21EZ-474X	CER. CAPACITOR	0.47 25V
C1426	NEX51CM-566X	E. CAPACITOR	56 16V
C1427	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C1428	NEHM1CM-476X	E. CAPACITOR	47 16V
C1429	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1430	NEHM1CM-476X	E. CAPACITOR	47 16V
C1431	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1432	NCF21EZ-474X	CER. CAPACITOR	0.47 25V
C1433	NCF21EZ-474X	CER. CAPACITOR	0.47 25V
C1434	NEX51DM-476X	E. CAPACITOR	47 20V
C1435	NCB41CM-106X	CER. CAPACITOR	10 16V
C1436	NDC31HJ-102X	CER. CAPACITOR	1000p 50V
C1438	NCB41CM-106X	CER. CAPACITOR	10 16V
C1441	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1442	NCS31HJ-221X	CER. CAPACITOR	220p 50V
C1443	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C1444	NCB11CK-105X	CER. CAPACITOR	1 16V
C1445	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C1446	NCB31AK-224X	CER. CAPACITOR	0.22 10V
C1447	NCB11CK-105X	CER. CAPACITOR	1 16V
C1448	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C1449	NCB11CK-105X	CER. CAPACITOR	1 16V
C1450	NCF21EZ-474X	CER. CAPACITOR	0.47 25V
C1451	NCF21EZ-474X	CER. CAPACITOR	0.47 25V
C1452	NEHQ1AM-227X	E. CAPACITOR	220 10V
C1453	NDC31HJ-102X	CER. CAPACITOR	1000p 50V
C1454	NEHM1CM-476X	E. CAPACITOR	47 16V
C1456	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1458	NCF21EZ-474X	CER. CAPACITOR	0.47 25V
C1459	NCF21EZ-474X	CER. CAPACITOR	0.47 25V
C1460	NEX51DM-476X	E. CAPACITOR	47 20V
C1461	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C1463	NCB41CM-106X	CER. CAPACITOR	10 16V
C1466	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1467	NCB11CK-105X	CER. CAPACITOR	1 16V
C1468	NCS31HJ-221X	CER. CAPACITOR	220p 50V
C1469	NCB31CK-223X	CER. CAPACITOR	0.022 16V
C1470	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C1471	NCB31AK-224X	CER. CAPACITOR	0.22 10V
C1472	NCB11CK-105X	CER. CAPACITOR	1 16V
C1473	NCB31HK-103X	CER. CAPACITOR	0.01 50V
C1474	NCB11CK-105X	CER. CAPACITOR	1 16V
C1475	NCF21EZ-474X	CER. CAPACITOR	0.47 25V
C1476	NCF21EZ-474X	CER. CAPACITOR	0.47 25V
C1477	NEHQ1AM-227X	E. CAPACITOR	220 10V
C1478	NCB11AK-106X	CER. CAPACITOR	10 10V
C1479	NDC31HJ-102X	CER. CAPACITOR	1000p 50V
C1480	NCB41CM-106X	CER. CAPACITOR	10 16V
C1481	NCB41CM-106X	CER. CAPACITOR	10 16V
C1483	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1484	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1485	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C1486	NCB11AK-106X	CER. CAPACITOR	10 10V

Symbol No.	Part No.	Part Name	Description
L1	NQL114K-220X	COIL	22uH
L2	NQL114K-220X	COIL	22uH
L3	NQL114K-220X	COIL	22uH
L4	NQL114K-220X	COIL	22uH
L101	NQL114K-220X	COIL	22uH
L102	NQL114K-220X	COIL	22uH
L105	NQL114K-220X	COIL	22uH
L106	NQL114K-220X	COIL	22uH
L107	NQL024J-150X	COIL	15uH
L108	NQL024J-330X	COIL	33uH
L109	NQL114K-220X	COIL	22uH
L110	NQL114K-220X	COIL	22uH
L111	NQL024J-150X	COIL	15uH
L112	NQL024J-330X	COIL	33uH
L201	NQL114K-220X	COIL	22uH
L202	NQL114K-220X	COIL	22uH
L203	NQL024J-330X	COIL	33uH
L204	NQL024J-150X	COIL	15uH
L209	NQL114K-220X	COIL	22uH
L210	NQL114K-220X	COIL	22uH
L211	NQL114K-220X	COIL	22uH
L401	NQL114K-220X	COIL	22uH
L402	NQL114K-220X	COIL	22uH
L403	NQL114K-220X	COIL	22uH
L404	NQL024J-2R2X	COIL	2.2uH
L405	NQR0276-001X	FERRITE BEADS	
L406	NQL024J-120X	COIL	12uH
L407	NQL024J-100X	COIL	10uH
L603	NQL024J-220X	COIL	22uH
L604	NQL024J-220X	COIL	22uH
L801	1002AS-100M	COIL	10uH TOKO
L802	1002AS-100M	COIL	10uH TOKO
L803	NQL114K-220X	COIL	22uH
L1001	1002AS-100M	COIL	10uH TOKO
L1201	1002AS-100M	COIL	10uH TOKO
L1401	NQL25CM-330X	COIL	33uH
L1402	NQL44CM-6R8X	COIL	6.8uH
L1403	NQL44CM-6R8X	COIL	6.8uH
L1404	NQL25CM-330X	COIL	33uH
L1405	SSV2810-330V	COIL	33uH
L1406	SSV2810-330V	COIL	33uH
L1407	NQL25CM-470X	COIL	47uH
L1408	SSV2810-330V	COIL	33uH
L1409	NQL44CM-6R8X	COIL	6.8uH
L1410	SSV2810-330V	COIL	33uH
L1411	NQL44CM-6R8X	COIL	6.8uH
L1412	SSV2810-330V	COIL	33uH
L1413	NQL25CM-470X	COIL	47uH
L1414	SSV2810-330V	COIL	33uH
X302	QAX0770-001	CRYSTAL	27MHz
X401	NAX0206-001X	CRYSTAL	24.576MHz
X601	NAX0348-001X	CRYSTAL	27MHz
△ F1401	NMFZ011-4R0X-S	FUSE	4A/63V
S501	NSW0022-004X	SWITCH	
J101	QNZ0475-001	JACK	
J102	54516-0471	JACK	MOLEX
CN1	OQA1501C2-06W	CONNECTOR	6PIN
CN2	OQA1501C2-08W	CONNECTOR	8PIN
CN3	OQA1501C2-09W	CONNECTOR	9PIN
CN4	QGF0508C1-30W	CONNECTOR	30PIN
CN5	OQA1201C2-04X	CONNECTOR	4PIN
CN6	FX2CA2-120S-1.27DSAL	CONNECTOR	120PIN HIROSE
CN7	OGB0805L3-80X	CONNECTOR	80PIN
CN8	OGB0502L1-40X	CONNECTOR	40PIN
CN12	OQA1207C1-32	CONNECTOR	32PIN
CN13	OQA2009C1-11	CONNECTOR	11PIN
CN15	OQA2531C1-07	CONNECTOR	7PIN
CN601	OQA1501C2-07W	CONNECTOR	7PIN
CN801	SCV1146-010	CONNECTOR	10PIN
CN1001	SCV1146-010	CONNECTOR	10PIN
K4	NQR0200-004X	FERRITE BEADS	
K5	NQR0200-004X	FERRITE BEADS	
K6	NQR0200-004X	FERRITE BEADS	
K7	NQR0200-004X	FERRITE BEADS	

Symbol No.	Part No.	Part Name	Description
K11	NQR0200-004X	FERRITE BEADS	
K202	NQR0200-004X	FERRITE BEADS	
K203	NQR0200-004X	FERRITE BEADS	
K204	NQR0200-004X	FERRITE BEADS	
K205	NQR0200-004X	FERRITE BEADS	
K206	NQR0200-004X	FERRITE BEADS	
K207	NQR0200-004X	FERRITE BEADS	
K208	NQR0200-004X	FERRITE BEADS	
K209	NQR0200-004X	FERRITE BEADS	
K210	NQR0200-005X	FERRITE BEADS	
K211	NQR0200-005X	FERRITE BEADS	
K212	NQR0200-005X	FERRITE BEADS	
K213	NQR0200-005X	FERRITE BEADS	
K214	NQR0200-005X	FERRITE BEADS	
K301	NQR0200-004X	FERRITE BEADS	
K302	NQR0200-004X	FERRITE BEADS	
K303	NQR0200-004X	FERRITE BEADS	
K309	NQR0200-004X	FERRITE BEADS	
K310	NQR0200-004X	FERRITE BEADS	
K401	NQR0200-004X	FERRITE BEADS	
K402	NQR0200-004X	FERRITE BEADS	
K403	NQR0200-004X	FERRITE BEADS	
K404	NQR0200-004X	FERRITE BEADS	
K405	NQR0200-004X	FERRITE BEADS	
K501	NQR0200-004X	FERRITE BEADS	
K503	NQR0200-004X	FERRITE BEADS	
K504	NQR0200-004X	FERRITE BEADS	
K509	NQR0200-004X	FERRITE BEADS	
K510	NQR0200-004X	FERRITE BEADS	
K512	NQR0200-004X	FERRITE BEADS	
K513	NQR0200-004X	FERRITE BEADS	
K515	NQR0200-005X	FERRITE BEADS	
K516	NQR0200-005X	FERRITE BEADS	
K517	NQR0200-005X	FERRITE BEADS	
K518	NQR0200-005X	FERRITE BEADS	
K519	NQR0200-005X	FERRITE BEADS	
K520	NQR0200-005X	FERRITE BEADS	
K521	NQR0200-005X	FERRITE BEADS	
K523	NQR0200-004X	FERRITE BEADS	
K527	NQR0200-004X	FERRITE BEADS	
K530	NQR0200-005X	FERRITE BEADS	
K531	NQR0200-004X	FERRITE BEADS	
K533	NQR0200-004X	FERRITE BEADS	
K534	NQR0200-004X	FERRITE BEADS	
K535	NQR0200-004X	FERRITE BEADS	
K601	NQR0200-004X	FERRITE BEADS	
K602	NQR0200-004X	FERRITE BEADS	
K603	NQR0200-004X	FERRITE BEADS	
K604	NQR0200-004X	FERRITE BEADS	
K606	NQR0200-004X	FERRITE BEADS	
K607	NQR0200-004X	FERRITE BEADS	
K608	NQR0200-004X	FERRITE BEADS	
K609	NQR0200-004X	FERRITE BEADS	
K610	NQR0200-004X	FERRITE BEADS	
K611	NQR0200-004X	FERRITE BEADS	
K612	NQR0200-004X	FERRITE BEADS	
K613	NQR0200-004X	FERRITE BEADS	
K614	NQR0200-004X	FERRITE BEADS	
K615	NQR0200-005X	FERRITE BEADS	
K616	NQR0200-004X	FERRITE BEADS	
K617	NQR0200-004X	FERRITE BEADS	
K618	NQR0200-004X	FERRITE BEADS	
K619	NQR0200-004X	FERRITE BEADS	
K620	NQR0200-005X	FERRITE BEADS	
K621	NQR0200-005X	FERRITE BEADS	
K622	NQR0200-005X	FERRITE BEADS	
K801	NQR0200-005X	FERRITE BEADS	
K802	NQR0200-005X	FERRITE BEADS	
K803	NQR0200-004X	FERRITE BEADS	
K804	NQR0200-005X	FERRITE BEADS	
K805	NQR0200-004X	FERRITE BEADS	
K806	NQR0200-004X	FERRITE BEADS	
K1001	NQR0200-005X	FERRITE BEADS	
K1002	NQR0200-005X	FERRITE BEADS	
K1003	NQR0200-005X	FERRITE BEADS	
K1006	NQR0200-004X	FERRITE BEADS	
K1007	NQR0200-005X	FERRITE BEADS	
K1201	NQR0200-005X	FERRITE BEADS	
K1203	NQR0200-004X	FERRITE BEADS	
K1204	NQR0200-004X	FERRITE BEADS	

Symbol No.	Part No.	Part Name	Description
K1205	NQR0200-005X	FERRITE BEADS	
K1206	NQR0200-005X	FERRITE BEADS	
K1207	NQR0200-005X	FERRITE BEADS	
K1401	NQR0200-005X	FERRITE BEADS	
K1402	NQR0200-005X	FERRITE BEADS	
K1403	NQR0200-005X	FERRITE BEADS	
K1404	NQR0200-005X	FERRITE BEADS	
K1405	NQR0200-005X	FERRITE BEADS	
K1406	NQR0200-005X	FERRITE BEADS	
K1407	NQR0200-005X	FERRITE BEADS	
K1408	NQR0200-005X	FERRITE BEADS	
K1409	NQR0200-005X	FERRITE BEADS	
K1410	NQR0200-005X	FERRITE BEADS	
K1411	NQR0200-005X	FERRITE BEADS	
K1412	NQR0200-005X	FERRITE BEADS	
K1413	NQR0200-005X	FERRITE BEADS	
K1414	NQR0200-005X	FERRITE BEADS	
K1415	NQR0200-005X	FERRITE BEADS	
K1416	NQR0200-005X	FERRITE BEADS	
K1417	NQR0200-005X	FERRITE BEADS	
K1418	NQR0200-005X	FERRITE BEADS	
K1419	NQR0200-005X	FERRITE BEADS	
K1420	NQR0200-005X	FERRITE BEADS	
K1421	NQR0200-005X	FERRITE BEADS	
K1422	NQR0200-005X	FERRITE BEADS	
K1423	NQR0200-005X	FERRITE BEADS	
K1424	NQR0200-004X	FERRITE BEADS	
TP7- TP1408	NNZ0009-001X	TEST POINT	
TB1 TB2- TB1402	QNB0168-001 NNZ0006-001X	EARTH TERMINAL EARTH TERMINAL	



5.2 FRONT BOARD ASSEMBLY PART LIST 0 2

LK2136A0B1

0 2

Symbol No.	Part No.	Part Name	Description
IC1	SN74LV165APW-X	I.C. (M)	TI
IC2	SN74LV165APW-X	I.C. (M)	TI
IC3	M66312-WE	I.C. (M)	RENESAS
IC4	M66312-WE	I.C. (M)	RENESAS
IC5	NJU6433FB2	I.C. (M)	JRC
IC6	SN74AHCT125PW-X	I.C. (M)	TI
IC7	M66312-WE	I.C. (M)	RENESAS
Q1	DTA144EUA-X	TRANSISTOR	ROHM
Q2	DTA144EUA-X	TRANSISTOR	ROHM
Q3	DTC144EUA-X	TRANSISTOR	ROHM
Q4	DTC144EUA-X	TRANSISTOR	ROHM
Q5	DTC144EUA-X	TRANSISTOR	ROHM
LD1	SLR-342MG3F	LED	ROHM
LD2	SLR-342MG3F	LED	ROHM
LD3	SLR-342MG3F	LED	ROHM
LD4	SLR-342MG3F	LED	ROHM
LD5	SLR-342MG3F	LED	ROHM
LD6	SLR-342MG3F	LED	ROHM
LD7	SLR-342MG3F	LED	ROHM
LD8	SLR-342VR3F	LED	ROHM
LD9	SLR-342MG3F	LED	ROHM
LD10	SLR-342MG3F	LED	ROHM
LD11	SLR-342MG3F	LED	ROHM
LD12	SLR-342MG3F	LED	ROHM
LD13	SLR-342MG3F	LED	ROHM
LD14	SLR-342MG3F	LED	ROHM
LD15	SLR-342MG3F	LED	ROHM
LD16	SLR-342MG3F	LED	ROHM
LD17	SLR-342MG3F	LED	ROHM
LD18	SLR-342MG3F	LED	ROHM
LD19	SLR-342MG3F	LED	ROHM
LD20	SLR-342MG3F	LED	ROHM
LD21	SPR-325MVW-T	LED	ROHM
LD22	NSPW300BS/BRS	LED	NICHIKAGAKU
LD23	NSPW300BS/BRS	LED	NICHIKAGAKU
LD24	SLR-342MG3F	LED	ROHM
R1	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R2	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R3	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R4	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R5	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R6	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R7	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R8	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R9	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R10	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R11	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R12	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R13	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R14	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R15	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R16	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R17	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R18	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R19	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R20	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R21	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R22	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R23	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R24	NRSA63J-102X	M.G. RESISTOR	1k 1/16W
R25	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R26	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R27	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R28	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R29	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R30	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R31	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R32	NRSA63J-223X	M.G. RESISTOR	22k 1/16W
R33	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R34	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R35	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R36	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R37	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R38	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R39	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R40	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R41	NRSA63J-271X	M.G. RESISTOR	270 1/16W

Symbol No.	Part No.	Part Name	Description
R42	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R43	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R44	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R45	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R46	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R47	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R48	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R49	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R50	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R51	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R52	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R53	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R54	NRSA63J-151X	M.G. RESISTOR	150 1/16W
R55	NRSA63J-151X	M.G. RESISTOR	150 1/16W
R56	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R57	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R58	NRSA63J-271X	M.G. RESISTOR	270 1/16W
R59	NRSA63J-0R0X	M.G. RESISTOR	0 1/16W
R61	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R62	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R63	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R64	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R65	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R66	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R67	NRSA63J-101X	M.G. RESISTOR	100 1/16W
R68	NRSA63J-154X	M.G. RESISTOR	150k 1/16W
R69	NRSA63J-103X	M.G. RESISTOR	10k 1/16W
R70	NRSA63J-222X	M.G. RESISTOR	2.2k 1/16W
R71	NRSA63J-222X	M.G. RESISTOR	2.2k 1/16W
R72	NRSA63J-222X	M.G. RESISTOR	2.2k 1/16W
R80	NRSA63J-152X	M.G. RESISTOR	1.5k 1/16W
R81	NRSA63J-122X	M.G. RESISTOR	1.2k 1/16W
R82	NRSA63J-152X	M.G. RESISTOR	1.5k 1/16W
R83	NRSA63J-152X	M.G. RESISTOR	1.5k 1/16W
R84	NRSA63J-152X	M.G. RESISTOR	1.5k 1/16W
R85	NRSA63J-152X	M.G. RESISTOR	1.5k 1/16W
R86	NRSA63J-101X	M.G. RESISTOR	100 1/16W
VR1	QVQ0312-B23	VAL RESISTOR	
C1	NCS31HJ-220X	CER. CAPACITOR	22p 50V
C2	NCS31HJ-220X	CER. CAPACITOR	22p 50V
C3	NCS31HJ-220X	CER. CAPACITOR	22p 50V
C4	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C5	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C6	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C7	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C8	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C9	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C10	NCS31HJ-220X	CER. CAPACITOR	22p 50V
C11	NCS31HJ-220X	CER. CAPACITOR	22p 50V
C12	NCB31CK-104X	CER. CAPACITOR	0.1 16V
C13	NCS31HJ-220X	CER. CAPACITOR	22p 50V
C14	NCS31HJ-220X	CER. CAPACITOR	22p 50V
C15	NCS31HJ-220X	CER. CAPACITOR	22p 50V
C16	NCS31HJ-220X	CER. CAPACITOR	22p 50V
C17	NCS31HJ-220X	CER. CAPACITOR	22p 50V
C18	NBE21AM-106X	TAN. CAPACITOR	10 10V
SI-S16	NSW0039-001X	SWITCH	
LCD1	QLD0331-001	LCD	
LENS1	LE31028-001A	LCD LENS	
HL1	LL20117-001A	LCD HOLDER	
CN1	QGF0508C1-30W	CONNECTOR	30PIN
K1-K39	NQR0200-005X	FERRITE BEADS	
TB1	OG-603060	EARTH TERMINAL	
TB2	OG-603060	EARTH TERMINAL	

**5.3 REAR BOARD ASSEMBLY PART LIST** 0 3  
**LK2136A0B2** 0 3

Symbol No.	Part No.	Part Name	Description
D207	MA3091/M-X	ZENER DIODE	MATSUSHITA
D208	MA3091/M-X	ZENER DIODE	MATSUSHITA
D209	MA3091/M-X	ZENER DIODE	MATSUSHITA
D210	MA3091/M-X	ZENER DIODE	MATSUSHITA
D211	MA3091/M-X	ZENER DIODE	MATSUSHITA
D212	MA3091/M-X	ZENER DIODE	MATSUSHITA
D213	MA3091/M-X	ZENER DIODE	MATSUSHITA
D214	MA3091/M-X	ZENER DIODE	MATSUSHITA
D217	MA3091/M-X	ZENER DIODE	MATSUSHITA
D218	MA3091/M-X	ZENER DIODE	MATSUSHITA
R201	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
L201	NQL024J-100X	COIL	10uH
L202	NQL024J-100X	COIL	10uH
L203	NQL024J-100X	COIL	10uH
L204	NQL024J-100X	COIL	10uH
S1	QSW1054-001	SWITCH	AUDIO LEVEL
JK1	QNZ0226-001	JACK	Y/C OUT
JK2	QNN0204-001	JACK	AUDIO IN/OUT
JK3	QNZ0163-001	JACK	VIDEO IN/OUT
K201	NQR0200-005X	FERRITE BEADS	

**5.5 HEADPHONE BOARD ASSEMBLY PART LIST** 0 5  
**LK2136A0B3** 0 5

Symbol No.	Part No.	Part Name	Description
D301	MA3091/M-X	ZENER DIODE	MATSUSHITA
D302	MA3091/M-X	ZENER DIODE	MATSUSHITA
D303	MA3091/M-X	ZENER DIODE	MATSUSHITA
D304	MA3091/M-X	ZENER DIODE	MATSUSHITA
R301	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
C301	NCB31CK-104X	CER CAPACITOR	0.1 16V
C302	NCB31CK-104X	CER CAPACITOR	0.1 16V
C303	NCB31CK-104X	CER CAPACITOR	0.1 16V
C304	NCB31CK-104X	CER CAPACITOR	0.1 16V
L301	NQL085J-100X	COIL	10uH
L302	NQL085J-100X	COIL	10uH
CN5	5339B-0490	CONNECTOR	MOLEX
JK201	QNS0045-001	JACK	PHONES
K301	NQR0200-001X	FERRITE BEADS	
K302	NQR0200-001X	FERRITE BEADS	
K303	NQR0200-001X	FERRITE BEADS	
TB301	OSGC-756030	EARTH TERMINAL	KITAGAWA KOGYO

**5.4 CF BOARD ASSEMBLY PART LIST** 0 4  
**LK2136A0B4** 0 4

Symbol No.	Part No.	Part Name	Description
R402	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R403	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R404	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R405	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R406	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
R407	NRSA63J-0R0X	M.G.RESISTOR	0 1/16W
C401	NCB31CK-104X	CER CAPACITOR	0.1 16V
C402	NCB31CK-104X	CER CAPACITOR	0.1 16V
C403	NCB31CK-104X	CER CAPACITOR	0.1 16V
C404	NCB31CK-104X	CER CAPACITOR	0.1 16V
CN304	KKS-RTR44-442A	CONNECTOR	DDK
CN301	QGA2528F1-40	CONNECTOR	
CN302	ICM-MA2HSS52-N11D	CONNECTOR	JST
CN303	LC-04A	CONNECTOR	JST

**5.6 MOTHER BOARD ASSEMBLY PART LIST** 0 6

**E951551-03A (U)**

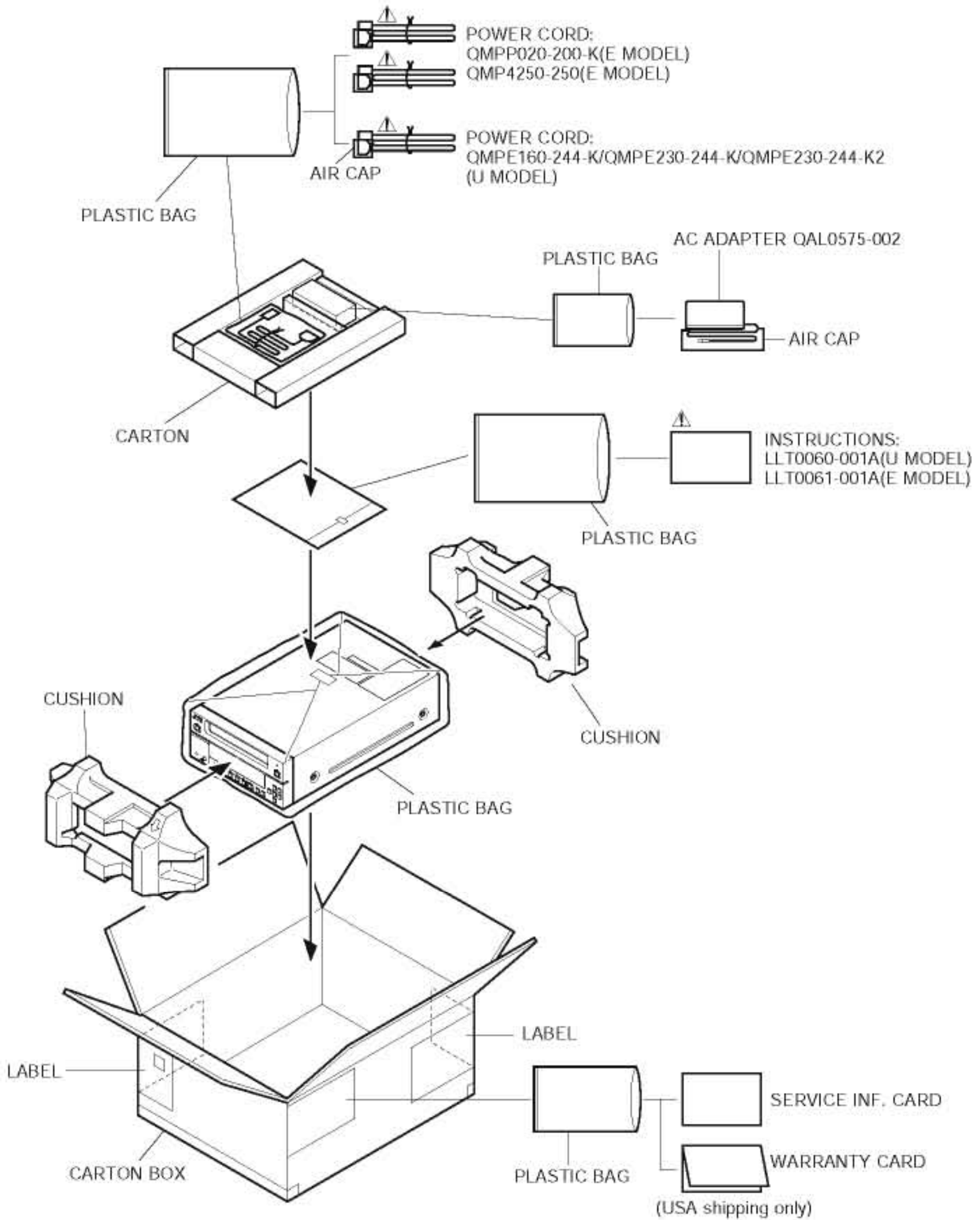
**E951551-13A (E)**

Component parts are not available.



## SECTION 6 PACKING

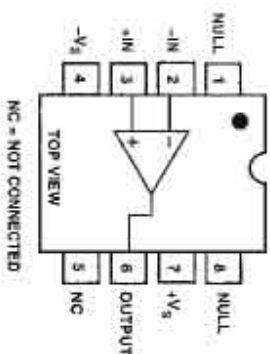
### 6.1 PACKING ASSEMBLY M T



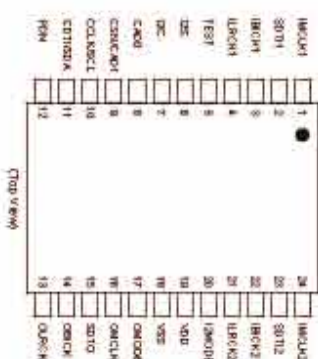
**Note :** Accessories above are subject to change without notice.

3.12 IC BLOCK DIAGRAMS

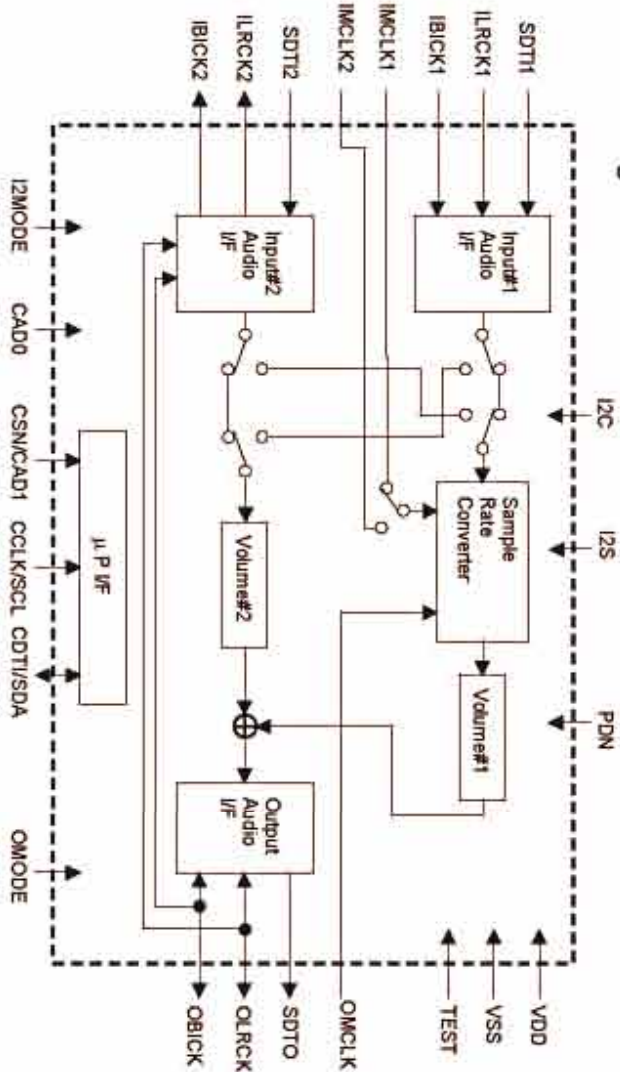
■ AD817AR-X [ANALOG DEVICES]  
[Hi-Speed Low Power Op.Amp]



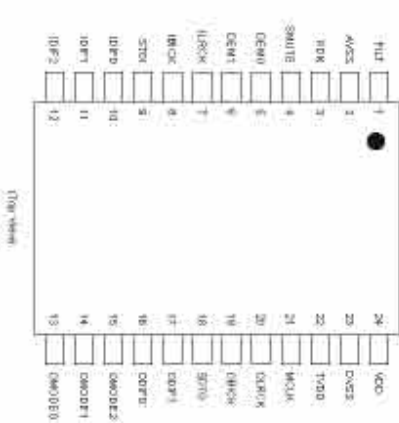
■ AK4120VF [ASAHl KASEl]  
[Sample Rate Converter with Mixer and Volume]



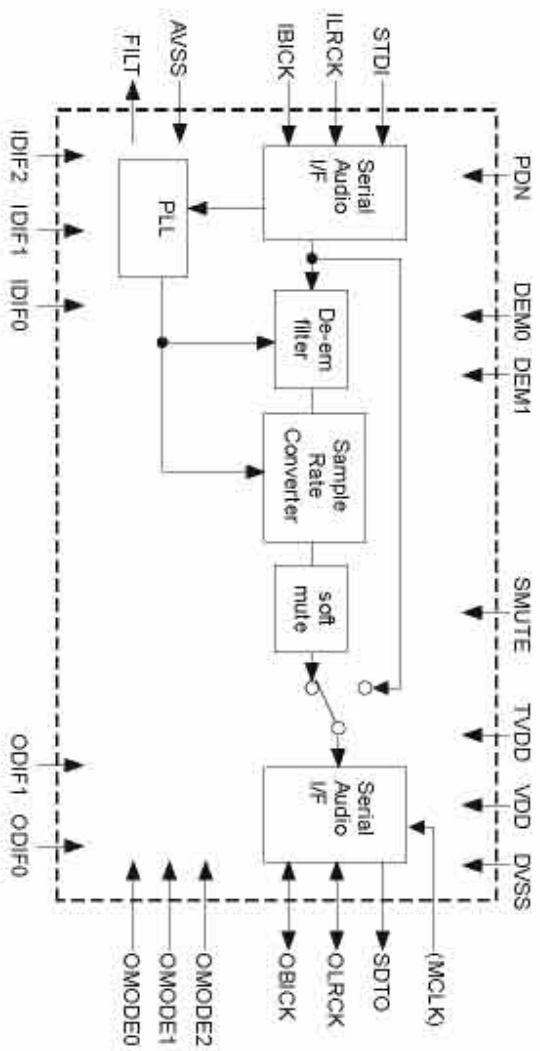
Block Diagram



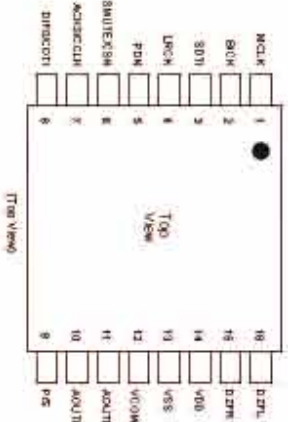
■ AK4121VF [ASAHl KASEl]  
[Asynchronous Sample Rate Converter]



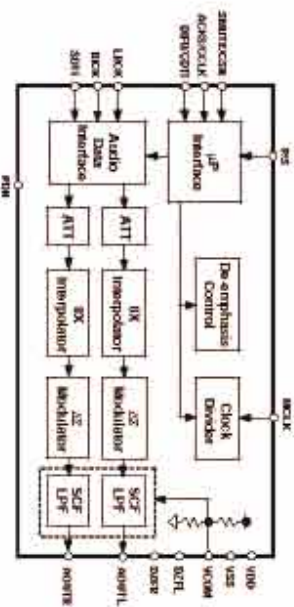
Block Diagram



■ AK4384VT-X [ASAHl KASEl]  
[24bit Zeh DAC]



Block Diagram



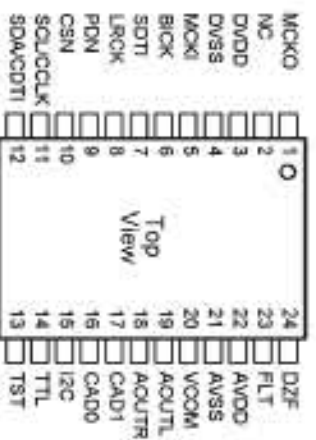
Pin Function

No.	Pin Name	I/O	Function
1	MCLK	I	Master Clock Input Pin An external TTL clock should be input on this pin.
2	BICK	I	Audio Serial Data Clock Pin
3	SDTI	I	Audio Serial Data Input Pin
4	LIRCK	I	L/R Clock Pin
5	PDI	I	Power-Down Mode Pin When at "1", the AK4384 is in the power-down mode and is held in reset. The AK4384 should always be reset upon power-up.
6	SMUTE	I	Soft Mute Pin in parallel mode "H": Enable, "L": Disable
7	ACKS	I	Chip Select Pin in serial mode "H": Enable, "L": Disable
8	CCLK	I	Auto Setting Mode Pin in parallel mode "H": Manual Setting Mode, "L": Auto Setting Mode
9	DIF0	I	Control Data Clock Pin in serial mode
10	AOUTR	O	Audio Data Interface Format Pin in parallel mode
11	AOUTL	O	Control Data Input Pin in serial mode
12	VCOM	O	Left Analog Output Pin "L": Serial control mode, "H": Parallel control mode (Internal pull-up pin)
13	VSS	-	Ground Pin
14	VDD	-	Power Supply Pin
15	DZFR	O	Left Data Zero Input Detect Pin
16	DZFL	O	Left Data Zero Input Detect Pin



■ AK4363VF-X (ASAHIKASEI)  
(Stereo CMOS D/A Converter and Phase Locked Loop)

Pin Layout

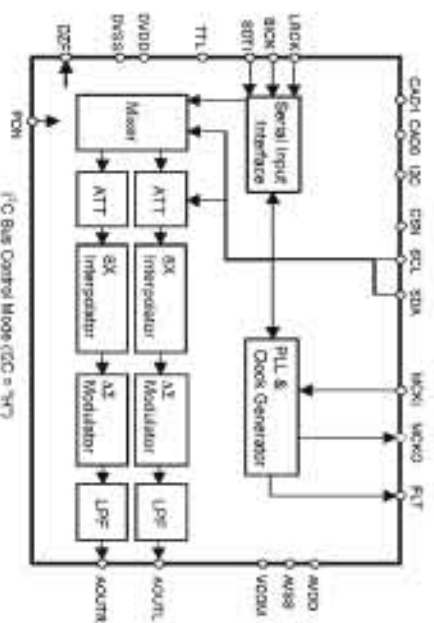
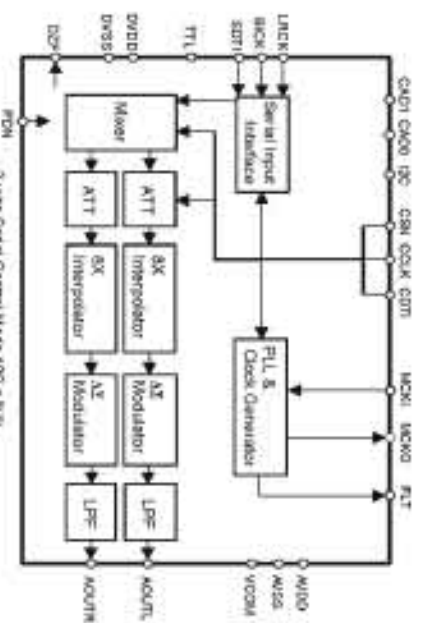


Pin/Function

No.	Pin Name	I/O	Description
1	MCKO	O	Master Clock Output Pin EXT = "0" : System clock is output from PLL circuit (PLL mode). EXT = "1" : Same frequency as MCKI is output (External mode).
2	NC	-	No Connect Nothing should be connected externally to this pin.
3	DVDD	-	Digital Power Supply Pin +2.7 ~ +6.0V
4	DVSS	-	Digital Ground Pin, 0V
5	MCKI	I	System Clock Input Pin EXT = "0" : 27MHz (PLL mode) EXT = "1" : Other frequency (External mode)
6	BCLK	I	Serial Data Clock Pin
7	SCLK	I	Serial Data Input Pin
8	LRCLK	I	Serial Input Channel Clock Pin
9	PDM	I	Power-Down Pin When "1", the circuit is in power-down mode. The AK4363 should always be reset upon power-up.
10	CSN	I	Chip Select Pin at 3-wire Serial control mode This pin should be connected to DVDD at I <sup>2</sup> C Bus control mode.
11	SCL	I	Control Clock Pin at I <sup>2</sup> C Bus control mode
12	SDA	I/O	Control Data Input/Output Pin at I <sup>2</sup> C Bus control mode
13	CDTI	I	Control Data Input Pin at 3-wire serial control mode
14	TTL	I	Test pin This pin should be connected to DVSS.
15	I2C	I	Digital Input Level Select Pin "1" : CMOS "0" : TTL
16	CAD0	I	Control Mode Select Pin "1" : 3-wire Serial "0" : I <sup>2</sup> C Bus
17	CAD1	I	Chip Address Select 0 Pin
18	AOUTR	O	Chip Address Select 1 Pin
19	AOUTL	O	Right Analog Output Pin
20	VCOM	O	Common Voltage Output Pin, AVDD/2 Used for averaging common voltage. Large external capacitor is used to reduce power supply noise.
21	AVSS	-	Analog Ground Pin
22	AVDD	-	Analog Power Supply Pin
23	FLT	O	Output Pin for Loop Filter of PLL Circuit This pin should be connected to AVSS with one resistor and one capacitor in series (See SYSTEM DESIGN <sup>1</sup> ).
24	DZF	O	Zero Input Detect Pin When SCLK follows a total 8192 LRCLK cycles with "0" input data or RSTN = "0", this pin goes to "1".

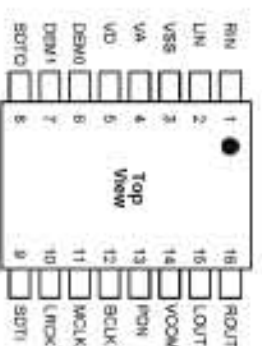
Note: No input pins should be left floating.

Block Diagram



■ AK4552VT-X (ASAHIKASEI)  
(Digital Audio A/D & D/A Converter)

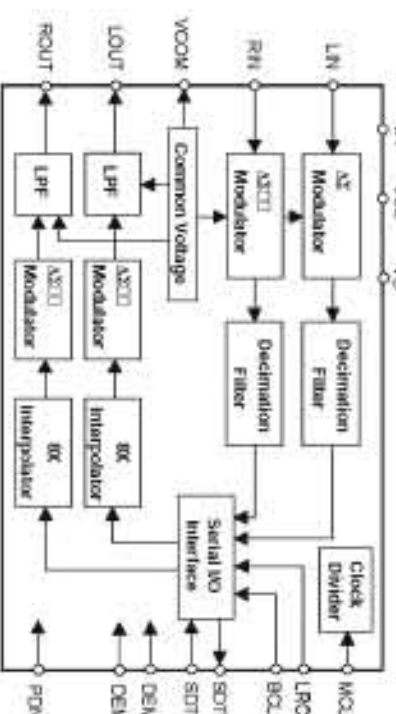
Pin Layout



Pin/Function

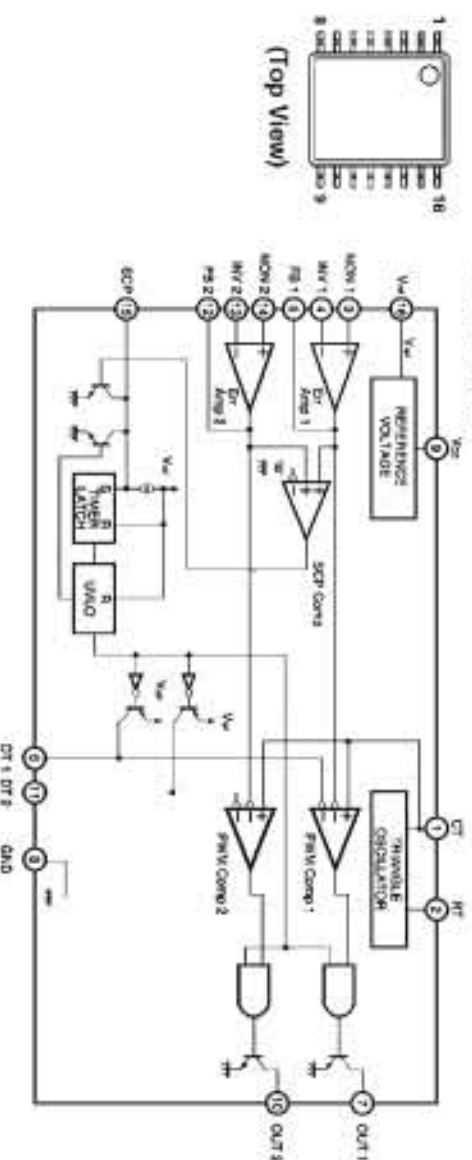
No.	Pin Name	I/O	Function
1	RIN	I	Right Analog Input Pin
2	LIN	I	Left Analog Input Pin
3	VSS	-	Ground Pin
4	VA	-	Analog Power Supply Pin
5	VD	-	Digital Power Supply Pin
6	DENM0	I	De-emphasis Control Pin
7	DENM1	I	De-emphasis Control Pin
8	SCLK	O	Auto Serial Data Output Pin
9	SCLK	I	Auto Serial Data Input Pin
10	LRCLK	I	Hybrid/Left Channel Clock Pin
11	BCLK	I	Hybrid/Right Channel Clock Pin
12	BCLK	I	Hybrid/Left Channel Clock Pin
13	PDM	I	Power-Down and Reset. "0" : Normal operation
14	VCOM	O	Common Voltage Output Pin, 0.45 x VA
15	LOUT	O	Left Analog Output Pin
16	ROUT	O	Right Analog Output Pin

Block Diagram



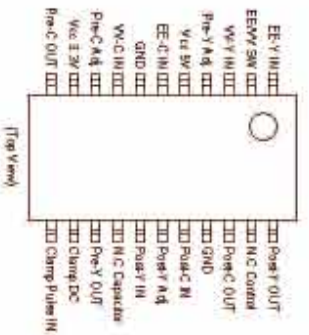
■ BA9743AFV-X (ROHM)  
(2-channel Switching Regulator Controller)

Block Diagram

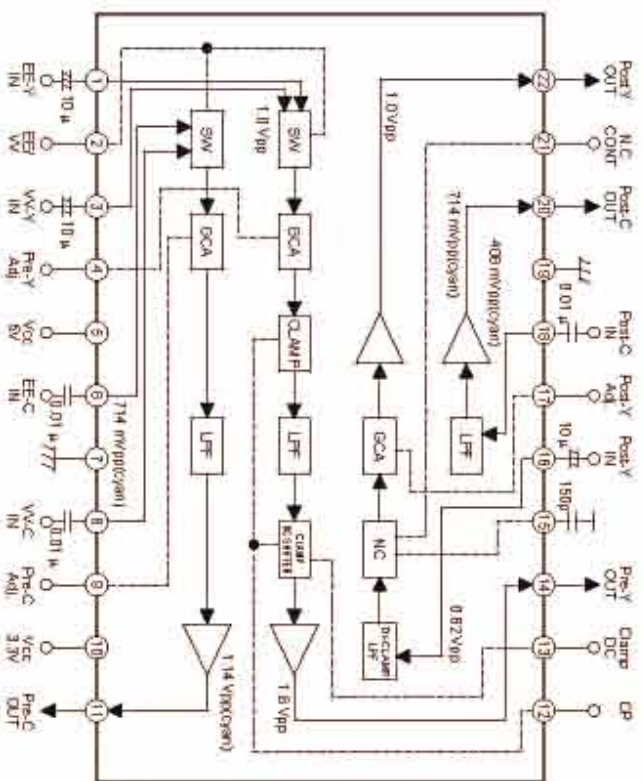


(Top View)

■ AN13300A-X [MATSUSHITA]  
[Video Signal I/O Interface for DSP]

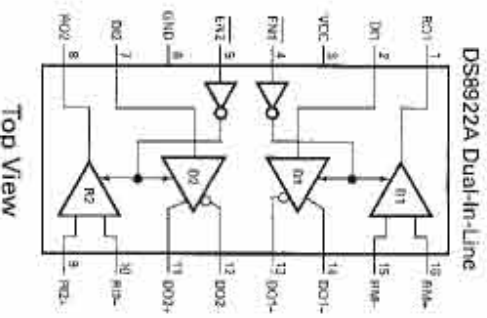


Block Diagram



■ DS8922M-X [NATIONAL SEMICONDUCTOR]  
[RS-422 Dual Differential Line Driver and Receiver Pairs]

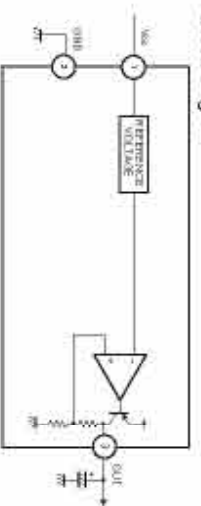
Connection Diagrams



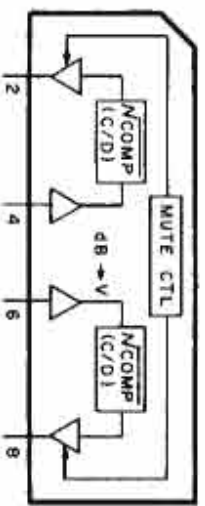
EN1	EN2	RO1	RO2	DO1	DO2
0	0	ACTIVE	ACTIVE	ACTIVE	ACTIVE
1	0	HI-Z	ACTIVE	HI-Z	ACTIVE
0	1	ACTIVE	HI-Z	ACTIVE	HI-Z
1	1	HI-Z	HI-Z	HI-Z	HI-Z

■ BA033FP-X [ROHM]  
[Low Saturation Voltage Type 3-pin Regulator (3.3V)]

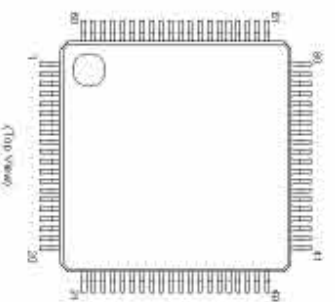
Block diagram



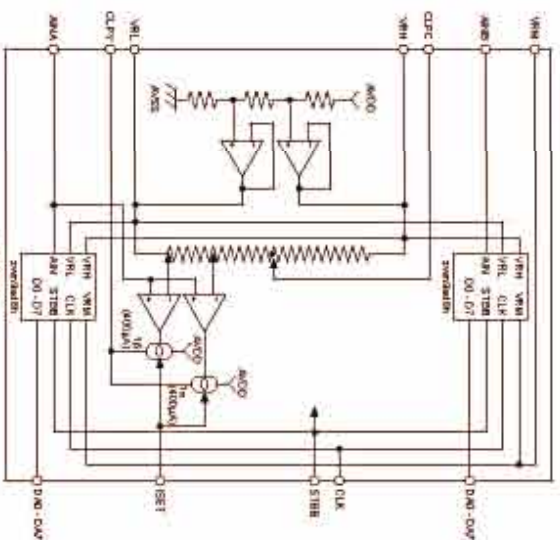
■ BA6138F-X [ROHM]  
[1/2 square-law compression amplifiers]



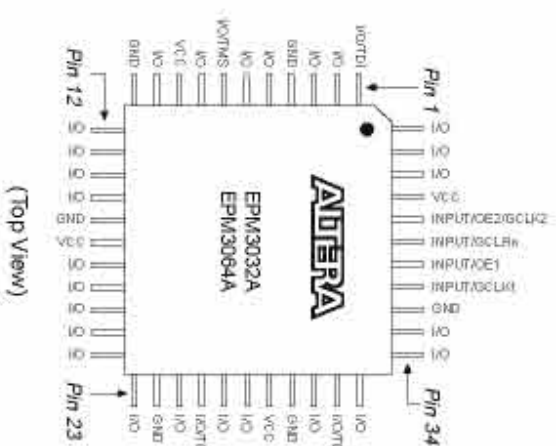
■ JCP8029 [SANYO]  
[8bit 2ch A/D Converter]



Block Diagram



■ EPM3064ATC44-10 [ALTERA]  
[Programmable Logic Device]



Terminal explanation

No.	Terminal Symbols	I/O	Terminal Explanation
1	TDI	I	WRITE FOR PLD
2	DATA_TR	I/O	Output data for analog (for RCA)
3	AODATA0	O	Output data for analog output H MUTE
4	GND	GND	Mute control for SYSCON
5	AO MUTE (H)	O	Write for PLD
6	SYS MUTE (H)	I	Mute control by MSD microcomputer
7	TMS	I	Mute control for audio output data
8	MSD MUTE (H)	I	
9	VCC	VCC	
10	AUDIN_MUTE (H)	I	
11	GND	GND	
12	AIDATA1	O	Input data for CH-3/4
13	AODATA1	O	Output data for CH-3/4
14	SDTI	O	Output data for audio XLR
15	DILRCK	O	LR clock generated from MCK. For 48K mode in recording
16	GND	GND	
17	VCC	VCC	
18	DIBCK	O	B clock generated from MCK. For 48K mode in recording
19	PLDMCK	O	Input MCK locked PLL
20	AUDMCK	O	Switch of MCK of locked or unlocked
21	OPDATA1	O	Input audio data from delay option (RCA)
22	OPDAT0	I	Input audio data from delay option (XLR)
23	AUD48K (H)	I	Selection for locked 48K mode
24	GND	GND	
25	ADPT DIR AUDIO	I	Control I/O for Net adapter (DIR)
26	TCK	I	Write for PLD
27	ADPT OE AUDIO	I	Control I/O for Net adapter (OE)
28	ADPT_PB (L)	I	Mode control for Net adapter L_PB/H_EE
29	VCC	VCC	
30	GND	GND	
31	AIN1_DAT0	O	Audio input data for CH-1/2
32	TDO	I	Write for PLD
33	SDTO	I	AD converter output
34	SEL	O	Output MCK for 48K mode (27MHz)
35	SYS_BCK	I	Audio system bit clock
36	GND	GND	
37	AU27M	I	Input 27MHz for PLL lock. For 48K mode in recording
38	PLD_CTL0	I	PLD control
39	SYS_LRCK	I	Audio LR clock
40	AMCK	I	Audio master clock
41	VCC	VCC	
42	AODATA0	I	Audio output data
43	PLD_CTL1	I	PLD control (RESERVE)
44	AUDIO_DAT_1	I	Input data from XLR option

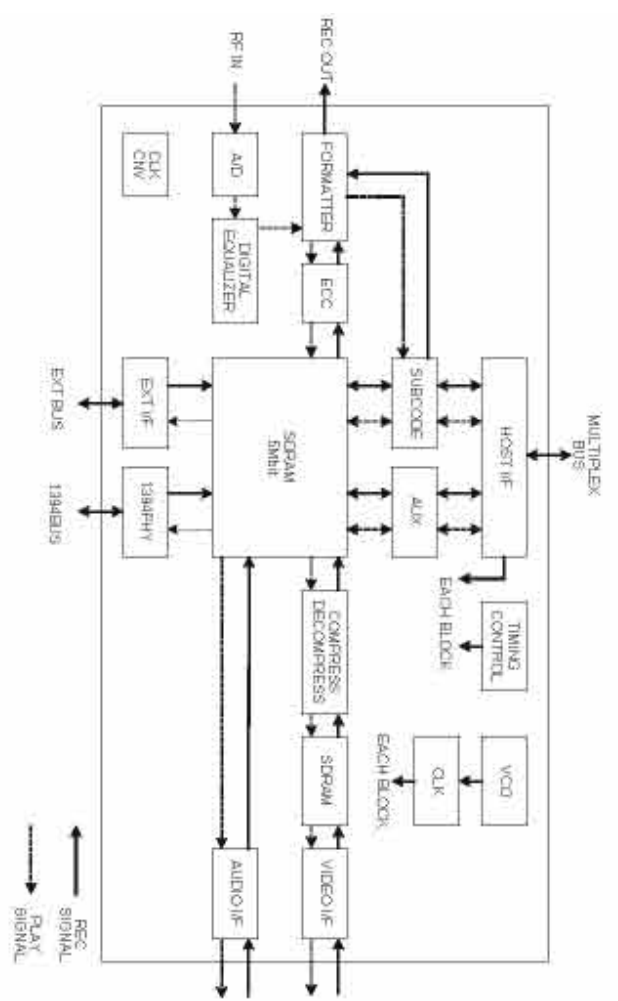


■ JCY0152 [JVC]  
[DVC LSI]

A	1	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	A	
B	2	85	160	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	144	143	142	141	140	B
C	3	86	161	228	227	226	225	224	223	222	221	220	219	218	217	216	215	214	213	212	211	210	209	C
D	4	87	162	229	288	287	286	285	284	283	282	281	280	279	278	277	276	275	274	273	272	271	270	D
E	5	88	163	230																				E
F	6	89	164	231																				F
G	7	90	165	232																				G
H	8	91	166	233																				H
J	9	92	167	234																				J
K	10	93	168	235																				K
L	11	94	169	236																				L
M	12	95	170	237																				M
N	13	96	171	238																				N
P	14	97	172	239																				P
R	15	98	173	240																				R
T	16	99	174	241																				T
U	17	100	175	242																				U
V	18	101	176	243																				V
W	19	102	177	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	W
Y	20	103	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	Y
AA	21	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	AA
AB	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	AB



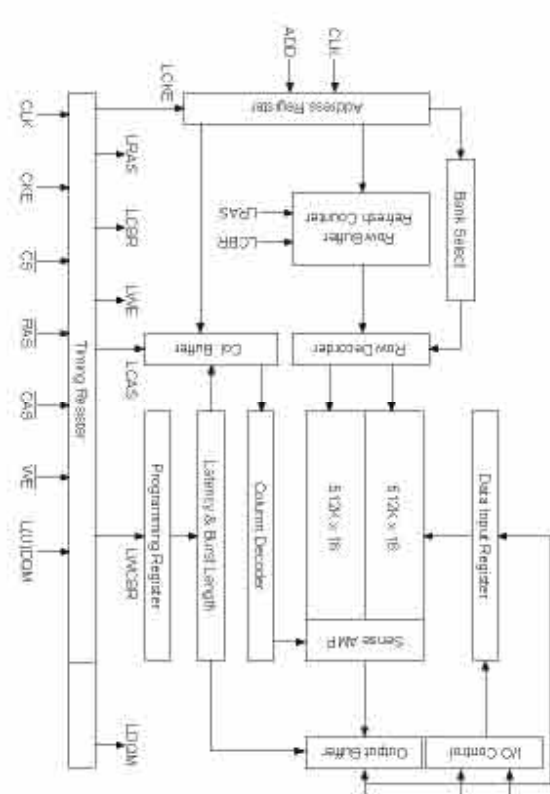
Block Diagram



■ K4S161622H-UC60 [SAMSUNG]  
[512K x 16bit x 2banks SDRAM]

VDD	1	50	VSS	51	0
DDQ	2	48	DO14	49	0
DO1	3	47	VSS0	46	0
VSS0	4	46	DO13	45	0
DO2	5	45	DO12	44	0
DO3	6	44	VDD0	43	0
VDD0	7	43	DO11	42	0
DO4	8	42	DO10	41	0
DO5	9	41	VSS0	40	0
DO6	10	40	DO9	39	0
DO7	11	39	DO8	38	0
VDD0	12	38	VDD0	37	0
DO8	13	37	N/C	36	0
DO9	14	36	DO7	35	0
DO10	15	35	DO6	34	0
DO11	16	34	DO5	33	0
DO12	17	33	DO4	32	0
DO13	18	32	DO3	31	0
DO14	19	31	DO2	30	0
VSS0	20	30	DO1	29	0
VDD0	21	29	VSS0	28	0
A1	22	28	A2	27	0
A2	23	27	A3	26	0
A3	24	26	A4	25	0
A4	25	25	VSS	24	0

Block Diagram



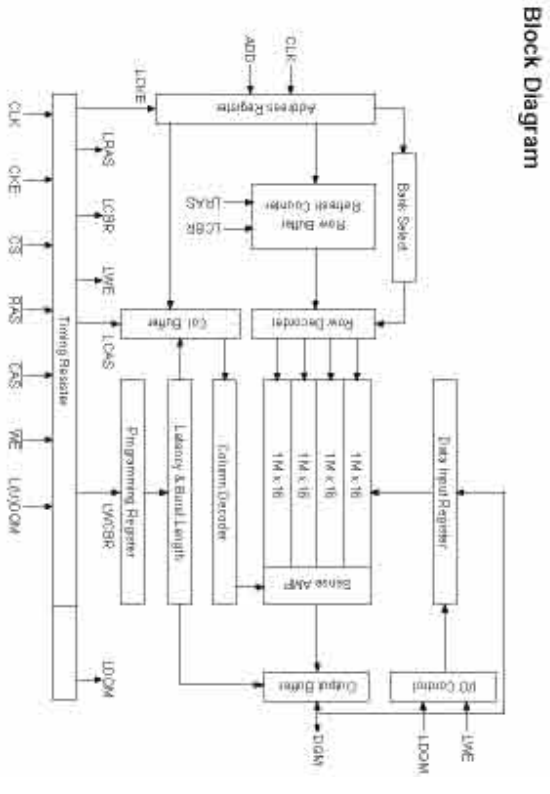
Pin Function

Pin	Name	Input Function
CLK	System Clock	Active on the positive going edge to sample all inputs
CS	Chip Select	Disables or enables device operation by masking all inputs except CLK, CKE and LDOEM
CKE	Clock Enable	Masks system clock to freeze operation from the next clock cycle. CKE should be enabled at least one cycle prior to new command. Disables input buffers for power down in standby.
A0 - A14	Address	Row column addresses are multiplexed on the same pins. Row address: RA0 - RA10, column address: CA0 - CA7
BA	Bank Select Address	Selects bank for read/write during column address latch time.
RAS	Row Address Strobe	Latches row addresses on the positive going edge of the CLK with RAS low. Enables row access & precharge.
CAS	Column Address Strobe	Latches column addresses on the positive going edge of the CLK with CAS low. Enables column access.
WE	Write Enable	Enables write operation and row precharge. Latches data in starting from CAS, WE active.
LDOEM	Data Input/Output Mask	Makes data output Hi-Z, Hi-Z after the clock and masks the output. Blocks data input when LDOEM active.
DO0 - 15	Data Input/Output	Data input/output are multiplexed on the same pins.
VDD/VSS0	Power Supply/Ground	Power and ground for the input buffers and the core logic.
VDD/VSS0	Data Output Power/Ground	Isolated power supply and ground for the output buffers to provide improved noise immunity.
N/C	No Connector/Reserved for Future Use	This pin is recommended to be left No Connection on the device.

■ K4S641632H-UC75 [SAMSUNG]  
[1M x 16bit x 4banks SDRAM]

VDD	1	54	VSS	55	0
DDQ	2	52	DO15	53	0
DO0	3	51	DO14	50	0
VSS0	4	50	VSS0	49	0
DO1	5	49	DO13	48	0
DO2	6	48	DO12	47	0
DO3	7	47	DO11	46	0
DO4	8	46	DO10	45	0
DO5	9	45	VSS0	44	0
DO6	10	44	DO9	43	0
DO7	11	43	DO8	42	0
VDD0	12	42	VDD0	41	0
DO8	13	41	DO7	40	0
DO9	14	40	DO6	39	0
DO10	15	39	DO5	38	0
DO11	16	38	DO4	37	0
DO12	17	37	DO3	36	0
DO13	18	36	DO2	35	0
DO14	19	35	DO1	34	0
DO15	20	34	DO0	33	0
VSS0	21	33	VSS0	32	0
A1	22	32	A2	31	0
A2	23	31	A3	30	0
A3	24	30	A4	29	0
A4	25	29	A5	28	0
A5	26	28	VSS	27	0

Block Diagram

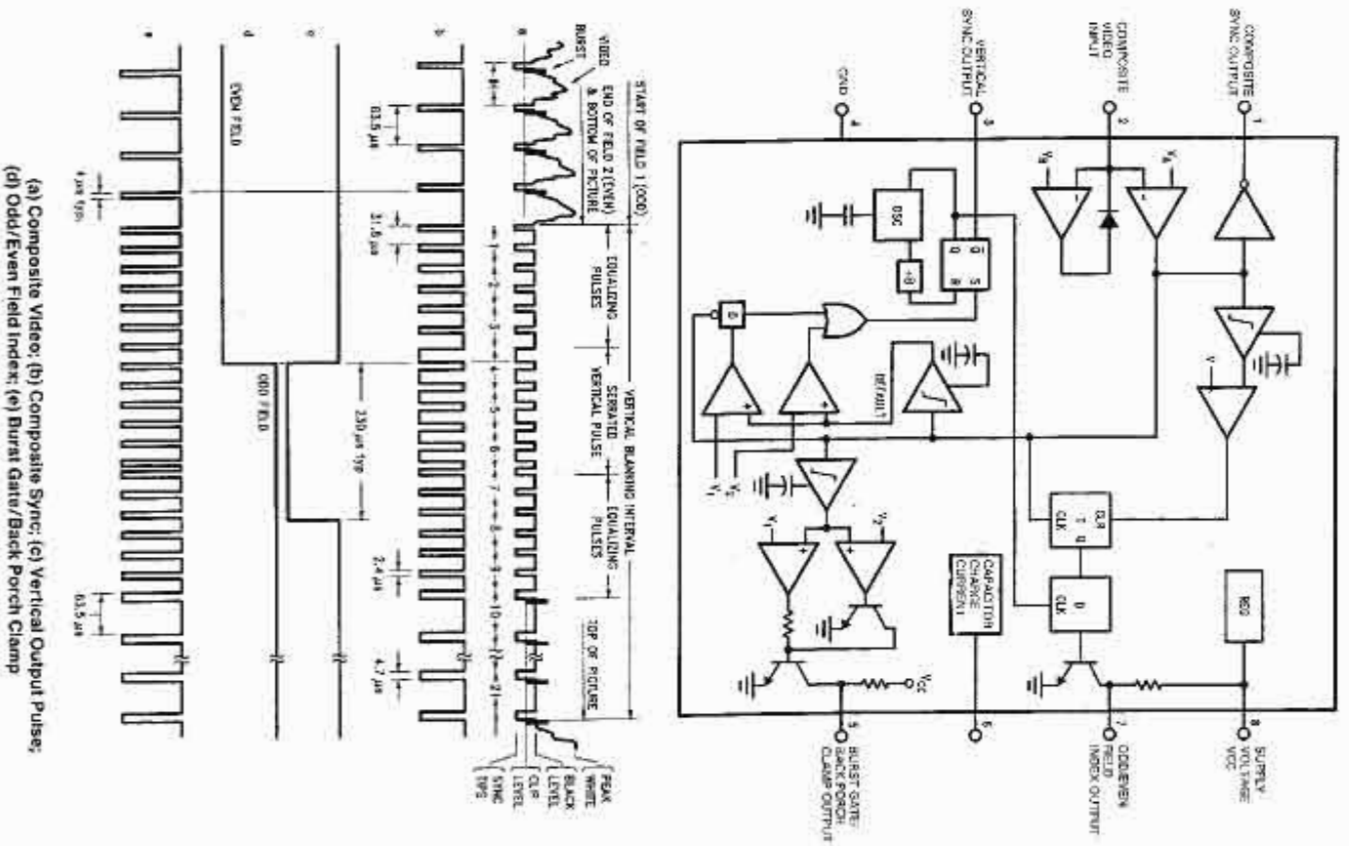


Pin Function

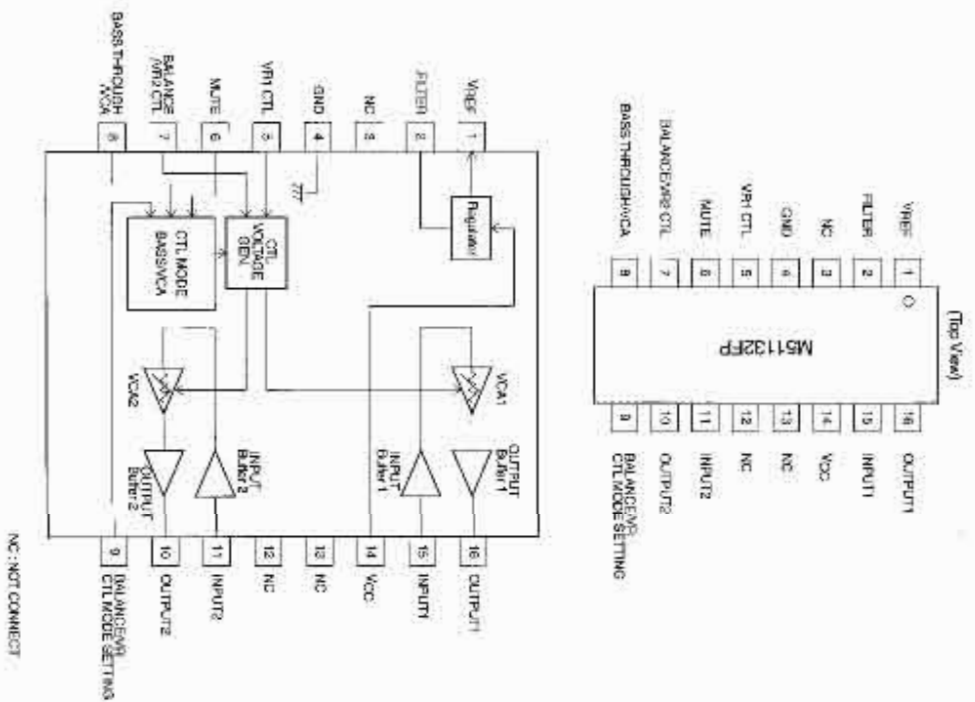
Pin	Name	Input Function
CLK	System Clock	Active on the positive going edge to sample all inputs.
CS	Chip Select	Disables or enables device operation by masking all inputs except CLK, CKE and LDOEM
CKE	Clock Enable	Masks system clock to freeze operation from the next clock cycle. CKE should be enabled at least one cycle prior to new command. Disables input buffers for power down in standby.
A0 - A11	Address	Row column addresses are multiplexed on the same pins. Row address: RA0 - RA11, column address: CA0 - CA7
BA0 - BA3	Bank Select Address	Selects bank for read/write during row address latch time. Enables row access & precharge.
RAS	Row Address Strobe	Latches row addresses on the positive going edge of the CLK with RAS low. Enables row access & precharge.
CAS	Column Address Strobe	Latches column addresses on the positive going edge of the CLK with CAS low. Enables column access.
WE	Write Enable	Enables write operation and row precharge. Latches data in starting from CAS, WE active.
LDOEM	Data Input/Output Mask	Makes data output Hi-Z, Hi-Z after the clock and masks the output. Blocks data input when LDOEM active.
DO0 - 15	Data Input/Output	Data input/output are multiplexed on the same pins.
VDD/VSS0	Power Supply/Ground	Power and ground for the input buffers and the core logic.
VDD/VSS0	Data Output Power/Ground	Isolated power supply and ground for the output buffers to provide improved noise immunity.
N/C	No Connector/Reserved for Future Use	This pin is recommended to be left No Connection on the device.



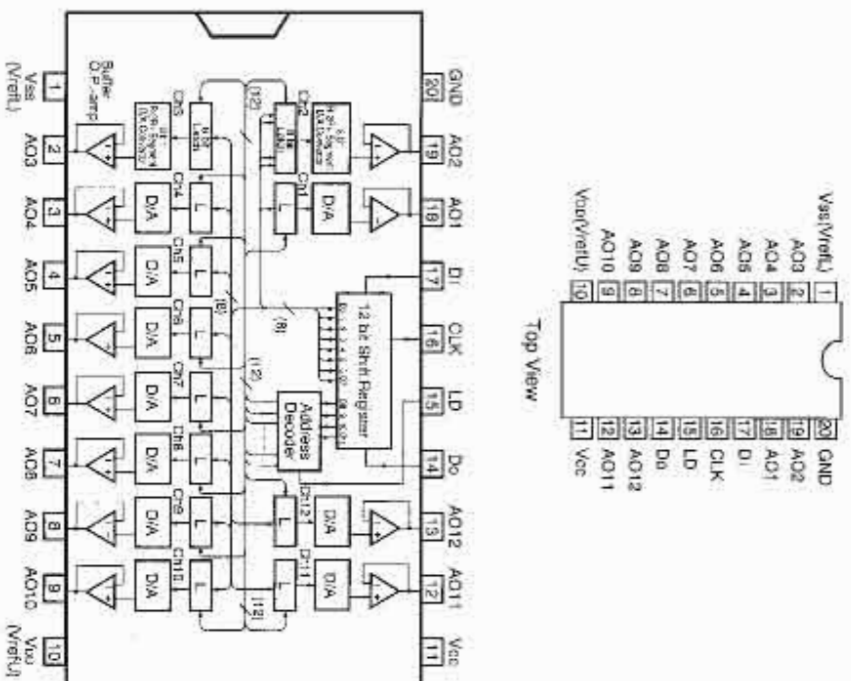
■ LM1818M-X [National Semiconductor]  
[Video Sync Separator]



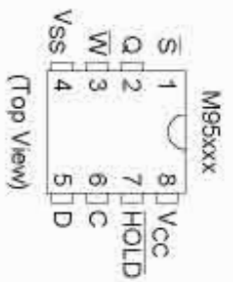
■ MS1132FP-X [MITSUBISHI]  
[2 Channel Electrical VR/Balance for Audio Level]



■ M62352GP-W [MITSUBISHI]  
[8 bit 12Channel D/A Converter with Buffer Op. Amp.]

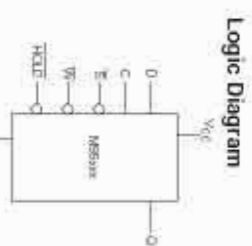


■ M95320-W/MN6-X [ST MICROELECTRONICS]  
[64/32 Kbit Serial SPI Bus EEPROM]

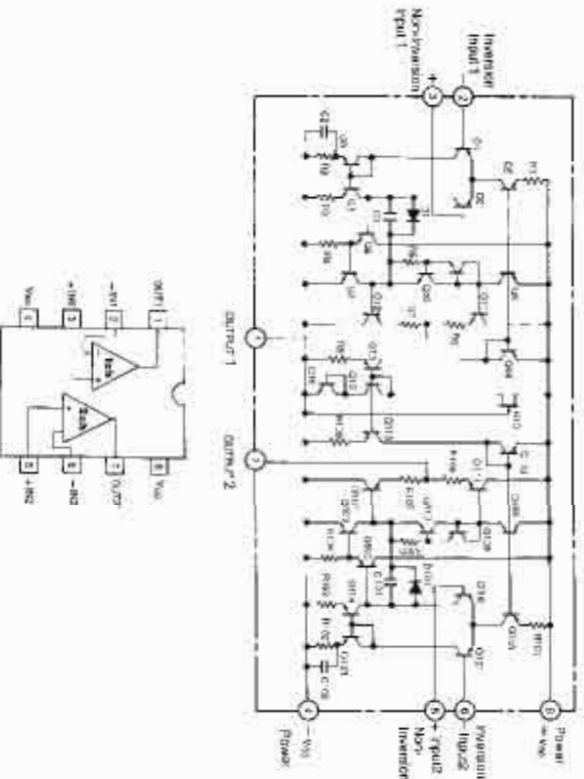


Signal Names

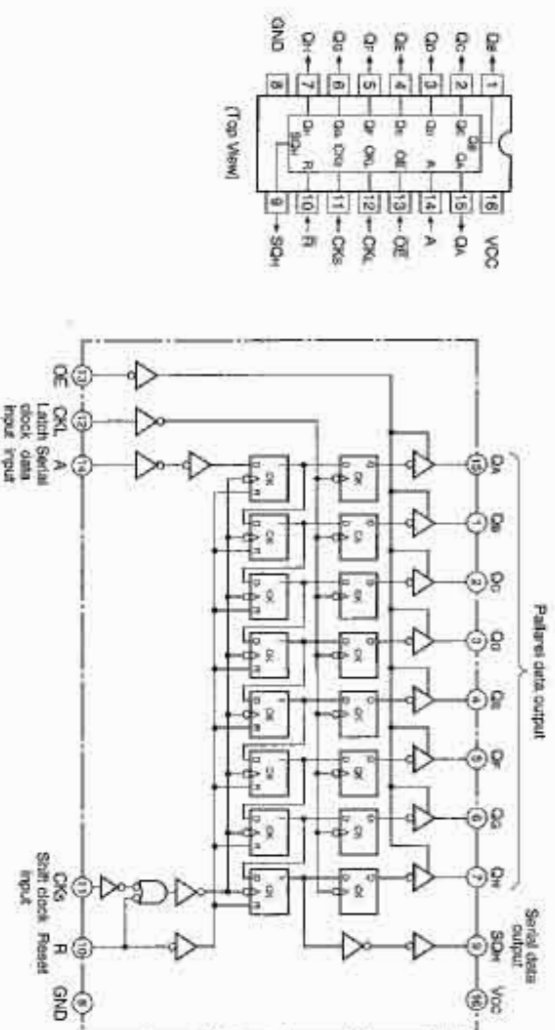
S	Serial Clock
Q	Serial Data Input
D	Serial Data Output
W	Chip Select
CS	Chip Select
W	Write Enable
HOLD	Hold
VCC	Supply Voltage
VSS	Ground



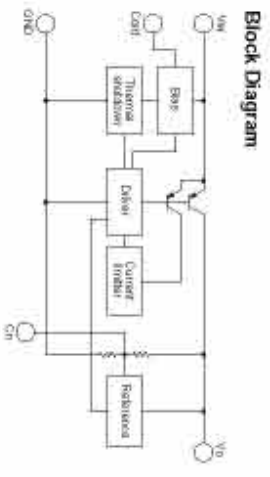
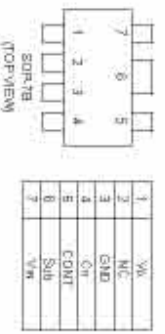
■ MS218AFP-X [MITSUBISHI]  
[Dual Op. Amp.]



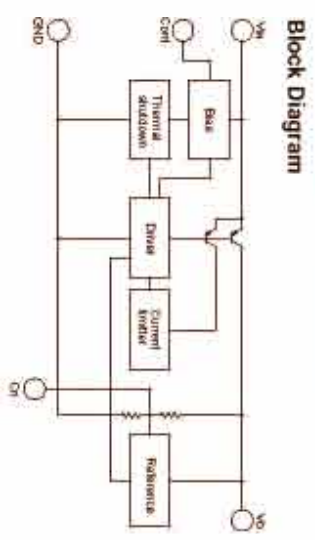
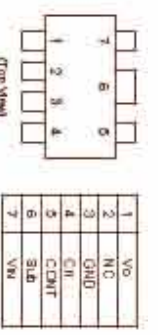
■ M66312-WE [MITSUBISHI]  
[8 Bit LED Driver with Shift Register and Latched 3-State Outputs]



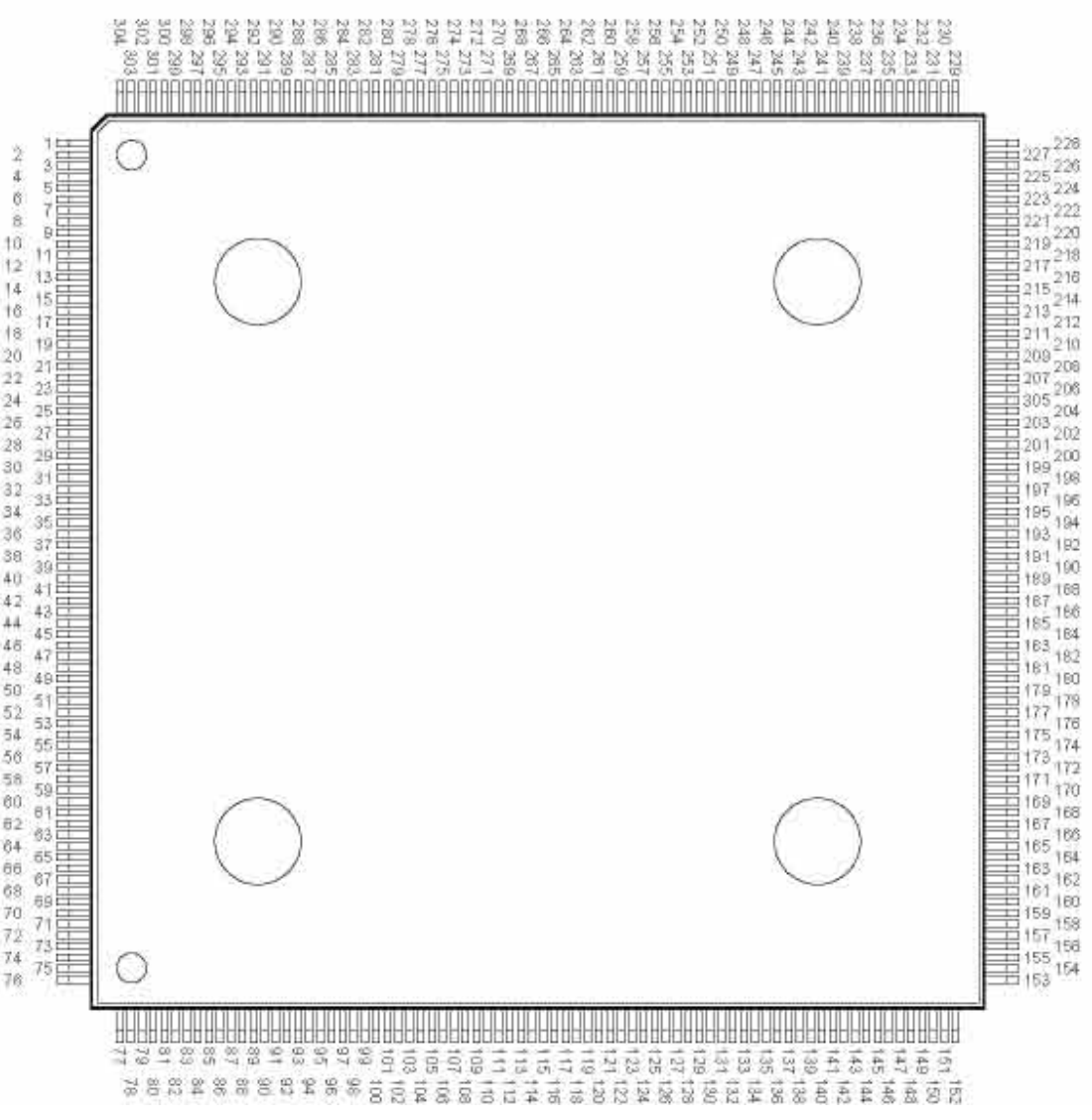
■ MM1561JF-X [MITSUMI]  
[500mA Regulator]



■ MM1563BF-X [MITSUMI]  
[500mA Regulator]

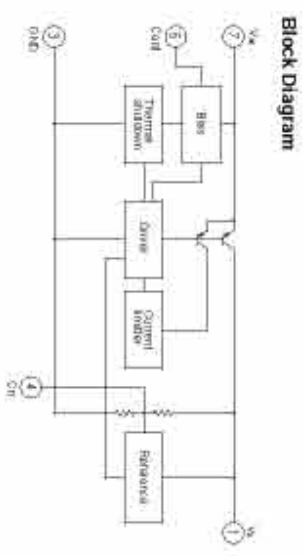
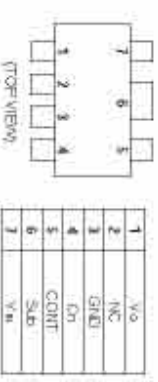


■ MB86394 [FUJITSU]  
[MPEG2 Audio/Video Codec]

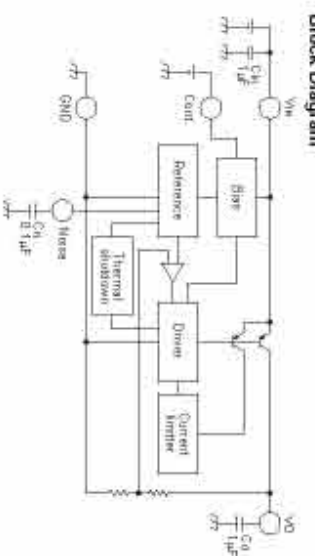
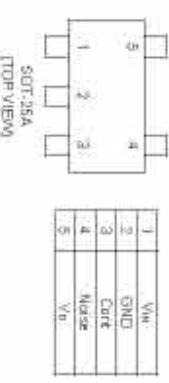


(Top View)

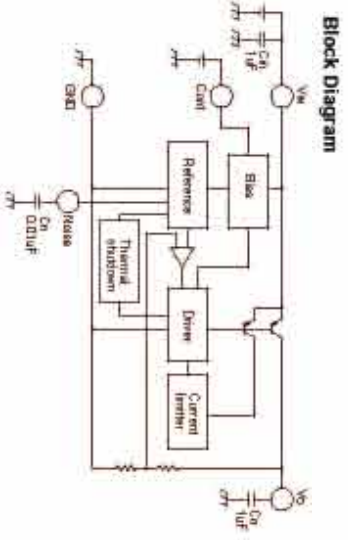
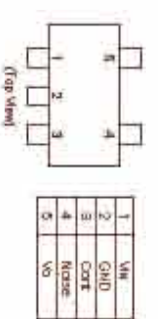
■ MM1565AF-X [MITSUMI]  
[500mA Regulator (5V)]



■ MM1571JN-X [MITSUMI]  
[1.8V Regulator]

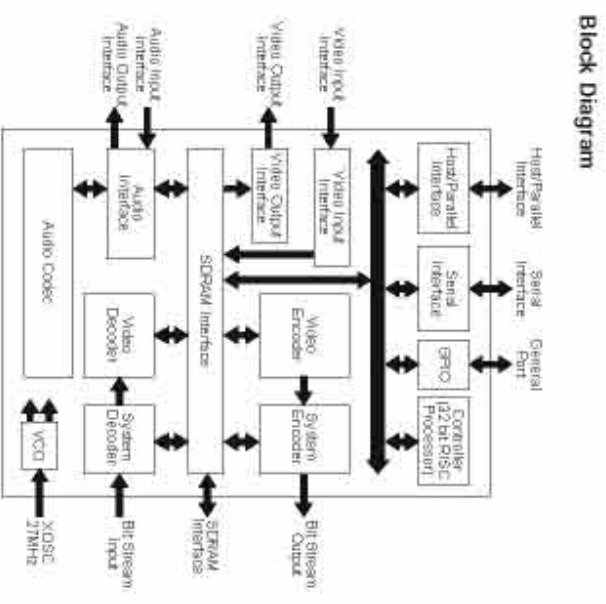


■ MM1575AN-X [MITSUMI]  
[150mA Regulator]



■ MM1572FN-X [MITSUMI]  
[Refer to MM1571JN-X.]

■ MM1572KN-X [MITSUMI]  
[Refer to MM1571JN-X.]

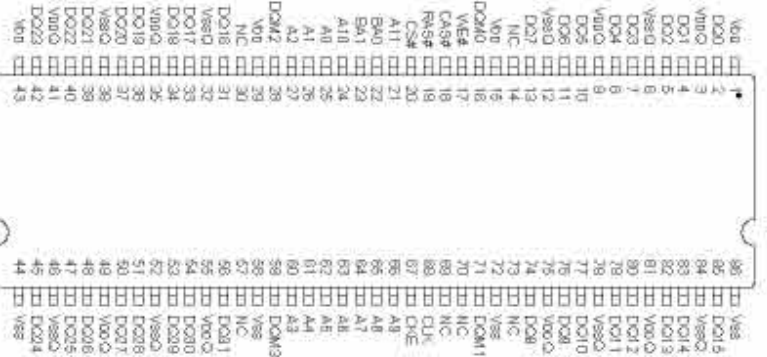


Block Diagram





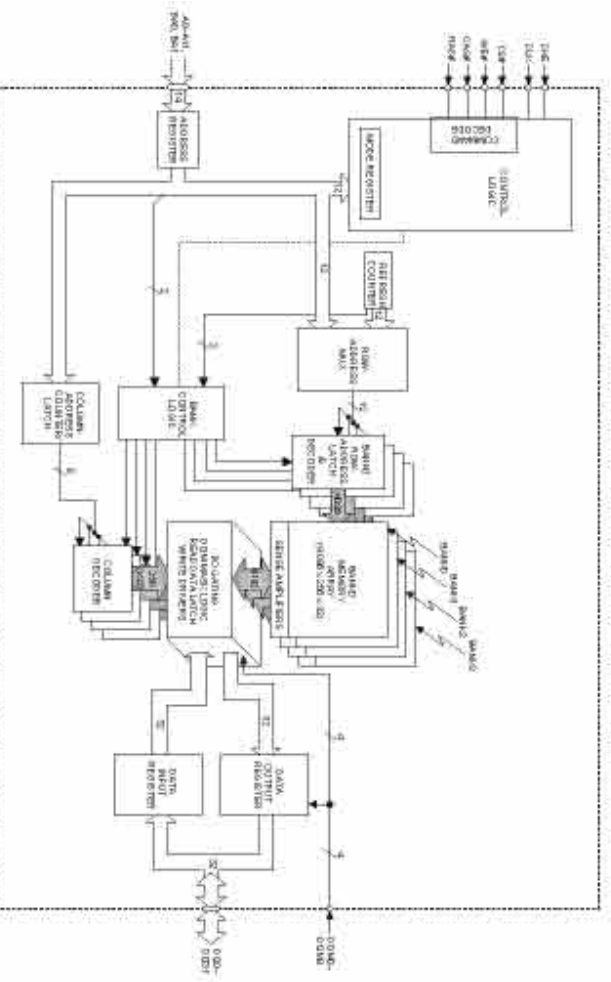
■ MT48LC4M32B2-X (MICRON)  
[1Meg x 32 x 4banks Synchronous DRAM]



(Top View)  
Note: The # symbol indicates signal is active LOW.

Configuration	4 Meg x 32 1Meg x 32 x 4 banks
Refresh Count	4K
Row Addressing	4K (A0-A11)
Bank Addressing	4 (BA0-BA1)
Column Addressing	256 (A0-A7)

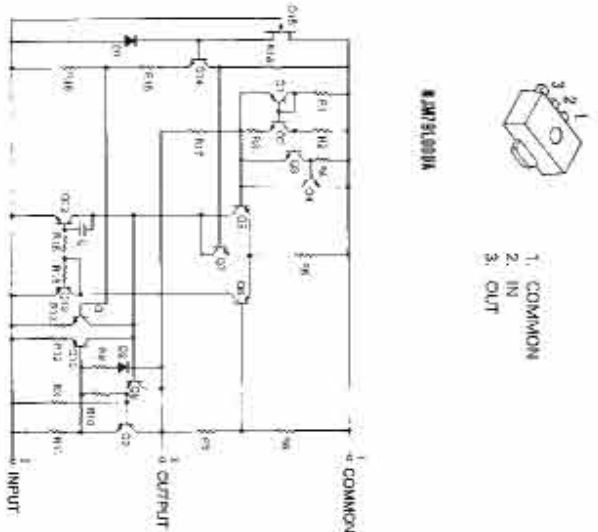
FUNCTIONAL BLOCK DIAGRAM  
4 Meg x 32 SDRAM



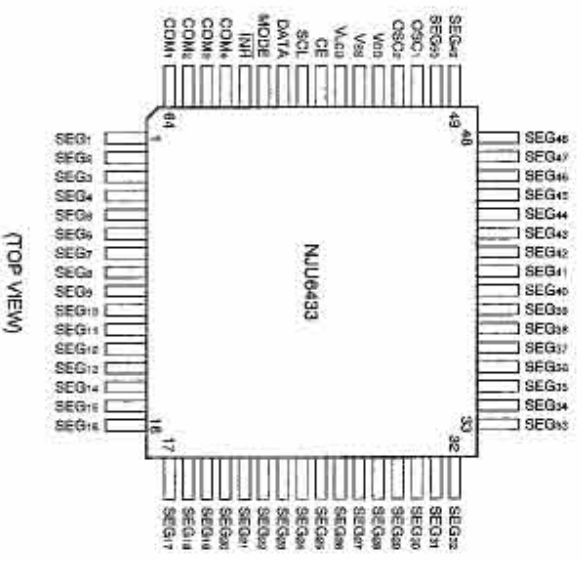
Pin Descriptions

PIN NUMBERS	SYMBOL	TYPE	DESCRIPTION
68	CLK	Input	Clock: CLK is driven by the system clock. All SDRAM input signals are sampled on the positive edge of CLK. CLK also increments the internal burst counter and controls the output registers.
67	CKE	Input	Clock Enable: CKE activates (HIGH) and deactivates (LOW) the CLK signal. Deactivating the clock provides PRECHARGE POWER-DOWN and SELF REFRESH operation (all banks idle). ACTIVE POWER-DOWN (row active in any bank) or CLOCK SUSPEND operation (burst/access in progress). CKE is synchronous except after the device enters power-down and self refresh modes, where CKE becomes asynchronous until after exiting the same mode. The input buffers, including CLK, are disabled during power-down and self refresh modes, providing low standby power. CKE may be tied HIGH.
20	CS#	Input	Chip Select: CS# enables (registered LOW) and disables (registered HIGH) the command decoder. All commands are masked when CS# is registered HIGH. CS# provides for external bank selection on systems with multiple banks. CS# is considered part of the command code.
17, 18, 19	WE#, CAS#, RAS#	Input	Command Inputs: WE#, CAS#, and RAS# (along with CS#) define the command being entered.
16, 71, 26, 59	DOM0-DOM3	Input	Input/Output Mask: DOM is sampled HIGH and is an input mask signal for write accesses and an output enable signal for read accesses. Input data is masked during a WRITE cycle. The output buffers are placed in a High-Z state (two-clock latency) during a READ cycle. DOM0 corresponds to DQ0-DQ7, DOM1 corresponds to DQ8-DQ15, DOM2 corresponds to DQ16-DQ23 and DOM3 corresponds to DQ24-DQ31. DOM0-DOM3 are considered same state when referenced as DOM.
22, 23	BA0, BA1	Input	Bank Address Input(s): BA0 and BA1 define to which bank the ACTIVE, READ, WRITE, or PRECHARGE command is being applied.
25-27, 60-66, 24, 21	A0-A11	Input	Address Inputs: A0-A11 are sampled during the ACTIVE command (row-address A0-A10) and READWRITE command (column-address A0-A7) with A10 defining auto precharge) to select one location out of the memory array in the respective bank. A10 is sampled during a PRECHARGE command to determine if all banks are to be precharged (A10 [HIGH]) or bank selected by BA0, BA1 (LOW). The address inputs also provide the op-code during a LOAD MODE REGISTER command.
2, 4, 5, 7, 8, 10, 11, 13, 74, 76, 77, 79, 80, 82, 83, 85, 31, 33, 34, 36, 37, 39, 40, 42, 45, 47, 48, 50, 51, 53, 54, 56	DQ0-DQ31	Input/Output	Data I/Os: Data bus.
14, 30, 57, 69, 70, 73	NC	-	No Connect: These pins should be left unconnected. Pin 70 is reserved for SSTL reference voltage supply.
3, 9, 35, 41, 49, 55, 75, 81	V <sub>CCQ</sub>	Supply	DQ Power Supply: Isolated on the die for improved noise immunity.
6, 12, 32, 38, 46, 52, 78, 84	V <sub>SSQ</sub>	Supply	DQ Ground: Provide isolated ground to DQs for improved noise immunity.
1, 15, 29, 43	V <sub>DD</sub>	Supply	Power Supply: +3.3V ±0.3V.
44, 58, 72, 86	V <sub>SS</sub>	Supply	Ground

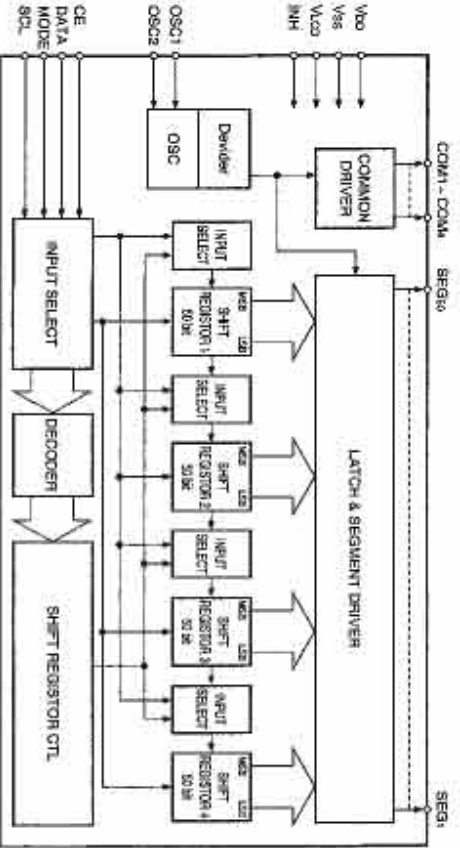
■ NJM79L05UA-X [JRC]  
[3-Terminal Negative Voltage Regulator (-5V)]



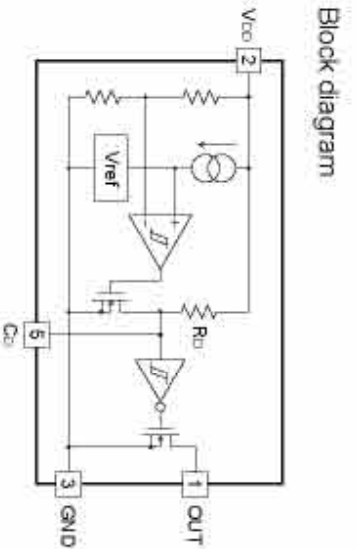
■ NJU6433FB2 [JRCI]  
[1/4 Duty LCD Driver]



No.	Symbol	Function
1-10	SEG1-SEG10	Segment output for LCD driver
51	OSC1	OSC terminal
52	OSC2	OSC terminal
53	VDD	GND
54	VSS	GND
55	VLCD	Power source for LCD drive
56	CE	H level : Data input Drop-down edge : Data latch L level : Disable
57	SCL	Clock input for serial data transceiver.
58	DATA	Serial data input.
59	MODE	H level : Mode setting L level : Data input for LCD display
60	INH	L level : LCD is not display H level : LCD is display
61-64	COM4-COM1	Common output for LCD drive.

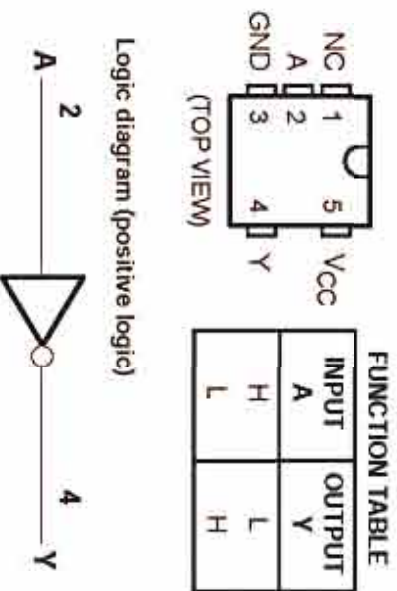


■ RNS5VD26AA-X [RICHIO]  
[Voltage detector]

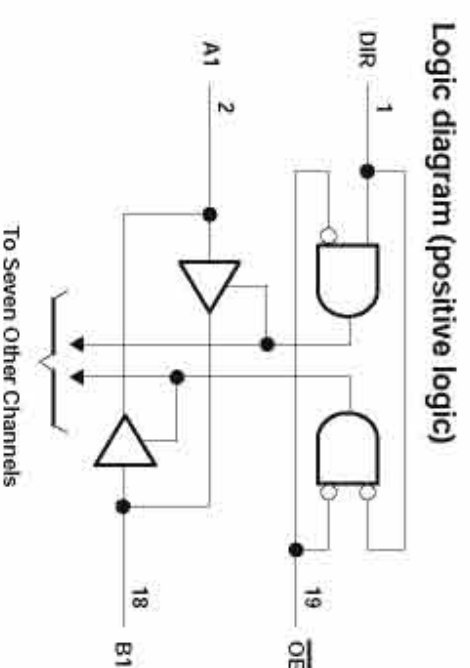
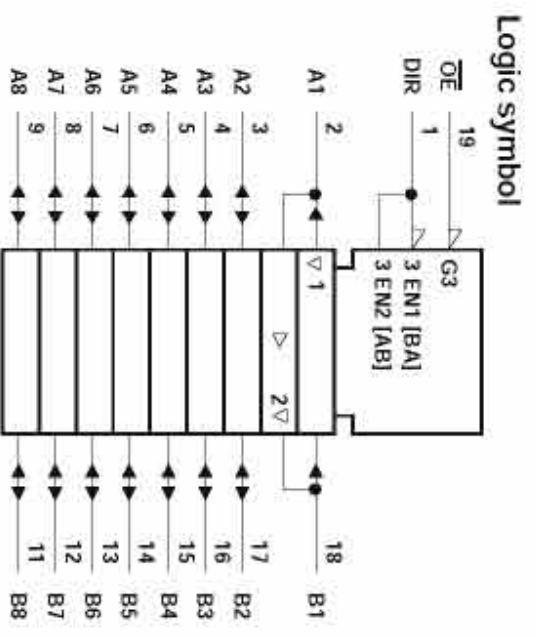
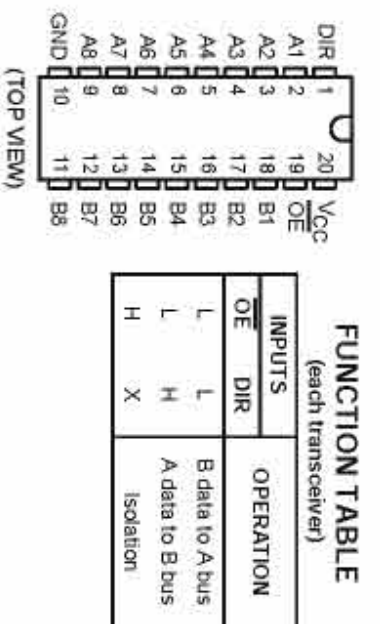


Pin Number	Pin Name	Pin Description
1	OUT	Output terminal
2	VDD	Power supply terminal
3	GND	Ground terminal
4	NC	Not connect
5	Cd	External capacitor connecting terminal for delay

■ SN74AHC1G04K-X [TEXAS INSTRUMENTS]  
[Single Inverter Gate]

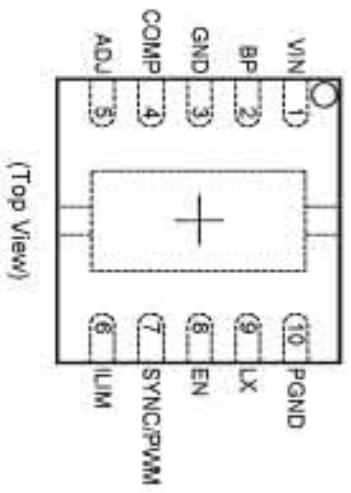


■ SN74AHC245PWR-X [TEXAS INSTRUMENTS]  
[Octal Bus Transceivers with 3-State Outputs]

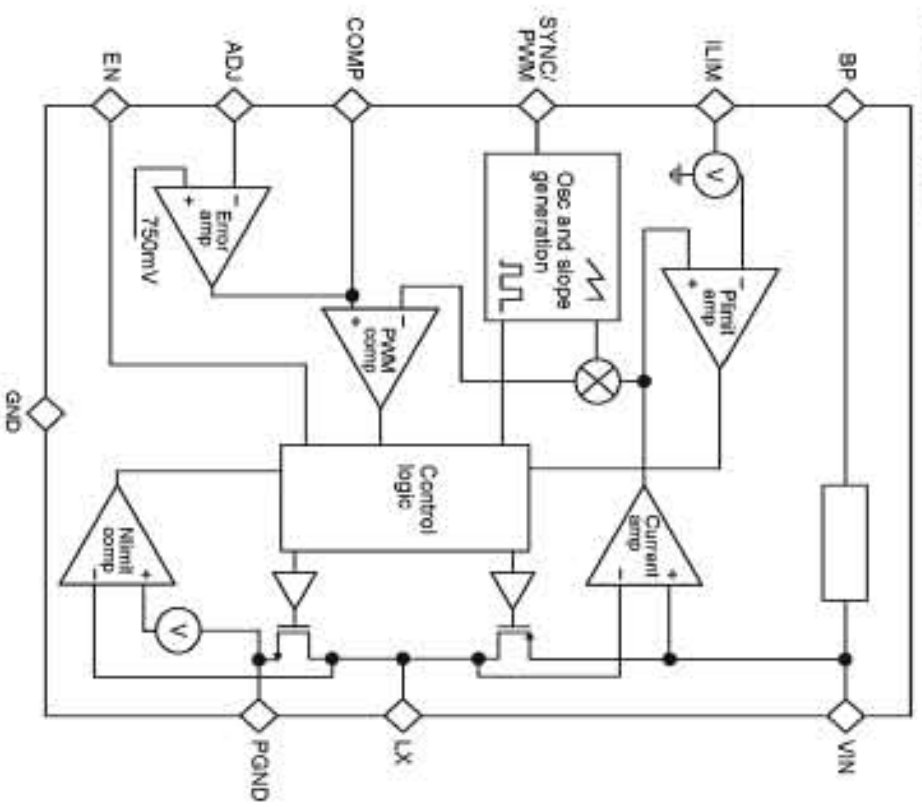




■ SC192 (SEMITECH)  
[2.7V to 5.5V Input Synchronous Buck Converter]

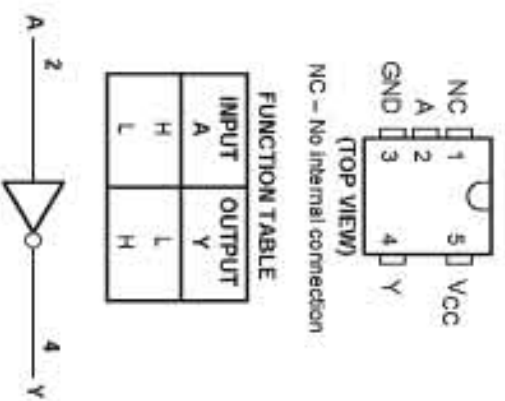


Block Diagram

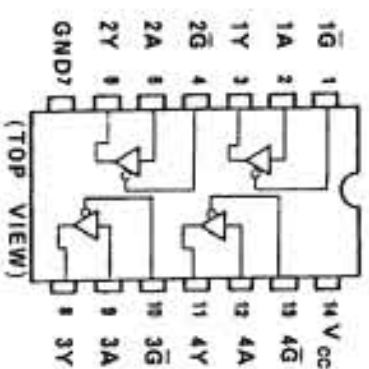


Pin No.	Pin Name	Pin Function
1	VIN	Input power supply voltage; this input goes directly to the internal MOSFET switches.
2	BP	Bypass capacitor pin; an external capacitor combined with an internal resistor provides a filtered supply voltage for the internal control circuitry. Connect a 0.1 $\mu$ F capacitor from BP to ground.
3	GND	Analog ground.
4	COMP	Compensation pin for the error amplifier.
5	ADJ	Output adjust pin; connect to resistor divider to set the output voltage.
6	LIM	Digital current limit select input. Connect LIM to GND for 0.5 A current; connect LIM to VIN for 1.2 A current limit.
7	SYNC/PWM	Oscillator synchronization input. Tie to VIN for forced PWM mode, GND to enable power save mode, or an external clock signal for frequency synchronization.
8	EN	Enable digital input; a high input enables the SC192 a low disables the device and reduces quiescent current to 0.1 $\mu$ A. In shutdown, LX becomes high impedance.
9	LX	Inductor connection to the switching FETs.
10	PGND	Power Ground.

■ SN74AHC1G04K-X (TEXAS INSTRUMENTS)  
(Single Inverter Gate)



■ SN74AHC125PW-X (TEXAS INSTRUMENTS)  
(Quad Bus Buffer Gates With 3-State Outputs)

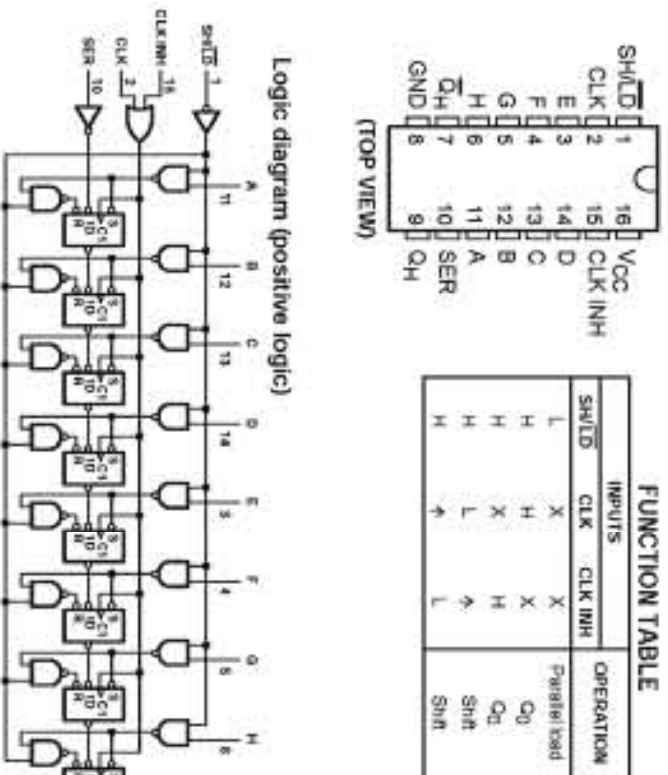


TRUE Table

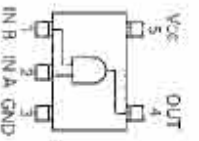
INPUTS	OUTPUTS
G	Y
A	Z
X	L
L	H

X : Don't Care  
Z : High Impedance

■ SN74LV165APW-X (TEXAS INSTRUMENTS)  
(Parallel-load 8-Bit Shift Registers)



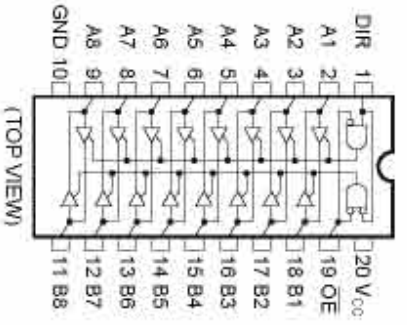
TC7SH08FU-X (TOSHIBA)  
[2 Input Single AND Gate]



Truth Table

A	B	OUT
L	L	L
L	H	L
H	L	L
H	H	H

SN74LVC245APW-X (TEXAS INSTRUMENTS)  
[Octal Bus Transceiver with 3-State Outputs]

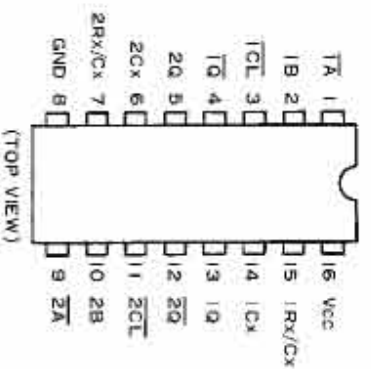


Function Table

Inputs	DIR	Operation
L	L	B data to A bus
L	H	A data to B bus
H	X	Isolation

H : High level  
L : Low level  
X : Immaterial

TC7AVHC123AFT-X (TOSHIBA)  
[Dual Retriggerable Monostable Multivibrators]

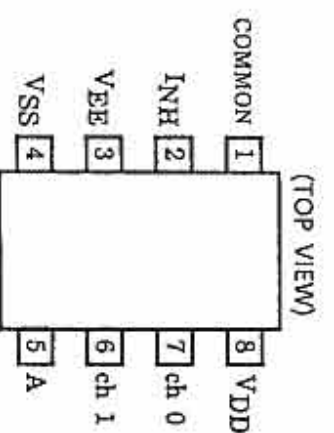


TRUE Table

INPUTS	OUTPUTS	NOTE
A	B	OUTPUT ENABLE
L	L	INHIBIT
H	X	INHIBIT
L	H	OUTPUT ENABLE
H	H	OUTPUT ENABLE

X: DON'T CARE

TC4W53FU-X (TOSHIBA)  
[2-Channel Multiplexer]



Truth table

CONTROL C	IMPEDANCE BETWEEN IN-OUT *
H	0.5~5 × 10 <sup>9</sup> Ω
L	>10 <sup>9</sup> Ω

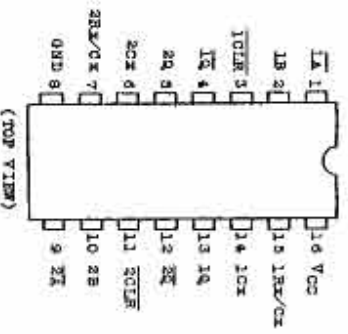
\* Don't Care

Truth table

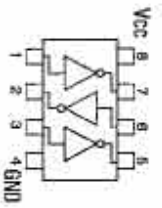
CONTROL INPUT	ON CHANNEL
INH	A
L	ch 0
L	ch 1
H	NONE

\* Don't Care

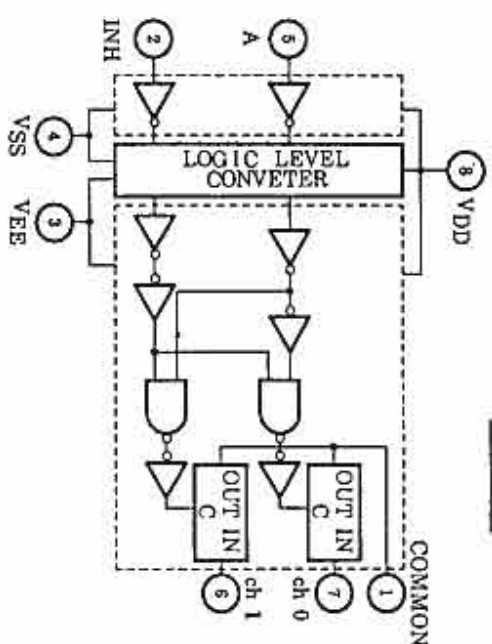
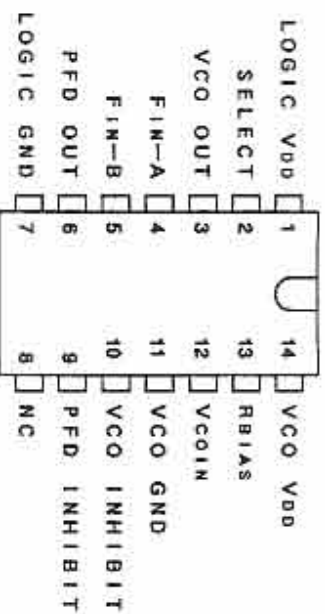
TC74VHC221AFT-X (TOSHIBA)  
[Dual Monostable Multivibrators  
(With Schmitt Trigger Input)]



TC7W04FU-X (TOSHIBA)  
[Triple Inverter Gate]



TLC2932PW-X (TEXAS INSTRUMENTS)  
[PLL]



True Table

INPUTS	OUTPUTS	NOTE
A	B	OUTPUT ENABLE
L	L	INHIBIT
H	X	INHIBIT
L	H	OUTPUT ENABLE
H	H	OUTPUT ENABLE

X : DON'T CARE



**JVC®**

**JVC®**

DVD RECORDER

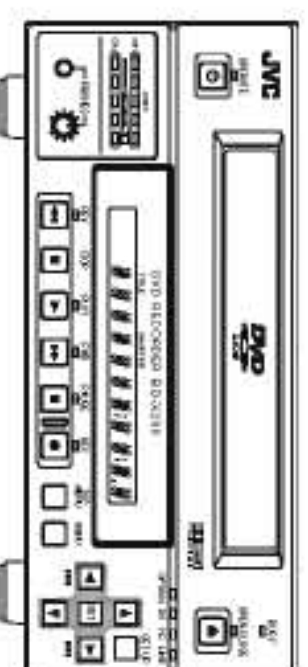
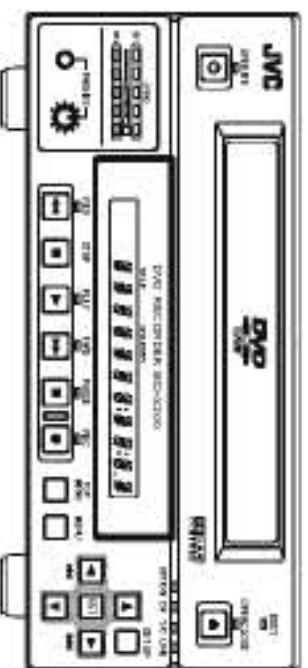
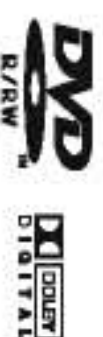
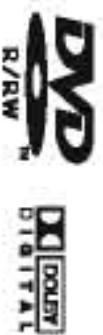
DVD RECORDER  
DVD-RECORDER  
ENREGISTREUR DE DVD  
GRABADORA DE DVD  
MASTERIZZATORE DVD

**BD-X200U**

INSTRUCTIONS

**BD-X200E**

INSTRUCTIONS  
BEDIENUNGSANLEITUNG  
MANUEL D'INSTRUCTIONS  
INSTRUCCIONES  
ISTRUZIONI



Thank you for purchasing this JVC product. Before operating this unit, please read the instructions carefully to ensure the best possible performance.

**For Customer Use :**

Error below the Serial No. which is located on the bottom of the unit.

Retain this information for future reference.

Model No. BD-X200U

Serial No.

Thank you for purchasing this JVC product. Before operating this unit, please read the instructions carefully to ensure the best possible performance.

Italiano

Español

Français

Deutsch

English



## IMPORTANT SAFEGUARDS

1. Read all of these instructions.
2. Save these instructions for later use.
3. All warnings on the product and in the operating instructions should be adhered to.
4. Unplug this appliance system from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
5. Do not use attachments not recommended by the appliance manufacturer as they may cause hazards.
6. Do not use this appliance near water - for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.
7. Do not place this appliance on an unstable cart, stand, or table. The appliance may fall, causing serious injury to a child or adult, and serious damage to the appliance.  
Use only with a cart or stand recommended by the manufacturer, or sold with the appliance. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
8. Slots and openings in the cabinet and the back or bottom are provided for ventilation, and to insure reliable operation of the appliance and to protect it from overheating; these openings must not be blocked or covered. The appliance should never be placed near or over a radiator or heat register. This appliance should not be placed in a built-in installation such as a bookcase unless proper ventilation is provided.
9. This appliance should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company. For appliance designed to operate from battery power, refer to the operating instructions.
10. This appliance system is equipped with a 3-wire grounding type plug (a plug having a third (grounding) pin). This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding plug.
11. For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
12. Do not allow anything to rest on the power cord. Do not locate this appliance where the cord will be abused by persons walking on it.
13. Follow all warnings and instructions marked on the appliance.
14. Do not overload wall outlets and extension cords as this can result in fire or electric shock.
15. Never push objects of any kind into this appliance through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the appliance.
16. Do not attempt to service this appliance yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
17. Unplug this appliance from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - a. When the power cord or plug is damaged or frayed.
  - b. If liquid has been spilled into the appliance.
  - c. If the appliance has been exposed to rain or water.
  - d. If the appliance does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the appliance to normal operation.
  - e. If the appliance has been dropped or the cabinet has been damaged.
  - f. When the appliance exhibits a distinct change in performance - this indicates a need for service.
18. When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
19. Upon completion of any service or repairs to this appliance, ask the service technician to perform routine safety checks to determine that the appliance is in safe operating condition.



## Supplement

This apparatus is designed for rack mounting or is used close to other apparatus.

In order to keep the best performance and furthermore for electromagnetic compatibility we recommend to use cables not exceeding the following lengths:

Port	Cable	Length
Y/C	Coaxial cable	10 meters
VIDEO LINE	Coaxial cable	10 meters
AUDIO LINE	Shielded cable	10 meters
REMOTE (9P)	Shielded Twist Pair cable	5 meters
DV	Shielded Twist Pair cable	4 meters
PHONES	Shielded Twist Pair cable	5 meters
MIC	Shielded Twist Pair cable	5 meters
LAN	Shielded Twist Pair cable	10 meters
USB	Shielded Twist Pair cable	5 meters
DC 19V	Shielded cable	1.2 meters

The inrush current of this apparatus is 19 amperes.

### Caution:

- Where there are strong electromagnetic waves or magnetism, for example near a radio or TV transmitter, transformer, motor, etc., the picture and sound may be disturbed. In such a case, please keep the apparatus away from the sources of the disturbance.

## Safety Precautions

**CAUTION**

**RISK OF ELECTRIC SHOCK  
DO NOT OPEN**

**CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER OR BACK. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICE TO QUALIFIED SERVICE PERSONNEL.**

The lightning bolt with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of unshielded hazardous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions provided within the literature accompanying the appliance.

**ATTENTION**

**RISQUE D'ÉLECTROCUTION  
NE PAS OUVRIR**

**ATTENTION POUR ÉVITER TOUT RISQUE D'ÉLECTROCUTION, NE PAS OUVRIR LE BOÎTER. AUCUNE PIÈCE SERVICEABLE N'EST À RÉPARER PAR L'UTILISATEUR. SE RÉFÉRER À UN AGENT QUALIFIÉ EN CAS DE PROBLÈME.**

Le symbole de foudre à tête de flèche, à l'intérieur d'un triangle équilatéral est destiné à avertir l'utilisateur sur la présence d'une "tension dangereuse" non isolée dans le boîtier du produit. Cette tension est suffisante pour provoquer l'électrocution de personnes.

Le point d'exclamation à l'intérieur d'un triangle équilatéral est destiné à avertir l'utilisateur sur la présence d'opérations d'entretien importantes ou sur des précautions importantes de traitement dans le manuel d'instructions.

\*Ces symboles ne sont utilisés qu'aux États-Unis.

**WARNING:**  
**TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**  
This unit should be used with 120 V AC only.  
**CAUTION:**  
To prevent electric shocks and fire hazards, **DO NOT use any other power source.**

**Note:**  
The rating plate (serial number plate) is on the bottom of the unit.

**INFORMATION**  
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**CAUTION**  
CHANGES OR MODIFICATIONS NOT APPROVED BY JVC COULD VOID USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

**AVERTISSEMENT:**  
**POUR ÉVITER LES RISQUES D'INCENDIE OU D'ÉLECTROCUTION, NE PAS EXPOSER L'APPAREIL À L'HUMIDITÉ OU À LA PLUIE.**  
Ce magnétoscope ne doit être utilisé que sur du courant alternatif en 120V.  
**ATTENTION:**  
Afin d'éviter tout risque d'incendie ou d'électrocution, ne pas utiliser d'autres sources d'alimentation électrique.

**REMARQUE:**  
La plaque d'identification (numéro de série) se trouve sur le panneau arrière de l'appareil.

**WARNING:**  
The battery used in the ED-X2000U must be replaced by a JVC authorized service dealer only.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## SAFETY PRECAUTIONS

**Warning Notice**  
**FOR YOUR SAFETY (Australia)**

1. Insert this plug only into effectively earthed three-pin power outlet.
2. If any doubt exists regarding the earthing, consult a qualified electrician.
3. Extension cord, if used, must be three-core correctly wired.

**IMPORTANT (in the United Kingdom)**

Mains Supply (AC 230 V )  
**WARNING – THIS APPLIANCE  
MUST BE EARTHED**

The wires in this mains lead are coloured in accordance with the following code:

GREEN and YELLOW : EARTH  
BLUE : NEUTRAL  
BROWN : LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked with the letter E or by the safety earth symbol ⚡ or coloured GREEN or GREEN-AND-YELLOW. The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or which is coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

**POWER SYSTEM**  
Connection to the mains supply  
This unit operates on voltage of 220 V to 240 V AC, 50 HZ/60 Hz.

**WARNING:**  
**TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE**

**CAUTION**  
To prevent electric shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified service personnel.

**WARNING**  
This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

**Note:**  
The rating plate and the safety caution are on the bottom of the unit.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

**WARNING**  
It should be noted that it may be unlawful to re-record pre-recorded tapes, records, or discs without the consent of the owner of copyright in the sound or video recording, broadcast, or cable programme and in any literary, dramatic, musical or artistic work embodied therein.

### Caution for AC Mains Lead

**FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.**  
This product is equipped with 2 types of AC cable. One is for continental Europe, etc. and the other one is only for U.K.  
Appropriate mains cable must be used in each local area, since the other type of mains cable is not suitable.

**FOR CONTINENTAL EUROPE, ETC.**  
Not to be used in the U.K.



**FOR U.K. ONLY**  
If the plug supplied is not suitable for your socket outlet, it should be cut off and appropriate one fitted.



## Thank you for purchasing this JVC BD-X200 DVD Recorder.

### Main Features

- Recording of DVD-R and DVD-RW (video mode only).
- Composite video, Y/C separate, and DV signals are supported as video inputs. Furthermore, analog or DV signals are supported as audio inputs.
- A keyboard and mouse can be used as an alternative to front panel buttons.
- When the BD-X200 is connected to an RS-422A compatible VCR, RS-422 control can be used to carry out synchronous recording of the VCR's video and audio to a DVD.
- Synchronous recording of video and audio from a DV camera or video player to a DVD can also be carried out.
- The DV IN/OUT terminal can be used to record audio and video from a non-linear editor to a DVD.
- The title and chapter menus can be created either automatically or manually.
- The DVD recorder features a LAN terminal. Accordingly, two of these recorders can be connected using LAN (CAT 5) cables to perform master-to-receiver dubbing.

### Trademarks & Copyrights

- **TM/®** Dolby and the Double "D" symbols are Trademarks of Dolby Laboratories.
- The copying, broadcasting, screening, or rental of copyrighted material without the authorization of the copyright holder is prohibited by law.

### Copyright Protection Technology

This DVD recorder utilizes copyright protection technology and is protected by US patents and intellectual property as owned by Macrovision and other copyright holders. The permission of Macrovision is required in order to use this copyright protection technology, and except in situations where special permission has been granted by that company, said technology is restricted to domestic usage and for certain other viewing purposes. The disassembly and/or modification of this DVD recorder is also prohibited.

### Copyrights

- The recording, dubbing, or playing of software containing a copyright protection signal is not possible on this DVD recorder.
- The usage of audio or video discs created using this DVD recorder either for financial gain or in broadcasting for widespread viewing may result in the legally-entiretable rights of the copyright holder being infringed.
- Unless the permission of the copyright holder has been obtained, audio or video discs created using this DVD recorder are to be used for personal enjoyment only.

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# Introduction

## Overview of BD-X200 Functions

### Video and audio signals from this DVD recorder's input terminals can be recorded to DVD-R or DVD-RW (Video mode only). (see Page 28)

The types of signals that can be used are as follows:  
Video: Composite video, Y/C separate, or DV signals (including audio)  
Audio: Analog audio or DV signals (including video).

### A wide range of recording methods are supported. The appropriate method is to be selected in accordance with the intended mode of use.

- The REC, PAUSE, and STOP buttons on the front panel can be used for standard operations. (see Page 38)
- Recording operations can be carried out using the REC CONTROL panel. Furthermore, a keyboard and mouse can also be used when recording via this panel. (see Page 41)
- The BD-X200 features an RS-422A terminal. When it is connected to an RS-422A-compatible VCR, therefore, RS-422 control can be used to carry out synchronous recording of the VCR's video and audio to a DVD. (Various menu settings are required.)
- Synchrono-recording is carried out from the REMOTE CONTROL screen. (see Page 69)
- When a digital video camera, or a DV player is connected to the BD-X200 using a DV cable, and when this DV recorder is setup as the master device for DV control (using menu settings), synchronous recording of any video and/or audio signals from the DV player can be carried out to a DVD. Synchrono-recording is carried out from the REMOTE CONTROL screen. (see Page 69)
- The DV I/OUTPUT terminal can be used to record audio and video from a non-linear editor to a DVD. In such a case, the BD-X200 must be setup as the control slave (using menu settings). The DVD recorder will be controlled by the non-linear editor in this type of setup. (see Page 64)

### The title and chapter menus can be created either automatically or manually. (see Page 49)

Five different patterns have been provided as display styles for the title and chapter menu. Each of these patterns is characterized by different thumbnail characteristics (i.e., number, position, and size) and background images displayed on the title and chapter menu screens.  
When a display style is selected during the recording of content to a DVD, the BD-X200 will automatically create the title and chapter menu in accordance with the style.  
The PRESET STYLE MENU screen can be used to modify the thumbnail and background display characteristics of each of the display styles.  
In addition, the THUMBNAIL EDIT screen and the CHAPTER MENU EDIT screen can be used to modify the display style and thumbnail images for chapter menu, and also to input chapter names and comments. The input of names or comments is carried out using a keyboard connected to one of the recorder's USB terminals.  
The TITLE MENU EDIT screen can be used to modify the display style for the title menu and to enter title names.

### DVD dubbing can be carried out using the LAN terminal.

This terminal allows two BD-X200 DVD recorders to be connected using a LAN cable, and the recorders can then operate as master and receiver devices during the dubbing of DVDs. (see Page 70)

### The BD-X200 can be used to play discs that it has created. (see Page 67)

In this way, it is possible to inspect the content of discs finalized using this DVD recorder.

- Once a disc has been finalized, it can also be played on other DVD players.

## Precautions for DVD Recorder Use

### Storage & Usage Locations

- The storage and usage of this DVD recorder in the following types of location should be avoided.
- Areas at temperatures which deviate by a significant degree above or below the permitted service temperature range (i.e., 5°C to 35°C).
  - Areas at humidities which deviate by a significant degree above or below the permitted service humidity range (i.e., 20% to 80% RH).
  - Areas where a large amount of dust or sand is present.
  - Areas where the DVD recorder may come into contact with oily smoke or steam, such as in kitchens or in their immediate vicinity.
  - Areas that are unstable or where significant vibration occurs.
  - Areas where condensation occurs readily.
  - Areas where a strong magnetic field is generated by transformers, motors, or the like.
  - Areas where transmitters, mobile phones, and other wireless-communication devices are present.
  - Areas that are subjected to X-ray irradiation or where corrosive gases are present. (This precaution must be strictly observed.)

### Handling

- Ensure that the DVD recorder is placed on a flat horizontal surface for use.
- Do not place heavy objects such as a monitor on top of the DVD recorder.
- Do not insert foreign objects into the disc tray opening.
- Be careful not to get your fingers clamped when loading the disc to prevent injury.
- Do not block the fans ventilation holes.
- Avoid knocking or dropping the DVD recorder.
- When the DVD recorder is to be moved, ensure that any DVD it contains is removed in advance.
- If the DVD recorder is not to be used for an extended period of time, please disconnect the AC adaptor to avoid wasting electricity.

### Cleaning the Exterior (with the power off)

Use a soft cloth when cleaning the outside of the DVD recorder.

Do not use paint thinners or organic solvents as cleaning agents.

Failure to observe these precautions can result in discoloration or melting of exterior surfaces.  
When stubborn dirt is present, wipe away using a cloth soaked in a dilute neutral solvent.

### Always use the AC adaptor provided with this DVD recorder.

### Always use the power cord provided with this DVD recorder.

The usage of a different type of cord or a damaged cord can result in the outbreak of fire or electric shocks.

### The power cord or the AC adaptor supplied with this DVD recorder should not be used with any other device.

Before connecting the BD-X200 to other devices, turn those devices off and then carry out setup procedures as described in the corresponding user's manuals.

The DVD drive unit is an expendable part. Although the service life of the DVD drive unit differs depending on the usage environment of the customer, replacement every 1000 hours as a guide is recommended. (see Page 76 - TOTAL RECORDING TIME)

## Precautions Regarding Condensation

### Condensation

When cold water is poured into a glass and droplets of water form on its outer surface, this moisture is referred to as "condensation".

### When condensation occurs

Condensation can cause water droplets to adhere to the DVD recorder's internal lens, thus making normal operation impossible.

### Condensation occurs easily in the following situations, and the appropriate care should be taken.

- When the DVD recorder is moved from a cold location into a warm room.
  - When the room containing the DVD is rapidly heated.
  - When an air conditioner's air ducts pointing straight at the DVD recorder.
- In situations where it is likely that condensation will occur, remove any DVD that may be present in the BD-X200 and then turn the power on. As the interior heats up, condensation will be less likely to occur.

Condensation is a principal cause of the inability to play discs and other similar problems. In this type of situation, allow the DVD recorder to remain inactive with its power on for several hours. If the problem persists after this period of time has elapsed, contact either the store where the BD-X200 was purchased or your nearest IVC Authorized dealer.

## Extended Periods of Inactivity

Performance may deteriorate over extended periods of inactivity. For this reason, the power should be turned on and the DVD recorder should be operated at regular intervals.

## Compensation for Damaged Content

IVC accepts no responsibility whatsoever for damages incurred as a result of an inability to play or record audio and video content in the rare event that this DVD recorder, a DVD-R, or a DVD-RW fails to operate correctly.

It is recommended that discs containing important content be backed up at regular intervals (i.e., on a yearly basis). Although digital signals do not deteriorate, storage environments can have an effect on a disc's aging characteristics, and this may result in an inability to play or record.

- If a disc should break, there will be no way to recover data from it.
- Proper playback of discs recorded using this DVD recorder on all devices is not guaranteed.

# Introduction

## Precautions for Disc Usage

### Care of Discs to Ensure High-Quality Playback

- Fingerprints, dust, or any other similar contamination of the surface of a disc can lead to distortion in the playback of recorded video and audio. For this reason, it is good practice to wipe each disc with a soft cloth before use.
- **Looking After Discs**
  - Using a soft cloth, wipe the disc gently from the inside to the outside.



- If stubborn dirt is present on the surface of a disc, wipe first using a slightly wet cloth and then using a dry cloth.
- Paint thinners, organic solvents, analog record cleaning agents, anti-static sprays, and talia must never be used. Failure to observe this precaution can lead to discs being permanently damaged.

### Additional Notes on Disc Handling

- Never wipe a disc using paint thinners, organic solvents, alcohol, or record-cleaning fluid.
- Do not use disc protectors or scratch guards.
- Stickers and other types of paper label should not be applied.
- Do not use discs from which stickers or labels have been removed.
- Do not use discs on which illustrations or text has been printed using a commercially-available label printer. First create a disc using the unit before printing.
- The use of non-circular discs (i.e., heart- or rectangular-shaped), warped discs, and cracked discs can lead to breakage of the DVD recorder.

### Handling Discs

- Placing a disc in its case



- Correct method for holding a disc



Your hands or fingers should not come into contact with the recording surface when holding a disc.

### Storing Discs

- Avoid storing discs in any of the following locations:
  - Areas with high levels of humidity or dust, or areas where mold is present.
  - Areas exposed to direct sunlight or close to heating equipment.
  - Vehicle interiors during summer months.
- Take care to avoid dropping or knocking discs.
- Place discs in cases and stack these cases for storage.
- Discs can be deformed or cracked as a result of stacking, leaning, or dropping when not inside a case.

## Details Regarding Discs

### Discs for Recording & Playback

The following shows the discs that can be recorded to and played using this DVD recorder, in addition to the corresponding display marks or logos.

DVD-R	12 cm, 4.7 GB General Version 2.0 (Video mode)
DVD-RW	12 cm, 4.7 GB Version 1.1 or later (Video mode)

\* Certain characteristics and properties of DVD-Rs and DVD-RWs can render them unusable for recording or playback.

### Recommended manufacturers

DVD-R : JVC, Maxell, TDK 1X, 2X, 4X  
DVD-RW : JVC, TDK 1X, 2X

### DVD-R & DVD-RW Details

**DVD-R** Only discs that conform with DVD-R Standard 2.0 (Video mode) can be used.

**DVD-RW** Discs of Version 1.1 or later can be used. Although Version 1.1 of the DVD-RW Standards allows the selection of either video mode or VR mode for recording, this DVD recorder performs recording in video mode only.

\* Version 1.0 of the DVD-RW Standards does not support video-mode recording, and for this reason, the corresponding discs cannot be used in terms of recording characteristics. DVD-R and DVD-RW (video mode) differ as follows:

### DVD-R

- Each disc can be recorded only one. Accordingly, these discs are recommended for use in archiving or long-term storage.
- Once a disc has been finalized, it can also be played on other DVD players.

### DVD-RW (video mode):

- After viewing a disc, all data can be erased and it can be used to record new content.
- Once a disc has been finalized, it can also be played on other DVD players.

## Finalizing

When a DVD-R or a DVD-RW (video mode) has been finalized, it can be played in the same way as any other DVD using a standard DVD player. (see Page 42)

■ **Recording to unused sections of a disc and the modification of titles or display styles can be carried out as required before a disc is finalized.**

- In the case of both DVD-Rs and DVD-RWs, it is impossible to overwrite previously recorded content with new data, even if the disc in question has not yet been finalized. The deletion of specific sections of data is also impossible. Regardless of whether or not finalization has been carried out, it will not be possible to use the DVD recorder to record new content to a DVD-R or DVD-RW that has been recorded using other devices.

■ **Once a disc has been finalized, it can be used as a standard DVD and its recorded audio and video can be played on this and other DVD players.**

- After finalizing, a disc's titles can be selected from the top menu.
- Additional recording will not be possible after finalizing.
- Although a finalized disc may in principle be played on other DVD players, certain characteristics of the disc and its recording conditions may make this impossible.

### Playing Discs on the BD-X200

The BD-X200 is capable of playing any discs that it has created and finalized.

- The following conditions may occur when attempting to play discs recorded using other devices on this DVD recorder:
  - Inability to play
  - Blank-type noise (i.e., mosaic)
  - Interruptions in audio and/or video
  - Unintentional stopping during playback
- Commercially-available DVD-Videos and DVD-ROMs cannot be used.

## Introduction

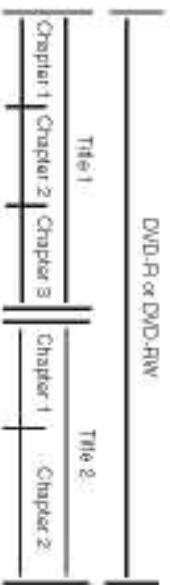
### Details Regarding Discs (continued)

#### DVD Data Configuration

Generally speaking, the content recorded on a DVD is separated into larger units referred to as "titles". A unique number called a "title number" is assigned to each of these titles, and as a result, any title can be immediately accessed using its title number. In addition, each title can be divided into smaller units referred to as "chapters". Similarly, a unique number called a "chapter number" is assigned to each of these chapters, and this allows any chapter to be immediately accessed using its chapter number.

Each recording made to a DVD-R or DVD-RW (video mode) is stored as a single title. In this, each pressing of the STOP button to leave Recording mode constitutes a different recording. (This action is also referred to as "title closing".)

Whenever the PAUSE button is pressed to pause recording, a chapter mark is inserted into the current title. It is also possible to insert chapter marks to partition titles at the desired points by pressing the REC button while recording. In addition, your BD-X200 can also be used to automatically insert chapter marks at regular intervals (CHAPTER CREATION menu settings will be required for this function.)



- Before a title is closed, it will be possible to modify the style used for chapter menu display, to change the thumbnails used, and to input thumbnail names.
- Before a disc is finalized, it will be possible to modify the style used for the title menu and to input title names.

#### Region Codes

One of six numbers referred to as "region codes" is assigned to DVD content to control the global regions in which this content may be viewed. If a DVD's region code does not correspond to the region code of the DVD player being used, it will not be possible to play the disc.

- This DVD recorder assigns the region code "ALL" to the discs that it records.
- It will not be possible to play discs to which region codes have been assigned.

#### Screen Sizes

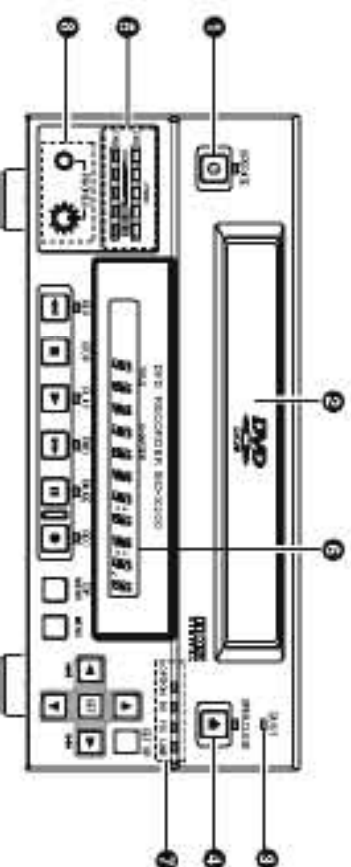
This DVD recorder is capable of recording video content for wide-screen TVs (i.e., with a 16:9 aspect ratio).

In addition, signals for normal content with a 4:3 aspect ratio, for squeezed content (i.e., where the left and right sides compressed), and for letterbox content (i.e., where the top and bottom of the screen are black) can be recorded as is.

- Thumbnail creation method for use in the title/chapter menu during wide-signal input can be selected in THUMBNAIL FORM of the RECORDER (22) menu screen. (☞ Page 81.)

## Component Names & Functions

### Front Panel



#### 1 OPERATE button and indicator

- This button is used to turn on the DVD recorder and to make it ready for use. When pressed a second time, this button turns off the DVD recorder.
- The indicator's lighting condition depends on the condition of the DVD recorder and can be one of the following:
  - Lit in green The DVD recorder's power is on.
  - Lit in red The DVD recorder's power is off.
  - Flashing in red An error has occurred.

**Note**  
The OPEN/CLOSE button will have no effect if pressed while the DVD recorder is in either Recording or Recording Pause mode. This is also the case when performing finalizing, erasing, or dubbing.

#### 3 Audio level indicator

These meters are used to indicate the current level of audio on Channel 1 and Channel 2.

Specifically, this audio level meter indicates the audio recording levels when the DVD recorder is in Recording mode, and the audio playback levels when it is in Playback mode. (Adjustment of the audio recording levels: ☞ Page 35.)

#### 5 LCD display

The LCD display is used to present important information. During recording or playback, for example, the title, chapter number, and elapsed time are indicated on the LCD display. (☞ Page 14 for more details.)

#### 7 Video input indicators

**OPTION indicator**  
This indicator is lit up or flashes when INPUT SELECT from the INPUT SELECT MENU screen has been set to OPTION. (This setting cannot be carried out using the DVD recorder alone.)

#### 8 DV indicator

This indicator is lit up or flashes when INPUT SELECT from the INPUT SELECT MENU screen has been set to DV. Specifically, the indicator is lit up when an input signal is present, and it flashes when no signal is present.

#### 9 V/C indicator

This indicator is lit up or flashes when INPUT SELECT from the INPUT SELECT MENU screen has been set to V/C. Specifically, the indicator is lit up when an input signal is present, and it flashes when no signal is present.

#### LINE indicator

This indicator is lit up or flashes when INPUT SELECT from the INPUT SELECT MENU screen has been set to LINE. Specifically, the indicator is lit up when an input signal is present, and it flashes when no signal is present.

#### Phones jack and volume adjuster

The phones jack allows headphones to be connected to the DVD recorder for monitoring of audio levels. In addition, the headphones volume can be adjusted using the volume adjuster. Note that this adjuster has no effect on the actual recording levels.

#### 2 Disc tray

The purpose of the disc tray is to hold DVDs.

This tray opens automatically when the OPEN/CLOSE button is pressed. In addition, the OPEN/CLOSE button can be pressed again to close the tray.

#### Notes

- Do not push the disc tray as it is opening or closing.
- Do not place objects other than discs on the disc tray.
- Do not press down on the disc tray.

#### 3 BUSY indicator

This indicator flashes when the DVD recorder is in Recording Pause mode or when it is performing time-consuming operations such as the closing, finalizing, and erasing. None of the DVD recorder's buttons will have any effect if pressed while the BUSY indicator is flashing.

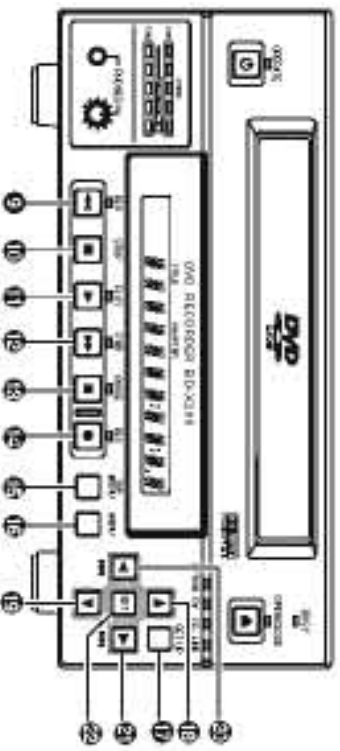
#### 4 OPEN/CLOSE button and indicator

This button is used to open and close the disc tray. In addition, the OPEN/CLOSE indicator is lit up while the disc tray is opening, and also when it is open.



## Component Names & Functions

### Front Panel (continued)



#### REV button and indicator

- When this button is pressed in Playback or Fast-Forward Play mode, the DVD recorder switches to last-reverse play. If pressed again during last-reverse play, the REV button toggles the speed of last-reverse between x3 and x1.5.
- When this button is pressed in Still or Slow-Forward Play mode, the DVD recorder switches to slow-reverse play. If pressed again during slow-reverse play, the REV toggles the speed of slow-reverse between x0.5 and x0.06.
- The REV indicator is lit up during last-reverse and slow-reverse play.

#### STOP button

- This button has the following effect when pressed in Recording or Recording Pause mode:
  - If EDIT MENU from the SYSTEM MENU screen is set to DISABLE, the DVD recorder stops recording (i.e., it performs file closing).
  - If EDIT MENU from the SYSTEM MENU screen is set to ENABLE, the DVD recorder stops recording and the THUMBNAIL EDIT screen is displayed. It will then be possible to modify the chapter menu.
  - When the STOP button is pressed in Playback mode, the DVD recorder stops playback.

#### PLAY button and indicator

- If this button is pressed together with the REC button while a recordable disc is inserted into the DVD recorder, recording will be started.
- When the PLAY button is pressed in Recording Pause mode, the DVD recorder restarts recording.
- If a finalized disc has been inserted into the DVD recorder, pressing of this button will start playback.
- The PLAY indicator is lit up in Recording and Playback modes.

#### FWD button and indicator

- When this button is pressed in Playback or Fast-Reverse Play mode, the DVD recorder switches to fast-forward play. If pressed again during fast-forward play, the FWD button toggles the speed of fast-forward between x3 and x1.5.
- When this button is pressed in Still or Slow-Reverse Play mode, the DVD recorder switches to slow-forward play. If pressed again during slow-forward play, the FWD toggles the speed of slow-forward between x0.5 and x0.06.
- The FWD indicator is lit up during fast-forward and slow-forward play.

#### PAUSE button and indicator

- If this button is pressed during recording, the DVD recorder switches to Recording Pause mode. A chapter mark is inserted at the corresponding point.
- If this button is pressed during playback, the DVD recorder switches to Still mode and freezes playback. If the PAUSE buttons are then pressed again in Still mode, the DVD recorder will advance playback by a single field.
- The PAUSE indicator is lit up in Recording Pause and Still modes.

#### REC button and indicator

- If this button is pressed together with the PLAY button in Stop mode, recording will be started.
  - If the current disc is blank or title closing has been carried out, a new title will be created and recording will start at Chapter 1.
- When this button is pressed during recording, a new chapter will be setup within the continuous video data.
- If this button is pressed and held for more than 2 seconds while the DVD recorder is stopped or inserted with no disc, input signal encoded/decoded in MPEG will be output via the VIDEO OUT terminal on the rear panel. This will continue for as long as the button is held, and it allows the DVD recording quality to be confirmed. Audio will be muted at this time.
- The REC indicator is lit up in Recording and Recording Pause modes.

#### TOP MENU button

- If this button is pressed while the DVD recorder is in a playback condition, the current DVD's top menu (or title menu) will be displayed on the monitor screen.
- If the DVD does not contain a title menu, nothing will be displayed when the TOP MENU button is pressed.

#### MENU button

- If this button is pressed while the DVD recorder is in a playback condition, the chapter menu for the currently selected title will be displayed on the monitor screen.
- If the DVD title does not contain a chapter menu, nothing will be displayed when the MENU button is pressed.

#### SET UP button

- This button can be pressed to display the Setup Menu on the monitor. A wide range of different menu settings can then be made via the Setup Menu (see Page 74). In addition, the SET UP button can be pressed again to hide the Setup Menu.
- If the SET UP button is pressed in Recording or Recording Pause mode, setting data relevant to recording (i.e., video bit rate and audio encoding format) will be displayed on-screen. In addition, the SET UP button can be pressed again to hide this information.

#### [▲] button

- This button is used to select menu items or setting values when the Setup Menu is displayed.
- If a title menu or chapter menu is displayed, this button can be used to select a menu number for playback. Specifically, pressing of this button moves the selection position upward.
- The ▲ button can be used to adjust the audio recording levels when the DVD recorder is stopped or in Recording Pause mode.
- If AUDIO REC VOLUME MODE from the RECORDER MENU (2/2) screen is set to BOTH and the button is pressed while either the ▲ or ▼ button is being held, the audio recording levels for both Channel 1 and Channel 2 will increase.
- If AUDIO REC VOLUME MODE from the RECORDER MENU (2/2) screen is set to INDEPENDENCE and the button is pressed while the ▲ button is being held, the audio recording level for Channel 1 will increase. Similarly, if the ▲ button is pressed while the ▼ button is being held, the audio recording level for Channel 2 will increase.

#### [▼] button

- This button is used to select menu items or setting values when the Setup Menu is displayed.
- If a title menu or chapter menu is displayed, this button can be used to select a menu number for playback. Specifically, pressing of this button moves the selection position downward.
- The ▼ button can be used to adjust the audio recording levels when the DVD recorder is stopped or in Recording Pause mode.
- If AUDIO REC VOLUME MODE from the RECORDER MENU (2/2) screen is set to BOTH and this button is pressed while either the ▲ or ▼ button is being held, the audio recording levels for both Channel 1 and Channel 2 will decrease.
- If AUDIO REC VOLUME MODE from the RECORDER MENU (2/2) screen is set to INDEPENDENCE and this button is pressed while the ▼ button is being held, the audio recording level for Channel 1 will decrease. Similarly, if the ▼ button is pressed while the ▲ button is being held, the audio recording level for Channel 2 will decrease.

#### [▶] button

- If a title menu or chapter menu is displayed, this button can be used to select a menu number for playback. Specifically, pressing of this button moves the selection position to the left.
- This button can be pressed while the DVD recorder is playing to move playback to the start of the current chapter.
- The ▶ button can be used to adjust the audio recording levels when the DVD recorder is stopped or in Recording Pause mode.
- If AUDIO REC VOLUME MODE from the RECORDER MENU (2/2) screen is set to INDEPENDENCE and either the ▲ or ▼ button is pressed while this button is being held, the audio recording level for Channel 1 will be adjusted accordingly.
- If AUDIO REC VOLUME MODE from the RECORDER MENU (2/2) screen is set to BOTH and either the ▲ or ▼ button is pressed while this button is being held, the audio recording levels for both Channel 1 and Channel 2 will be adjusted accordingly.
- If this button is pressed together with the ▶ button, the audio recording levels will be returned to their default settings (i.e., unity gain).

#### [▶] button

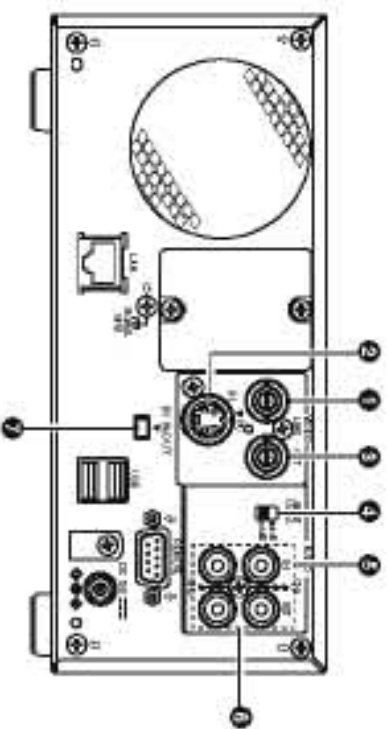
- If a title menu or chapter menu is displayed, this button can be used to select a menu number for playback. Specifically, pressing of this button moves the selection position to the right.
- This button can be pressed while the DVD recorder is playing to move playback to the start of the next chapter.
- The ▶ button can be used to adjust the audio recording levels when the DVD recorder is stopped or in Recording Pause mode.
- If AUDIO REC VOLUME MODE from the RECORDER MENU (2/2) screen is set to INDEPENDENCE and either the ▲ or ▼ button is pressed while this button is being held, the audio recording level for Channel 2 will be adjusted accordingly.
- If AUDIO REC VOLUME MODE from the RECORDER MENU (2/2) screen is set to BOTH and either the ▲ or ▼ button is pressed while this button is being held, the audio recording levels for both Channel 1 and Channel 2 will be adjusted accordingly.
- If this button is pressed together with the ▶ button, the audio recording levels will be returned to their default settings (i.e., unity gain).

#### SET button

- This button is used to confirm the selection of menu items or setting values when the Setup Menu is displayed.
- When this button is pressed during normal screen display, the counter from the DVD recorder's LCD display will switch to display of either the elapsed recording/playback time or the remaining disc title time.

## Component Names & Functions

### Rear Panel



#### 1 VIDEO LINE IN terminal (BNC)

This terminal allows composite video signals to be input to the DVD recorder.

- In order to select these signals for input, set INPUT SELECT from the INPUT SELECT MENU screen to LINE.
- SETUP from the SYSTEM MENU screen should be set in accordance with whether or not the input signal is a setup signal. (U-model only)

#### 2 VIDEO Y/C IN terminal (4-pin)

This terminal allows Y/C separate video signals to be input to the DVD recorder.

- In order to select these signals for input, set INPUT SELECT from the INPUT SELECT MENU screen to Y/C.
- SETUP from the SYSTEM MENU screen should be set in accordance with whether or not the input signal is a setup signal. (U-model only)
- This terminal's specification (i.e., S1 or S2) can be selected using Y/C TERMINAL MODE from the RECORDER MENU (2/2) screen.

#### 3 VIDEO LINE OUT terminal (BNC)

This terminal is used to connect the DVD recorder to a monitor.

- When the DVD recorder is in Stop or Recording mode, the video input signal is output on the E-E screen as a composite video signal.
- If the REC button is pressed and held for at least 2 seconds while the DVD recorder is stopped, the input signal will be subjected to MPEG3 encode/decode processing and output via the VIDEO LINE OUT terminal. This will continue for as long as the REC button is held, and it allows the DVD recording quality to be confirmed.
- Playback from the DVD is output as a composite signal when in Playback mode.
- The Setup Menu, title menu, chapter menus, and other setting and control screens are displayed on the monitor connected to this terminal.
- Status and alarm information is also displayed on-screen. (The DISPLAY MENU screen can be used to indicate which items are to be displayed.)

#### 4 AUDIO INPUT LEVEL switch

This switch is used to set the standard level for audio input.

+4dB : The standard level is set to +4 dB.

-4dB : The standard level is set to -4 dB.

#### 5 AUDIO IN terminals (RCA x 2)

These terminals allow analog audio signals to be input to the DVD recorder.

- In order to select these signals for input, set INPUT SELECT from the INPUT SELECT MENU screen to LINE or Y/C.

#### 6 AUDIO OUT terminals (RCA x 2)

These terminals allow analog audio signals to be output from the DVD recorder.

- When the DVD recorder is in Stop or Recording mode, the audio input signals (i.e., E-E signals) are output via these terminals.
- Audio from the DVD is output when in Playback mode.

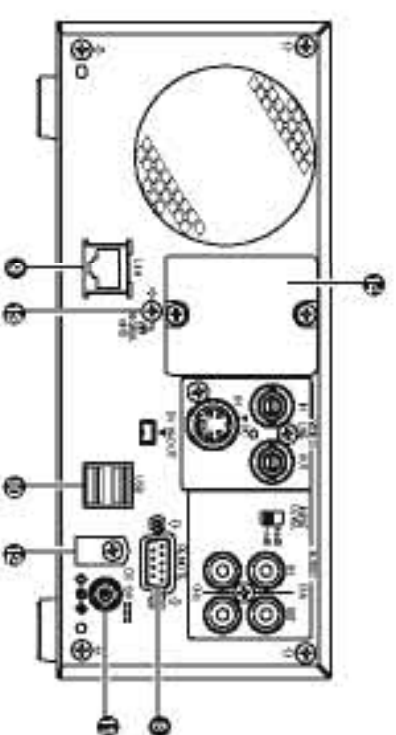
#### 7 DV IN/OUT terminal

This I/O terminal for digital signals conforms with IEEE1394 specifications.

- As such, it allows the DVD recorder to be connected to DV cameras, DV VCRs, and non-linear editors with DV terminals. In order to select this terminal's audio and video signals for input, set INPUT SELECT from the INPUT SELECT MENU screen to DV.

• REMOTE SELECT from the REMOTE MENU screen is used to select a control method for this terminal as follows:

- DV(MASTER) : The DVD recorder operates as the master device and controls a DV camera or VCR.
- DV(SLAVE) : The DVD recorder operates as a slave device and is controlled by commands from a non-linear editor.
- DV(TRIGGER) : The DVD recorder performs recording in response to operation of the trigger button on a camera capable of DV triggering (i.e., a GV/DV5000).



#### 8 RS-422A REMOTE terminal (D-sub 9-pin male)

This terminal is used to connect the DVD recorder to a VCR capable of being controlled via RS-422A. RS-422A control of a VCR using the RS-422A REMOTE terminal is carried out with the DVD recorder operating in Master mode.

- In order to use this terminal, set REMOTE SELECT from the REMOTE MENU screen to OPT/MASTER. Video and audio from the VCR can be recorded to a DVD using commands issued from the REMOTE CONTROL screen. (See Page 59)

#### 9 LAN terminal (RJ-45)

When two DVD recorders are used to perform DVD-to-DVD dubbing, this terminal is connected to both BD-X2000. A cable of Category 5 or better is required for this connection. A cross-type Ethernet cable is required when connecting directly to another BD-X2000.

- This terminal is also used when connecting to a PC, on which BD-X2000 utility software for operations such as the creation of the title and chapter menus has been installed.
- Network settings must be carried out using the NETWORK MENU screen.

#### 10 USB terminals (2)

These terminals are used when connecting the DVD recorder to USB devices such as a keyboard or mouse. A keyboard and mouse can be used as an alternative to the DVD recorder's buttons when using setting and control screens.

- The input of text in setting screens is carried out using a keyboard.
- It is not possible to operate devices other than a keyboard or mouse by connecting them to the USB terminal.
- SET KEYBOARD STYLE from the SYSTEM MENU screen in accordance with the keyboard's input language. Recommended manufacturers: Logitech

#### 11 DC IN terminal (2-pin)

This terminal is used to provide DC at 1.5 V to the DVD recorder. The DC power cord from the AC adaptor (included) should be connected here.

**Note** When power is supplied via this terminal, the OPERATE indicator on the front panel lights up in red.

#### 12 DC power cord clamp

This clamp secures the DC power cord in place, and it should always be used to prevent accidental disconnection.

#### 13 SIGNAL GND terminal

This terminal is used to ground signals.

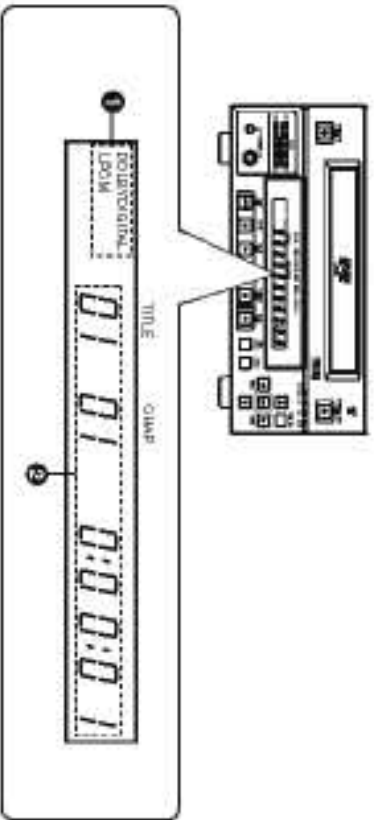
#### 14 Optional-board slot cover

This cover is removed to allow commercially-available optional boards to be installed.

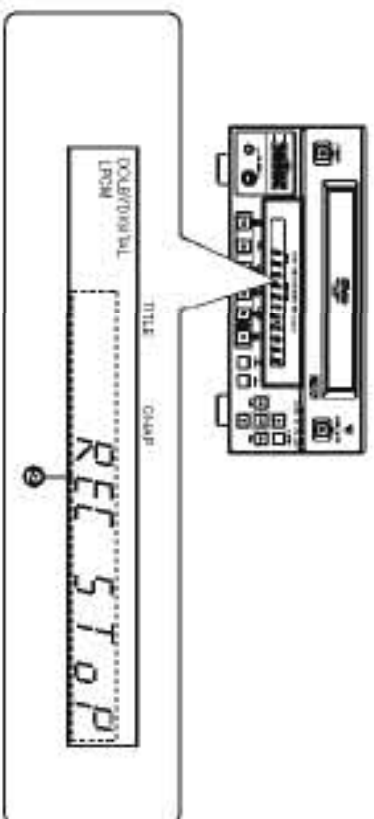
# LCD Display and On-Screen Content

## LCD Display

The following information and data is presented on the DVD recorder's LCD display:



No.	Description
1	<p><b>Encoding format for audio recordings (LPCM, DOLBY DIGITAL)</b></p> <p>Recording mode : The encoding format set using AUDIO ENCODE from the RECORDER MENU (1/2) screen is displayed.</p> <p>Playback mode : The recording format used for audio on the current disc is displayed.</p> <p>Information relevant to the current mode</p> <p>■ <b>Title number / Chapter number / Counter</b></p> <ul style="list-style-type: none"> <li>When in Recording mode, the LCD display indicates the title number and chapter number currently being recorded. In addition to either the elapsed title-recording time or the remaining disc space.</li> <li>The SET button can be pressed to toggle between display of the elapsed recording time and the remaining disc space in the counter area.</li> </ul> <p>● When in Playback mode, the LCD display presents the title number and chapter number currently being played. In addition to either the elapsed title-playback time or the remaining title-playback time. The SET button can be pressed to toggle between display of elapsed and remaining title-playback time in the counter area.</p> <p><b>Note</b></p> <p>The remaining disc and title time depend on the amount of data comprising video, and for this reason, they should be taken as being a general indication and not an exact figure.</p>
2	<p>Information relevant to the current mode</p> <p>■ <b>Title number / Chapter number / Counter</b></p> <ul style="list-style-type: none"> <li>When in Recording mode, the LCD display indicates the title number and chapter number currently being recorded. In addition to either the elapsed title-recording time or the remaining disc space.</li> <li>The SET button can be pressed to toggle between display of the elapsed recording time and the remaining disc space in the counter area.</li> </ul> <p>● When in Playback mode, the LCD display presents the title number and chapter number currently being played. In addition to either the elapsed title-playback time or the remaining title-playback time. The SET button can be pressed to toggle between display of elapsed and remaining title-playback time in the counter area.</p> <p><b>Note</b></p> <p>The remaining disc and title time depend on the amount of data comprising video, and for this reason, they should be taken as being a general indication and not an exact figure.</p>



No.	Description
2	<p>■ <b>Indication of the current operating mode</b></p> <p>PLEASE WAIT : The DVD recorder is starting up.</p> <p>OPERATE OFF : The DVD recorder is preparing to shut down.</p> <p>NO DISC : The DVD recorder currently contains no disc.</p> <p>LOADING : A disc is being loaded into the DVD recorder.</p> <p>DVD-R : The current disc is a non-finalized DVD-R. (Approximately 3 seconds)</p> <p>DVD-RW : The current disc is a non-finalized DVD-RW. (Approximately 3 seconds)</p> <p>DVD : The current disc is a finalized DVD-R or DVD-RW. (Approximately 3 seconds)</p> <p>REC PAUSE : The DVD recorder is switching from Recording mode to Recording Pause mode.</p> <p>REC STOP : The DVD recorder is switching from Recording mode to Stop mode.</p> <p>MENU EDIT : A title menu or chapter menu is currently being edited.</p> <p>EJECT : The current disc is being ejected.</p> <p>TITLE CLOSE : The DVD recorder is performing title-close processing.</p> <p>FINALIZE : The DVD recorder is finalizing the disc.</p> <p>ERASE : The DVD recorder is erasing data from a DVD-RW disc.</p> <p>TOP MENU : The disc's top menu is being played.</p> <p>MENU : A menu is being played.</p> <p>ENCODING XX : Encoded video is being output. (XX indicates the bit rate.)</p> <p>■ <b>Display of the Setup Menu</b></p> <p>Menu items and setting values from the Setup Menu are displayed. (see Page 74)</p> <p>■ <b>Event messages</b></p> <p>Messages relating to incorrect operation and the like are displayed for approximately 3 seconds. (see Page 10)</p> <p>■ <b>Alarm messages</b></p> <p>Alarms are displayed when the DVD recorder cannot obey a command. (see Page 20)</p>



## LCD Display and On-Screen Content

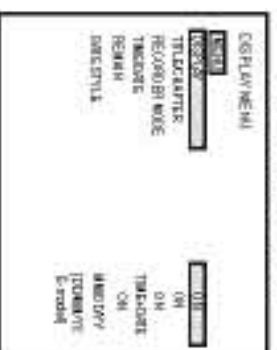
### On-Screen Content

In addition to E-E and playback screens, the monitor connected to the DVD recorder's VIDEO LINE OUT terminal can display the following:

- Status messages
- Event messages
- Alarm messages
- The Setup Menu (see Page 74)
- Recording-operation control screens: REC CONTROL panel (see Page 41) and REMOTE CONTROL screen (see Page 60)

### Status Messages

The DVD recorder's setting condition and operation status are indicated by status messages, and these messages are displayed on E-E or playback screens. The DISPLAY MENU screen can be used to indicate whether or not status messages are to be displayed.



- To display status messages: Set DISPLAY from the DISPLAY MENU screen to ON.
- The various items of status information for display can be selected.
- If DISPLAY is set to OFF, no status information will be displayed.



No.	Item	Description
1	Operation Mode	<p>This area indicates the DVD recorder's current mode of operation. Use RECORDER MODE from the DISPLAY MENU screen to indicate whether or not this is to be displayed.</p> <ul style="list-style-type: none"> <li>NO DISC : The DVD recorder currently contains no disc.</li> <li>EJECT : The current disc is being ejected.</li> <li>OPEN OFF : Operate Off mode</li> <li>STOP : Stop mode</li> <li>REC : Recording mode</li> <li>REC PAUSE : Recording Pause mode</li> <li>PLAY : Playback mode</li> <li>STL : Still mode</li> <li>FWD x3 : Fastforward play at 3 times normal speed</li> <li>FWD x1.5 : Fastforward play at 1.5 times normal speed</li> <li>REV x3 : Fastreverse play at 3 times normal speed</li> <li>REV x1.5 : Fastreverse play at 1.5 times normal speed</li> <li>SLOW FWD 0.60 : Slow-forward play at 0.6 times normal speed</li> <li>SLOW FWD 0.50 : Slow-forward play at 0.5 times normal speed</li> <li>SLOW REV 0.50 : Slow-reverse play at 0.5 times normal speed</li> <li>SLOW REV 0.06 : Slow-reverse play at 0.06 times normal speed</li> <li>LOADING : A disc is being loaded.</li> </ul>

### Status Messages (continued)



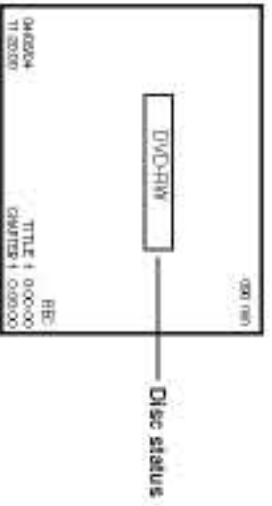
No.	Item	Description
2	Title number / Chapter number / Counter	<p>Use TITLE/CHAPTER from the DISPLAY MENU screen to indicate whether or not this is to be displayed.</p> <p>Recording mode : The title number and chapter number currently being recorded are displayed together with the elapsed title-recording time (in hours, minutes, and seconds).</p> <p>Playback mode : The title number and chapter number currently being played are displayed together with the elapsed title-playback time (in hours, minutes, and seconds).</p>
3	Date / Time	<p>Use TIME/DATE from the DISPLAY MENU screen to select the way in which the date and time are displayed.</p> <ul style="list-style-type: none"> <li>OFF : No information is displayed.</li> <li>DATE : Only the date is displayed.</li> <li>TIME : Only the time is displayed.</li> <li>TIME+DATE : Both date and time are displayed.</li> </ul> <p>The date display style can be changed using DATE STYLE from the DISPLAY MENU screen.</p> <p>Recording mode : The date and time from the internal clock are displayed.</p> <p>Playback mode : The date and time of disc finalizing are displayed.</p>
4	Remaining time	<p>Use REMAIN from the DISPLAY MENU screen to indicate whether or not this is to be displayed.</p> <p>Recording mode : The amount of video that can still be recorded on the current disc is displayed (in minutes).</p> <p>Playback mode : Not displayed.</p> <p>* Remaining time is to be used as a general guide, not as an exact figure.</p>
6	REC CONTROL panel	<p>Provided that a recordable disc has been inserted, this panel will be displayed whenever REC CONTROL from the REMOTE MENU screen is set to ON.</p> <p>The REC CONTROL panel can be used to control recording operations. (see Page 41)</p>

## LCD Display and On-Screen Content

### On-Screen Content (continued)

#### Disc Status

When a disc is inserted into the DVD recorder, one of the following disc status messages is displayed on the monitor screen.

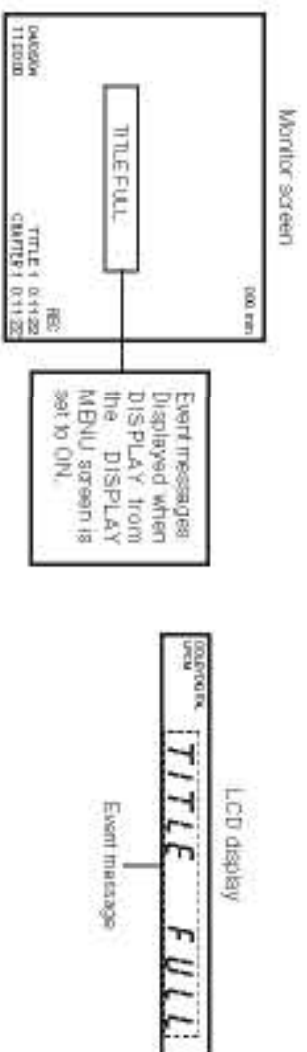


\* The disc status is not displayed if DISPLAY from the DISPLAY MENU screen is set to OFF.

Status	Description
DVD-R	The current disc is a non-finalized DVD-R. (Approximately 3 seconds)
DVD-RW	The current disc is a non-finalized DVD-RW. (Approximately 3 seconds)
DVD	The current disc is a finalized DVD-R or DVD-RW. (Approximately 3 seconds)
INVALID DISC	The current disc is neither a DVD-R nor DVD-RW.

### Event Messages

Event messages are displayed on the DVD recorder's LCD display and on the monitor when incorrect operations are attempted. These messages will remain on-screen for approximately 3 seconds.



Monitor message	LCD display message	Description
INVALID TV	INVALID TV	A signal of an invalid format has been input. Alternatively, an attempt has been made to play a disc containing signals of an invalid format.
TITLE FULL	TITLE FULL	Recording was attempted on a disc already containing 99 titles.
CHAPTER FULL	CHAP FULL	An attempt was made to add a chapter to a title already containing 99 chapters.
NOT FINALIZE	NOT FINAL	An attempt was made to eject a disc before it was finalized.
---	A.L-xxxx-R	Set value is displayed when changing the recording level of analog audio.
---	D.L-xxxx-R	Set value is displayed when changing the recording level of digital audio.
DURATION OVER	---	Auto Edit was carried out when the remaining disc space became insufficient during PS-422A or DV remote operation.
INVALID EDL	---	An incorrect value was entered during the registration of an edit list (EDL).
EDL UNDER EDIT	---	EDL Load was carried out after starting the registration of an edit list (EDL).
NO CASSETTE	---	During PS-422A or DV remote operation, an attempt was made to control the connected VCR while it did not contain a video tape.
NOT CONNECT	---	During PS-422A or DV remote operation, a control operation was attempted while no external device was connected.
EDIT FAILURE	---	Editing could not be completed normally.

## LCD Display and On-Screen Content

### Alarm Messages

Alarm messages are displayed on the DVD recorder's LCD display and on the monitor when the recorder cannot obey a command. These messages will remain on-screen until the next operation is carried out.



Monitor message	LCD display message	Description
INVALID DISC	INVALID DISC	The current disc is not a DVD-R or DVD-RW.
NOT X200	NOT X200	A disc recorded using a different DVD recorder was inserted or played.
REC INHIBIT	REC INH	<ul style="list-style-type: none"> <li>Recording was attempted using a disc on which no more data can be recorded.</li> <li>The current disc is a non-finalized DVD-RW to which no more data can be recorded.</li> </ul>
COPY INHIBIT	COPY INH	Recording of a copy-protected signal was attempted.
DISC FULL	DISC FULL	All remaining space on the disc is used up during recording.
CELL OVER	CELL OVER	The number of cells for a single title exceeded 255. This will be displayed when the recording time for a single title is exceeded as a result of setting ENCODE QUALITY to a low value (i.e., 4 Mbps or lower), recording content with title movement, or other similar factors. No error will be triggered when the time is within that set for the total content.
REGION CODE OVERHEATING!	REGION CODE OVERHEATING	An attempt was made to play a disc for which a region code has been set.
		Displayed when the internal temperature of the set rises due to fan malfunction, etc. In this case, immediately turn off the power and discontinue use. The power will automatically shut down in about 20 minutes after the OVERHEATING display.

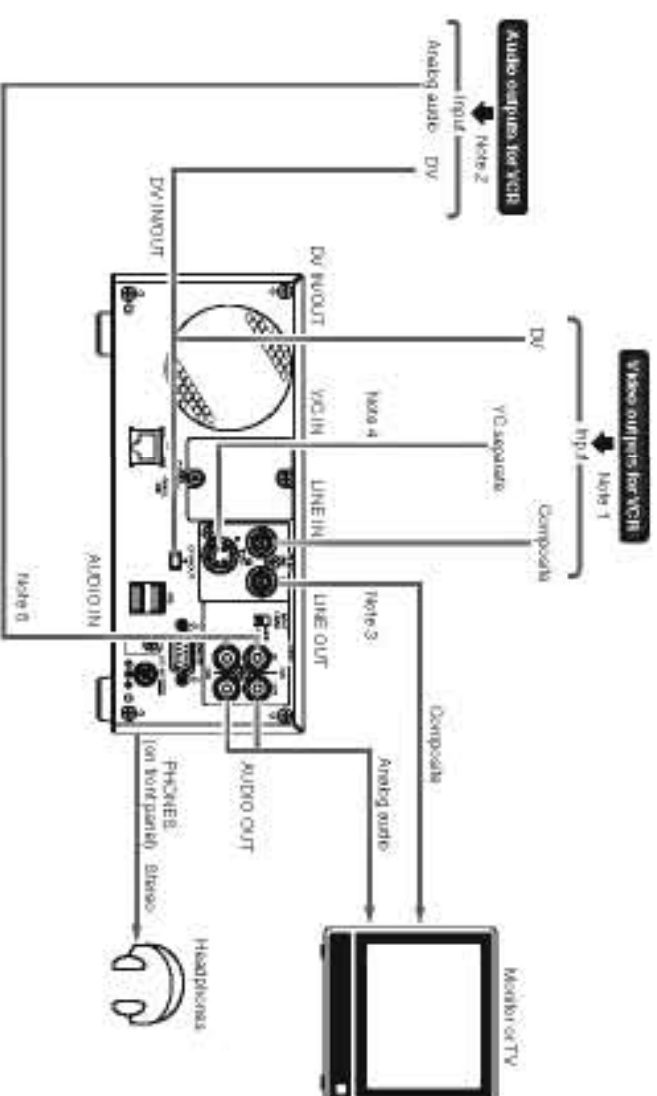
### CAUTION

If alarm messages such as "INVALID DISC" are displayed several times when a disc recorded using the BD-X200 or a blank disc is inserted, there is a possibility that the disc itself has been damaged. In such a case, the damaged disc should be replaced with a new one.  
If the alarm messages continue to appear after replacing the disc, the problem may lie within the DVD recorder, and in such a case, you are recommended to contact either the store where this BD-X200 was purchased or your nearest JVC authorized dealer.

## Preparation

### Signal Connections

#### Audio and video signals



Note 1: The video signal for input is selected using INPUT SELECT from the INPUT SELECT MENU screen.

Note 2: The audio signals for input are selected using INPUT SELECT from the INPUT SELECT MENU screen.

When either LINE or Y/C is set for INPUT SELECT, the analog audio signals from the AUDIO IN terminals will be selected for input.

Note 3: When the DV is set for INPUT SELECT, the DV audio signals from the DV IN/OUT terminal will be selected for input. When the DV recorder is in Stop or Recording mode, the video input signals is output on the E-E screen as a composite video signal.

In addition, the Setup Menu and other setting screens are also displayed on the monitor connected to this terminal. The DVD recorder's operation status and other relevant information are displayed on-screen when DISPLAY from the DISPLAY MENU screen has been set to CN.

Note 4: The Y/C IN terminal's specification (i.e., S1 or S2) can be selected using Y/C TERMINAL MODE from the RECORDER MENU (2/2) screen.

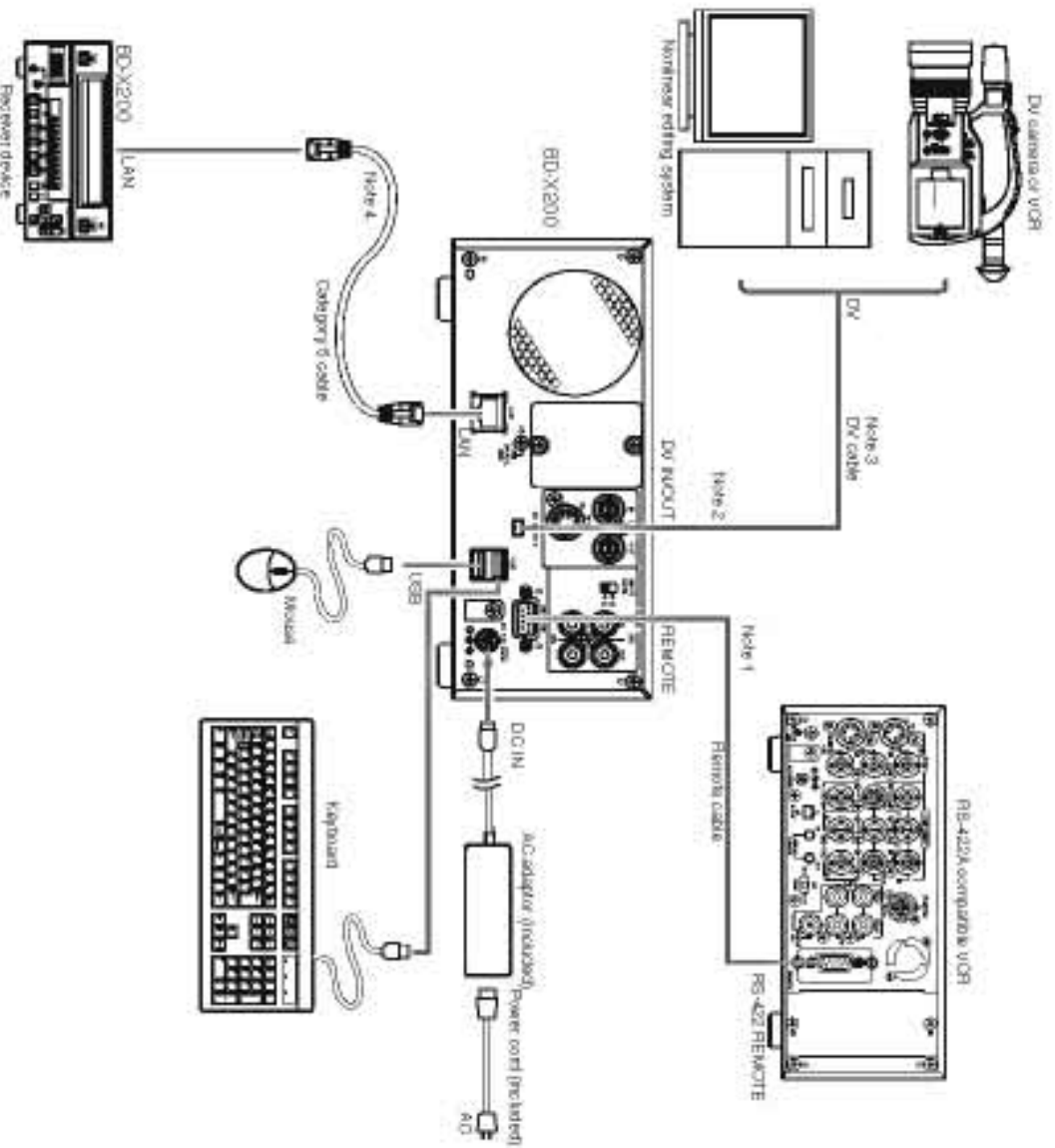
Note 5: The standard input level for audio signals input via the AUDIO IN terminals (i.e., +4 dB or -9 dB) can be selected using the AUDIO INPUT LEVEL switch on the rear panel.



## Preparation

### Signal Connections (continued)

#### Control signals



Note 1: In order to use the RS-422A REMOTE terminal, set REMOTE SELECT from the REMOTE MENU screen to SP/MASTER.

Note 2: In order to carry out control using the DV IN/OUT terminal, make the appropriate selection using REMOTE SELECT from the REMOTE MENU screen.

Note 3: One of the following DV cables should be used:

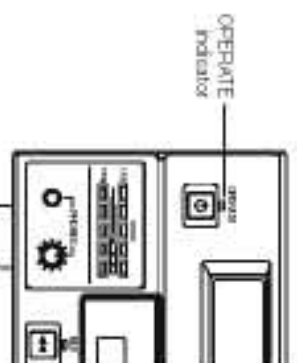
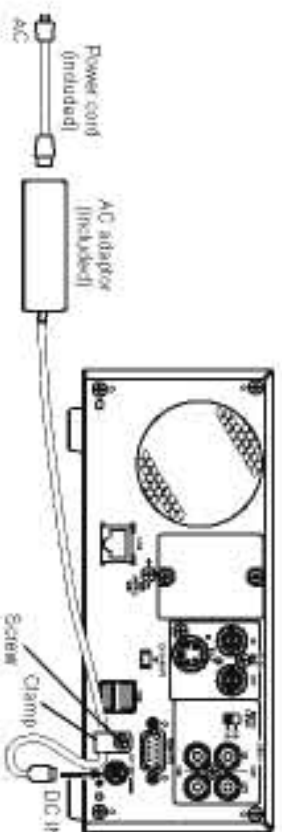
VC-VDV204 (2 m, 4P-4P) from JVC

VC-VDV206 (2 m, 4P-8P) from JVC

Note 4: When connecting a secondary device directly to your BD-X200, use a Category 5, cross-wired Ethernet cable.

### Power Connections

Connect the AC adaptor (included) to the DVD recorder.



**Note**  
A small amount of current will be required by the DVD recorder when in Operate Off mode.

1. Connect the AC adaptor's DC cord to the DVD recorder's DC IN terminal.
2. Secure the DC cord using the DC power cord clamp in order to prevent accidental disconnection.
  - ① Remove the screw and then the clamp.
  - ② Insert the DC cord into the clamp, and then secure the clamp to the DVD recorder.
3. Connect the power cord (included) to the AC adaptor's AC IN terminal.
4. Insert the power cord into an electrical outlet.
  - Power will be supplied to the DVD recorder and the OPERATE indicator will be illuminated (Operate Off mode).

**CAUTION**

- Always use the AC adaptor provided with the DVD recorder.
- The use of other power sources should be avoided.
- Do not disconnect the DC cord or power cord during recording or playback.
- In the case of DVD-R discs, failure to observe this precaution will result in the discs becoming unusable.
- In the case of DVD-RW discs, it will be necessary to erase all data from the disc and to start recording again from the beginning.

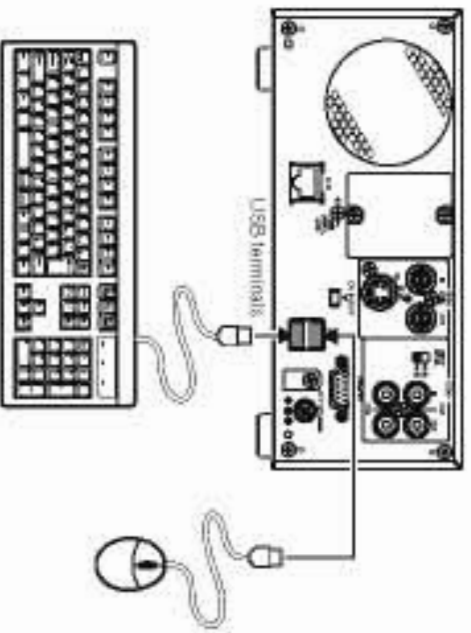


## Preparation

### Using a Keyboard & Mouse

Menu settings, the **1to** and chapter settings, and other DVD recorder settings are carried out from setting screens displayed on the TV or monitor. In addition, recording operations can also be carried out from similar screens.

- **Connections**  
Connect a USB keyboard and mouse to the two USB terminals on the back of the DVD recorder.  
Recommended manufacturers: Logitech



Function	Front panel	Keyboard	Mouse
Selection of menu items or setting values	▶ button ▲ button ▼ button	→ key ← key ↑ key ↓ key	Move the mouse And then left click.
Confirmation of settings	SET button	Enter key	Left click.

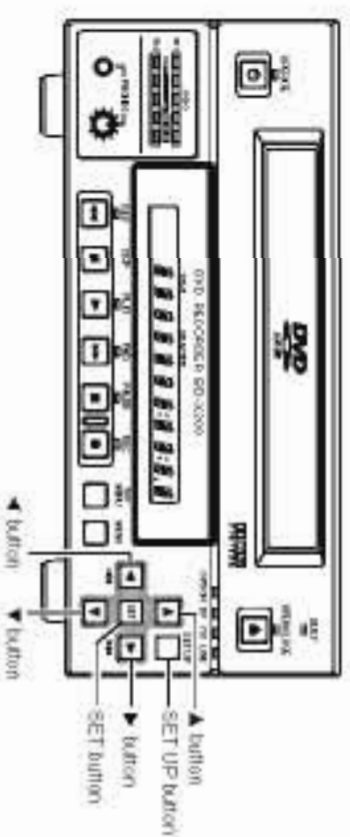
**Note** —  
Unless otherwise specified, this user's manual describes procedures carried out from the DVD recorder itself.

The entry of names and comments for the title and chapter menus is carried out using the keyboard. (Set KEYBOARD STYLE from the SYSTEM MENU screen in accordance with the keyboard's input language.)

### Setting & Displaying the Date & Time

Use the following procedure to set the internal clock's date and time. Even when the DVD recorder's power is turned off, the clock's date and time settings are stored using the internal battery.

Note that these settings are used to write the current date and time to a disc being finalized. The DISPLAY screen can be used to indicate whether or not the date and time are to be displayed on-screen.



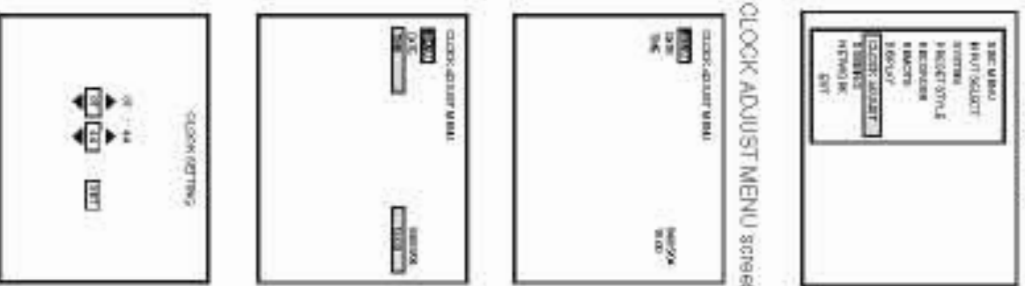
#### Setting the Date and Time

Setting of the date and time is carried out using the CLOCK ADJUST MENU screen. During this procedure, the monitor connected to the VIDEO LINE OUT terminal is used to monitor the setting of date.

1. Turn on the power and ensure that the DVD recorder is stopped.  
Press the SET UP button to display the Setup Menu.
2. Open the CLOCK ADJUST MENU screen.  
① Use the ▲ and ▼ buttons to select CLOCK ADJUST. (The currently selected menu item is displayed as highlighted.)  
② Press the SET button to open the CLOCK ADJUST MENU screen.
3. Set the date and time as required.  
① Use the ▲ and ▼ buttons to select either DATE or TIME. Then press the SET button.  
② Use the ▶ and ◀ buttons to select the digit to be changed. (The currently selected digit is displayed as highlighted text.)  
③ Use the ▲ and ▼ buttons to change the value of the selected digit.  
④ Repeat steps ② through ③ to make all of the required settings, and then press the SET button.

**Note** —  
It is not possible to set the time in units of seconds. After setting the minutes, press the SET button in sync with a time signal.

4. After completing all of the required settings, return to the Setup Menu.  
To do this, use the ▲ or ▼ buttons to select MENU and then press the SET button.
5. Return to the normal screen display.  
• To do this, press the SET UP button  
or  
• Select EXIT from the Setup Menu and press the SET button.







## Settings & Controls for Recording

### Preparing a Disc for Recording

- The DVD recorder is capable of recording to DVD-R and DVD-RW (in video mode)
  - **DVD-R** : Only discs that conform with DVD-R Standard 2.0 (video mode) can be used.
  - **DVD-RW** : Discs of Version 1.1 or later can be used.
- Although Version 1.1 of DVD-RW standards allows the selection of video mode and V.R mode for recording, this DVD recorder performs recording in video mode only
  - \* Version 1.0 of the DVD-RW standards does not support video-mode recording, and for this reason, the corresponding discs cannot be used.

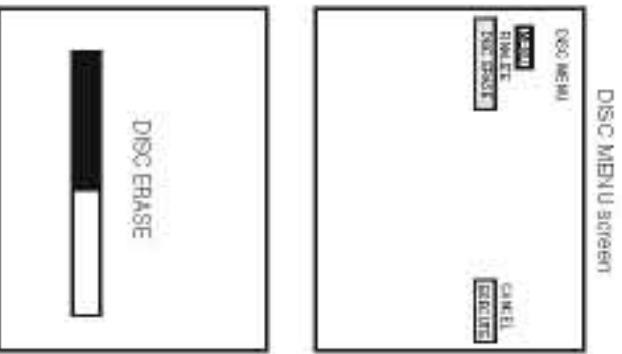
- In terms of recording characteristics, DVD-R and DVD-RW (video mode) differ as follows:
    - **DVD-R** : Each disc can be recorded only once. Erasing of data and re-recording are not possible.
    - **DVD-RW (video mode)** : After erasing a disc, all data can be erased and it can be used to record new content.
- The condition of the disc being used will dictate the available recording options as follows:

	Disc condition	Recording operations
DVD-R	Blank disc	New content can be recorded. A new title is created and recording starts from that title's first chapter.
	A disc recorded on using the DVD recorder but not yet finalized	A new title is created in the unused section of the disc, and recording starts from that title's first chapter.
DVD-RW	Blank disc	New content can be recorded. A new title is created and recording starts from that title's first chapter.
	A disc recorded on using the DVD recorder but not yet finalized	A new title is created in the unused section of the disc, and recording starts from that title's first chapter.
	A recorded disc from which data is to be erased	Erase the recorded data (as described below), and then record new content.

#### Notes

- If data has been erased from a disc using a different DVD recorder, it may not be possible to record new content to it using this recorder. To avoid this type of situation, ensure that this DVD recorder is used to erase recorded data.
- New content cannot be recorded to discs that have been finalized.
- Regardless of whether or not finalization has been carried out, it will not be possible to use this DVD recorder to record new content to a DVD-R or DVD-RW that has been recorded on using other devices.

### Erasing All Data From a Disc



1. Insert the DVD-RW from which data is to be erased.
2. Press the **SET UP** button to display the Setup Menu.
3. Use the **▼** and **▲** buttons to select **DISC MENU** and then press the **SET** button.
  - The DISC MENU screen will appear.
4. Use the **▼** and **▲** buttons to select **DISC ERASE** and then press the **SET** button.
  - A list of setting values will appear.
5. Use the **▼** and **▲** buttons to select **EXECUTE** from the list and then press the **SET** button.
  - The erasing of data will begin.
  - The message "DISC ERASE" appears and the state of progress is displayed using a progress bar.
  - When all data has been erased, the progress bar will disappear.

- **CAUTION** : All of the data recorded to the disc will be erased in this process. Before starting, therefore, confirm that no important data is stored on the disc.
- Under no circumstances should the power be turned off or the power cord disconnected while data is being erased.

### Pre-Recording Settings

- **Recorder switch settings**
  - Use the **AUDIO INPUT LEVEL** switch on the DVD recorder's rear panel to select the reference input level for analog audio (i.e., +4 dB or -9 dB).

- The following screens are used to make settings relevant to recording
  - (Screen setting methods: see Page 75).

#### • INPUT SELECT MENU screen

- This screen is used to select the audio and video signals to be used.

For more details, refer to page 92.

#### • SYSTEM MENU screen

##### • SET UP (U-model only)

- This parameter is set when an analog video signal (i.e., composite or Y/C separate) is being input to the DV Recorder. Specifically, a setting is made to reflect whether or not the input signal is a setup signal. **SET UP** should be set to ON if it is a setup signal, or to OFF if it is not.

##### • TEST SIGNAL

- Set this parameter to ON when the color bar output by the DVD recorder's internal signal generator is to be recorded.

##### • EDIT MENU

- This parameter indicates whether or not a screen for menu editing is to be displayed during title closing and finalizing.

##### • ENABLE

- During title closing, this screen can be used to modify the chapter menu's style and thumbnails and also to insert chapter names. (see Page 47)
- During finalizing, the menu editing screen allows the title menu's display style to be modified. (see Page 59)

##### • DISABLE

- In this case, the chapter menus created using preset values as part of title closing when recording is ended.

#### • PRESET STYLE MENU screen

- This screen is used to select the arrangement and background style for thumbnails displayed on the title menu. This DVD recorder can store eight individual style type (i.e., TYPE1 through TYPE8), and the most suitable type should be selected here.

For more details, refer to page 37.

#### • RECORDER MENU screen

- The RECORDER MENU screen contains two different pages of parameters.

##### • CHAPTER CREATION

- This parameter indicates whether chapters are to be created automatically or manually.
- MANUAL** : Chapters will be created manually. To create a chapter, press the **REC** button while recording.
- AUTO** : Chapters are to be created automatically. In this case, the DVD recorder will create chapters at the time intervals set using **SET INTERVAL**.

##### • TOTAL CONTENT TIME

- This parameter is used to make a setting relevant to the encoding (or compression) of video data.
- A setting should be made here when the DVD recorder is to automatically set the bit rate based on the recording time and the remaining disc capacity. Specifically, this parameter sets the recording time.

#### • ENCODE QUALITY

- This parameter is used to manually set the bitrate for video data.

#### • AUDIO ENCODE

- This parameter is used to set the format for encoding (or compressing) audio data.

For more details regarding the encoding of audio and video, refer to pages 33, 34.

#### • ASPECT

- This parameter is used to set the aspect for recorded video. (AUTO, 4:3, LETTER BOX, or SQUEEZE)

#### • RECORDER MENU (2/2) screen

##### • Y/C TERMINAL MODE

- This parameter indicates whether the Y/C IN terminal's specifications S1 or S2 (Specifically, it selects the recording method for the wide-screen discrimination signal.)

##### • THUMBNAI FORM

- This parameter selects the method to be used for thumbnail conversion when recording a wide-screen signal.

##### • AUDIO CHANNEL (DV)

- This parameter is to be set when recording an audio signal from the DV IN/OUT terminal.
- Specifically, it indicates whether the signals from channels 1 and 2 or from channels 3 and 4 are to be recorded.

##### • AUDIO REC VOL/UM MODE

- This parameter is used to select the method for adjustment of audio recording levels. Specifically, both channels can be adjusted while maintaining the same level (BOTH), or each channel can be adjusted independently (INDEPENDENCE). For more details regarding methods for the adjustment of audio recording levels, refer to page 36.

##### • DISC IN ACTION

- This parameter's setting is used during the recording of discs to indicate the action to be taken when a completed (i.e., finalized) disc is inserted into the DVD recorder or a different DVD player.

##### • MENU

##### • TITLE END

- This parameter's setting is used during the recording of discs to indicate the action to be taken when playback of a title on a completed disc has ended.

##### • MENU

##### • REPEAT

- The title menus displayed.
- Play back from the top of the title begins.

#### • REMOTE MENU screen

##### • REMOTE SELECT

- This parameter should be set to OFF when not controlling the DVD recorder via the RS-422A REMOTE terminal or the DV IN/OUT terminal.
- Alternatively, the REMOTE CONTROL screen can be displayed by setting this to SPIN (MASTER), DV (MASTER), or DV (SLAVE). (see Page 60)

##### • REC CONTROL

- This parameter indicates whether or not the REC CONTROL panel is to be displayed constantly on-screen when a recordable disc has been inserted.
- Set this to ON when using a keyboard and/or mouse.

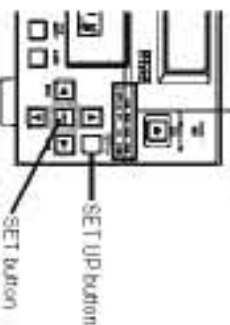
## Settings & Controls for Recording

### Selecting & Confirming Input Signals

The selection of audio and video input signals is carried out from the INPUT SELECT MENU screen as described below. In addition, the type of input signals that have been selected can be confirmed on the front panel.

#### Selecting Input Signals

Video input indicators



INPUT SELECT MENU screen



- Stop the DVD recorder.
- 1. Open the INPUT SELECT MENU screen.**
  - ① Press the SET UP button to display the Setup Menu.
  - ② Select INPUT SELECT using the ▲ and ▼ buttons and then press the SET button.
- 2. Make the required settings on the INPUT SELECT MENU screen.**
  - ① Select the parameter to be set using the ▲ and ▼ buttons, and then press the SET button to display a list of possible settings.
  - ② Select the required setting using the ▲ and ▼ buttons, and then press the SET button to adopt this setting.
- 3. Complete the setting process.**
  - To do so, carry out one of the following procedures:
    - Select MENU and press the SET button to return to the Setup Menu.
    - Press the SET UP button to return to the normal screen display.

Item	Description
INPUT SELECT	This parameter is used to select the audio and video input signals. LINE : The composite video signal from the VIDEO LINE IN terminal and the analog audio signals from the AUDIO IN terminals are to be used. Y/C : The Y/C separate signal from the Y/C IN terminal and the analog audio signals from the AUDIO IN terminals are to be used. DV : The audio and video signals from the DV IN/OUT terminal are to be used.

**Note**  
 Setting of INPUT SELECT will not be possible when REMOTE SELECT from the REMOTE MENU screen has been set to DVM(MASTER), DV(SLAVE), or DVT(TRIGGER).  
 DV signals will be used for input at these times.

### Confirming Input Signals



- The type of video signals that have been selected for input can be confirmed using the video input signal indicators on the DVD recorder's front panel. Specifically, the indicator corresponding to the type of input signal selected using INPUT SELECT will be lit up or flashing.
- Lit : The selected signal is being received.
- Flashing : The selected signal is not being received.

### Setting the Encoding Format for Audio & Video

The setting of encoding formats for audio and video is carried out from the RECORDER MENU (1/2) screen as described below.

#### Setting Encoding Formats



RECORDER MENU (1/2) screen



- Stop the DVD recorder.
- 1. Open the RECORDER MENU (1/2) screen.**
  - ① Press the SET UP button to display the Setup Menu.
  - ② Select RECORDER using the ▲ and ▼ buttons and then press the SET button.
- 2. Make the required settings on the RECORDER MENU (1/2) screen.**
  - ① Select the parameter to be set using the ▲ and ▼ buttons, and then press the SET button to display a list of possible settings.
  - ② Select the required setting using the ▲ and ▼ buttons, and then press the SET button to adopt it.
- 3. Complete the setting process.**
  - To do so, carry out one of the following procedures:
    - Select MENU and press the SET button to return to the Setup Menu.
    - Press the SET UP button to return to the normal screen display.

### Video Encoding

Item	Description
TOTAL CONTENTS TIME	If you already know the duration of the video to be recorded, this parameter can be set to the corresponding time to allow your BD-X200 to select the optimum encoding bitrate. (Make a setting in hours and minutes.) ● If the recording time is set using this parameter, ENCODE QUALITY will be set automatically, and this setting may not be modified manually. ● If this function is not to be used, set it to NO USE. When this setting is made, ENCODE QUALITY will be returned to its previous setting.
ENCODE QUALITY (Mbps)	This parameter can be set when TOTAL CONTENTS TIME has been set to NO USE. Specifically, it allows direct setting of the encoding bit rate (i.e., the amount of data per second). Large values increase the quality of the video; however, this also increases the overall data size. Setting range: The range of values that can be set depends on the audio encoding format. LPCM : 4.0 to 7.9 Mbps (in 0.2 Mbps steps) DOLBY DIGITAL : 2.0 to 9.0 Mbps (in 0.2 Mbps steps)



## Settings & Controls for Recording

### Setting the Encoding Format for Audio & Video (continued)

#### Audio Encoding

##### AUDIO ENCODE

This parameter is used to set the encoding format for audio data.

L PCM     Linear PCM encoding  
 DOLBY DIGITAL     Dolby AC3 encoding

##### Note

If the SET UP button is pressed while in Recording mode, the video bit-rate setting and audio encoding format will be displayed on-screen. Press the SET UP button once again to hide this information.

#### Guide to Recording Times

The time available for recording on a disc will depend on the video encoding bit rate and audio encoding format that have been set. Furthermore, the more titles a disc contains, the less time will be available for recording. Use the following table as a guide to the amount of time available for recording.

Audio encoding format	Encoding bit rate							
	9 Mbps	8 Mbps	7 Mbps	6 Mbps	5 Mbps	4 Mbps	3 Mbps	2 Mbps
DOLBY DIGITAL	61 min.	68 min.	77 min.	88 min.	109 min.	125 min.	157 min.	212 min.
L PCM	—	—	67 min.	76 min.	87 min.	102 min.	—	—

## Settings & Controls for Recording

### Setting the Encoding Format for Audio & Video (continued)

#### Audio Encoding

##### AUDIO ENCODE

This parameter is used to set the encoding format for audio data.

L PCM     Linear PCM encoding  
 DOLBY DIGITAL     Dolby AC3 encoding  
 MPEG     MPEG encoding

##### Note

If the SET UP button is pressed while in Recording mode, the video bit-rate setting and audio encoding format will be displayed on-screen. Press the SET UP button once again to hide this information.

#### Guide to Recording Times

The time available for recording on a disc will depend on the video encoding bit rate and audio encoding format that have been set. Furthermore, the more titles a disc contains, the less time will be available for recording. Use the following table as a guide to the amount of time available for recording.

Audio encoding format	Encoding bit rate							
	9 Mbps	8 Mbps	7 Mbps	6 Mbps	5 Mbps	4 Mbps	3 Mbps	2 Mbps
DOLBY DIGITAL	62 min.	69 min.	78 min.	89 min.	105 min.	126 min.	161 min.	218 min.
MPEG	63 min.	70 min.	79 min.	91 min.	109 min.	131 min.	168 min.	231 min.
L PCM	—	—	66 min.	77 min.	96 min.	109 min.	—	—

## Adjusting of Audio Recording Levels

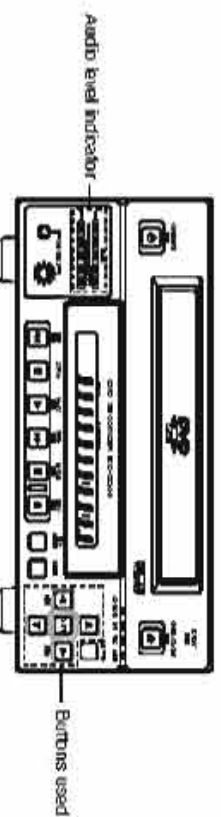
This DVD recorder's audio recording levels can be adjusted using two different methods, and AUDIO REC VOLUME MODE from the RECORDER MENU (2/2) screen indicates the method to be used. In addition, it is also possible to return the audio recording levels to their default settings (i.e., unity gain).

**Note:** The AUDIO INPUT LEVEL switch on the DVD recorder's rear panel can be used to select the reference input level for analog audio (i.e., +4 dB or -8 dB).

### Selecting the Adjustment Method

- RECORDER MENU (2/2) screen
- 
1. Open the RECORDER MENU (2/2) screen. To do this, select **←** button from the RECORDER MENU (1/2) screen and press the SET button.
  2. Make the required setting using AUDIO REC VOLUME MODE from the RECORDER MENU (2/2) screen.
    - BOTH** : Audio levels are adjusted while both the CH1/CH2 are maintained at the same volume.
    - INDEPENDENCE** : The CH1/CH2 are adjusted separately.

### Adjusting the Audio Recording Levels



- Return from setting screens to the normal display.
- Recording levels can be adjusted in either Stop or Recording mode. Be sure to monitor the front panel's audio level indicator as the levels are being adjusted. Adjust the level so that the LED on the far right does not light.

Adjusting both channels together (BOTH)	Adjusting both channels separately (INDEPENDENCE)
<p><b>To raise the recording level</b></p> <p>Press the <b>▲</b> button while holding the <b>▶</b> or <b>▶</b> button to raise the audio recording levels for Channel 1 and Channel 2 simultaneously.</p> <p><b>To lower the recording level</b></p> <p>Press the <b>▼</b> button while holding the <b>▶</b> or <b>▶</b> button to lower the audio recording levels for Channel 1 and Channel 2 simultaneously.</p>	<p><b>To adjust the Channel 1 level</b></p> <p>Press either the <b>▲</b> or <b>▼</b> button while holding the <b>▶</b> button. Pressing the <b>▲</b> button raises the recording level. Pressing the <b>▼</b> button lowers the recording level.</p> <p><b>To adjust the Channel 2 level</b></p> <p>Press either the <b>▲</b> or <b>▼</b> button while holding the <b>▶</b> button. Pressing the <b>▲</b> button raises the recording level. Pressing the <b>▼</b> button lowers the recording level.</p>

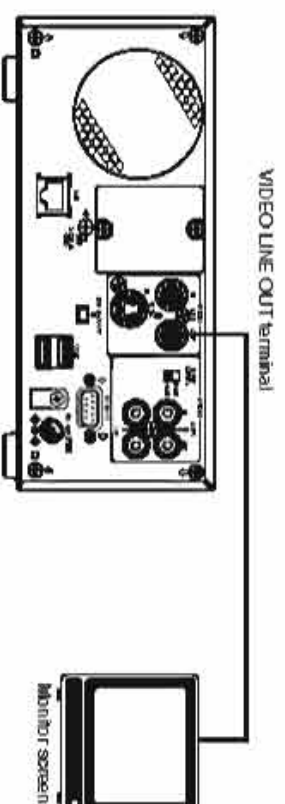
### Returning Audio Recording Levels to Default Settings (UNITY MODE)

- Press and hold the **▶** and **▶** buttons simultaneously to return the audio recording levels to their default settings (i.e., unity gain).
- Both of the audio recording levels will be fixed at the default setting.

## Settings & Controls for Recording

### Checking the Video Input

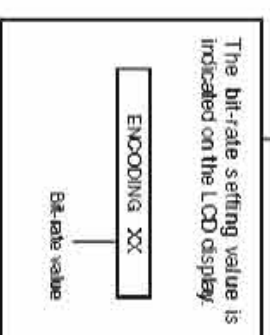
Use the monitor connected to the VIDEO LINE OUT terminal to confirm that the input video signal is as required. The following procedure will allow you to monitor the quality at which the video will be recorded to a DVD.



- Signal Connections**  
Connect the VIDEO LINE OUT terminal to the monitor.

- Procedure**
- Press and hold the REC button for at least 2 seconds while the DVD recorder is stopped or inserted with no disc. While this button is being held, input signal encoded/decoded in MPEG will be output via the VIDEO OUT terminal on the rear panel.
  - This function allows the quality of the video to be confirmed before recording to a DVD.

**Note**  
Audio will be muted at this time.



## Selecting Styles for Title & Chapter Menu

Each recorded DVD contains title and chapter menus that provide information relating to its titles and chapters. Whenever recording is carried out, title numbers, chapter numbers, and thumbnails are automatically generated in order to create the title and chapter menus. Specifically, the frames from the start of individual recordings are used as thumbnails for the title menu. In a similar way, the frames at which chapter marks have been inserted are used as thumbnails for chapter menus. (These thumbnails may be modified later on.) The title menu will become the top thumbnail of the chapter menu.

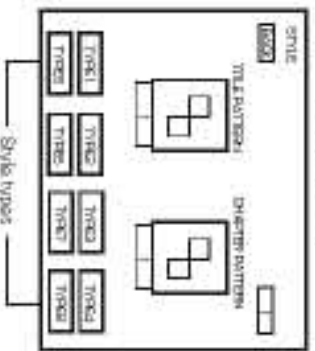
The term "style" is used to refer to a combination of thumbnail characteristics for the title and chapter menus. This DVD recorder can store eight different style types, and the PRESET STYLE MENU screen is used to indicate which of these types is to be used.



Setup Menu



PRESET STYLE MENU screen



STYLE screen

### Making Settings in the PRESET STYLE MENU screen

1. Press the SET UP button to display the Setup Menu.
  2. Select PRESET STYLE from the Setup Menu and then press the SET button.
    - The PRESET STYLE MENU screen will appear. Within this screen, the STYLE parameter indicates the style type currently selected for the title and chapter menus.
  3. Confirm the settings for the currently selected style.
 

Select STYLE and then press the SET button to display the corresponding STYLE screen.

**CHAPTER PATTERN** The display pattern currently selected for the title menu. Each display pattern uses different numbers, positions, and sizes for thumbnails, in addition to different backgrounds.

**CHAPTER PATTERN** The display pattern currently selected for chapter menus. Each display pattern uses different numbers, positions, and sizes for thumbnails, in addition to different backgrounds.
  4. Use the cursor buttons (▲, ▼, ▶, and ◀) to select one of the eight style types and display the corresponding STYLE screen.
  5. To use a specific style, select the corresponding type number and then press the SET button.
 

This type number will then be stored by the DVD recorder. Following this, the screen's BACK button will be highlighted. The SET button can now be pressed to return to the PRESET STYLE MENU screen.
- If BACK is used to exit the STYLE screen without the SET button being pressed for the newly selected type, the style setting will not be updated.

#### Notes

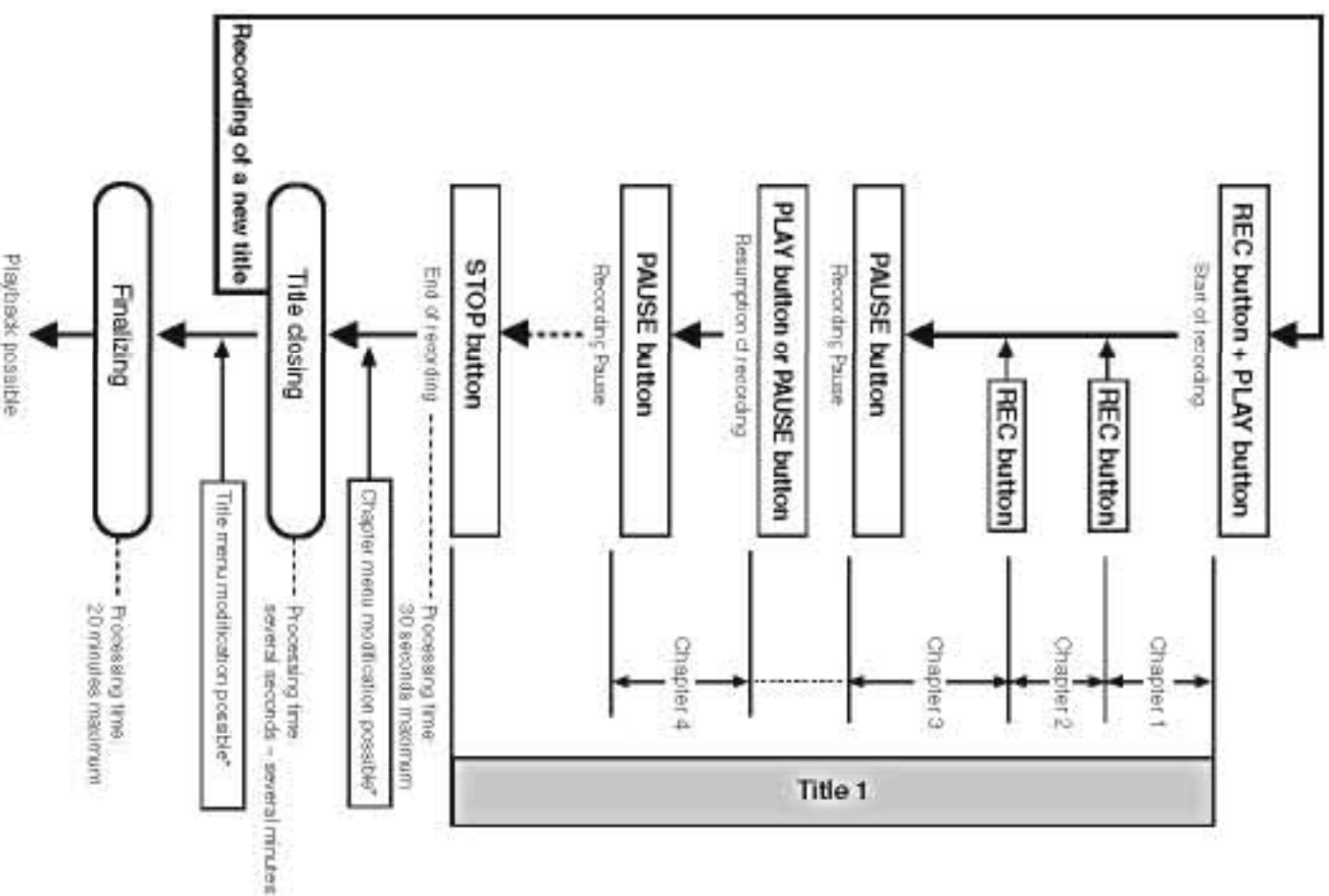
- The STYLE settings for chapter menus can be freely modified until the closing is carried out. (see Page 47)
- The STYLE settings for the title menu can be freely modified until the DVD is finalized. (see Page 53)
- Each style can be freely modified and stored in the DVD recorder's memory. In addition, it is also possible to freely select and modify display patterns (i.e., the number, position, and size of thumbnails in addition to the background). For more details regarding modification of PRESET STYLE, refer to page 43.
- In certain cases, the frames used for chapter menu thumbnails may differ slightly from the exact frames at which the corresponding chapter marks were inserted.

## Recording

### Recording Sequence

Use the following sequence as a reference when performing recording:

- Input settings: see Page 32.
- Video and audio quality settings: see Pages 33, 34.
- Navigation settings (i.e., DISC IN ACTION and TITLE END): see Page 81.



\* Title and chapter menu modification will be possible when EDIT MENU from the SYSTEM MENU screen has been set to ENABLE.  
 • Playback will not be possible until a disc has been finalized.

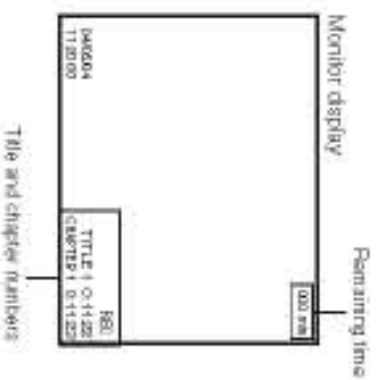
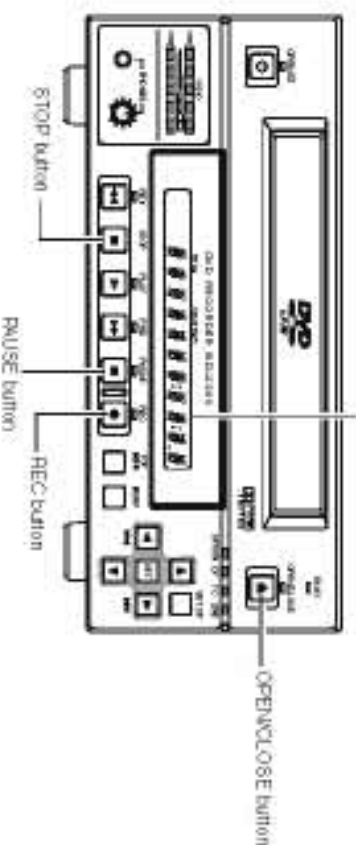


## Recording with the Front Panel

BD-X200 recording operations can be carried out in two different ways — namely, using the buttons provided on the front panel and using the on-screen REC/CONTROLL panel in the latter case. Furthermore, recording operations can be performed using a keyboard and mouse. The following section, however, will provide a description of recording using the front panel buttons.

On a DVD, the section of video recorded between the start of recording and pressing of the STOP button to end recording is stored as a single title, and a unique title number is assigned to each of these sections. A single disc can contain up to 99 different titles. In addition, each title can be separated into a number of different chapters by inserting chapter marks at the appropriate points, and each title can contain up to 99 chapters.

Information relating to titles and chapters is stored on a disc in the form of title and chapter menus. When the disc is being played, therefore, the title and chapter menu can be used to access specific sections of stored video and audio.



- Notes**
- A maximum of 10 minutes will be required to complete title closing.
  - The remaining time available for recording on a disc will be displayed on the monitor. Note that this is to be used as a general guide, not as an exact figure. (DISPLAY and REMAIN from the DISPLAY/MENU screens must both be ON for this figure to be displayed.)
  - During the recording process, the current title number and chapter number are displayed on the monitor (DISPLAY and TITLE/CHAPTER from the DISPLAY/MENU screens must both be ON for these numbers to be displayed.)

1. Insert a disc that can be recorded on.

### 2. Start recording.

This is done by pressing the REC and PLAY buttons simultaneously.

### 3. Pause recording.

This is done by pressing the PAUSE button.

- The DVD recorder will adopt Recording Pause mode and a chapter mark will be inserted at the current position.
- A number of different methods can also be used for the manual or automatic insertion of chapter marks. (see Page 40)

### 4. Restart recording.

Press the PLAY or PAUSE button.

- Recording will begin once again and a new chapter will be created in the current title.

### 5. End recording (i.e. close the title)

Press the STOP button when either recording or paused.

- The action of the DVD recorder following the end of recording depends on the setting of EDIT MENU from the SYSTEM MENU screen.
- **DISABLE** : Recording is ended and the chapter menu is created using preset settings (i.e. the title is closed).
- **ENABLE** : The THUMBNAVIL EDIT screen will appear. This screen can be used to modify the chapter menu's display style, to change the thumbnails used, to input chapter names, and to perform other similar functions. For more details, refer to page 47.

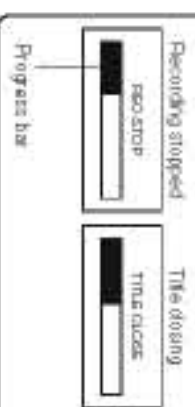
- **If additional recording is to be carried out, repeat steps 1 through 5 above.**

- In such a case, the subsequent recording is stored as a new title.

## Recording

### Recording with the Front Panel (continued)

**Note**  
When recording is stopped or a title is closed, the state of progress will be indicated on-screen using a progress bar.



6. **End recording and remove the disc.**  
Depending on how the disc will be used, one of two different procedures is implemented at this time.
  - **If more content will be recorded to the disc using this DVD recorder:** Simply press the OPEN/CLOSE button and remove the disc. (Do not finalize the disc before it is removed.)
  - **If the disc is to be played on this DVD recorder or on a different DVD player:** Finalize the disc, press the OPEN/CLOSE button, and then remove the disc. For more details regarding finalizing, refer to page 42.

### Inserting Chapter Marks Manually or Automatically

RECORDER MENU (1/2) screen



In addition to pausing the recording, a number of different manual and automatic methods can be used to insert chapter marks.

The actual method to be used is determined by CHAPTER CREATION and SET INTERVAL from the RECORDER MENU (1/2) screen.

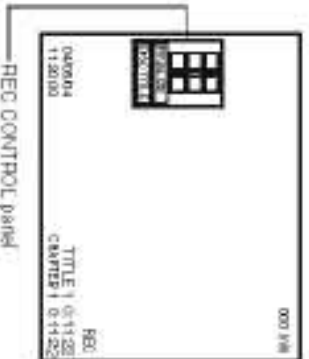
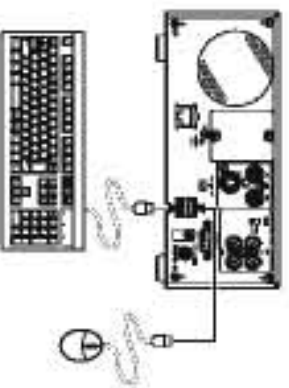
- If chapter marks are to be inserted manually at any point, set CHAPTER CREATION to MANUAL.
- Chapter marks can then be inserted by pressing the REC button while recording.
- If chapter marks are to be inserted automatically, first of all set CHAPTER CREATION to AUTO. Then use SET INTERVAL to set a time (in minutes) for chapter mark insertion.

The DVD recorder will insert chapter marks at the corresponding intervals during recording.

- Notes**
- The frame at which a chapter mark is inserted will be used for the corresponding thumbnail in the chapter menu. When EDIT MENU from the SYSTEM MENU screen is set to ENABLE, the frames used for thumbnails can be modified on the THUMBNAVIL EDIT screen that appears automatically at the end of recording.
  - Each title can contain up to 99 chapters.
  - In certain cases, the frames used for chapter menu thumbnails may differ slightly from the exact frames at which the corresponding chapter marks were inserted.

## Using a Keyboard & Mouse to Control Recording

BD-X200 recording operators can be carried out using the REC CONTROL panel displayed on the monitor. In addition, a keyboard and mouse can also be used when working with this panel.



**Notes**

- DISC TITLE from the REC CONTROL panel can be selected to allow a name to be input for the disc. This type of name proves useful when managing discs using PC. Note that disc names are not displayed on the monitor or the DVD recorder.
- Characters allowed for the disc title are alphanumerical characters and underscore ( \_ ) only. Spaces and other symbols may not be used.
- FINALIZE and DISC TITLE from the REC CONTROL panel cannot be used while recording.
- The Record (●) button from the REC CONTROL panel can be activated or clicked to insert chapter marks and thumbnails during recording.

### Signal Connections

Connect a keyboard and mouse to the USB terminals on the back of the DVD recorder.

### Settings

- If the REC CONTROL panel is to be displayed on-screen, set REC CONTROL from the REMOTE MENU screen to ON.
- This panel will be displayed in Stop, Recording, and Recording Pause mode.
- To open the Setup Menu, press the DVD recorder's SET UP button. It is not possible to open this screen using the keyboard or mouse.

### Procedure

- Start recording.**  
 Keyboard : Use the arrow keys (←, →, ↑, ↓) to select Record (●) from the REC CONTROL panel, and then press the Enter key.  
 Mouse : Move the mouse pointer to the Record (●) button and left click while the Record button selected.
- Pause recording.**  
 Keyboard : Use the arrow keys (←, →, ↑, ↓) to select Pause (■) from the REC CONTROL panel, and then press the Enter key.  
 Mouse : Move the mouse pointer to the Pause (■) button and left click while the Pause button is selected.
  - The DVD recorder will adopt Recording Pause mode; in addition, a chapter mark and thumbnail will be inserted at the current position.
- Restart recording.**  
 Keyboard : Use the arrow keys (←, →, ↑, ↓) to select either Record (●) or Pause (■) from the REC CONTROL panel, and then press the Enter key.  
 Mouse : Move the mouse pointer to the Record (●) or Pause (■) button and left click while the Record or Pause button is selected.
- End recording (i.e., close the title).**  
 Select Stop (■) from the REC CONTROL panel and press the Enter key.
  - The action of the DVD recorder following the end of recording depends on the setting of EDIT MENU from the SYSTEM MENU screen.
  - DISABLE : Recording is ended and the chapter menu is created using standard settings (i.e., the title is closed).
  - ENABLE : The THUMBNAIL EDIT screen will appear. This screen can be used to modify the chapter menu's display style, to change the thumbnails used, to input chapter names, and to perform other similar functions. For more details, refer to page 47.
- If additional recording is to be carried out, repeat steps 1 through 4 above.**
  - In such a case, each subsequent recording will be stored as a new title.
- End recording and remove the disc.**  
 Depending on how the disc will be used, one of two different procedures is implemented at this time.
  - If more content will be recorded to the disc using this DVD recorder: Simply press the DVD recorder's OPEN/CLOSE button and remove the disc. (Do not finalize the disc before it is removed.)
  - If the disc is to be played on this DVD recorder or on a different DVD player: Use FINALIZE from the REC CONTROL panel to finalize the disc before it is ejected.
 For more details regarding finalizing, refer to page 42.

## Recording

### Finalizing (for playback on this and other DVD players)

Finalize a disc recorded using this DVD recorder as described below in order to ensure that it can be played on this and other DVD players. In the case of DVD-RW's, playback will be possible on DVD players that support video mode.

#### After finalizing a disc:

- No additional recording will be possible.
- The title menu cannot be changed.
- The titles created before finalizing will be displayed as the top menu.

### Finalizing

The process of finalizing can be carried out in two different ways.

- Select DISC MENU and then FINALIZE from the Setup Menu.
- Select FINALIZE on the REC CONTROL panel when this is being used for recording.

#### Setup Procedure: Insert the disc to be finalized.



- Press the SET UP button to display the Setup Menu, and then select DISC MENU.
- Set FINALIZE from the DISC MENU screen to EXECUTE and then press the SET button.



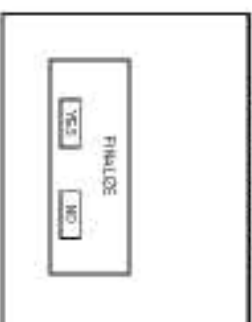
#### 1. If using the REC CONTROL panel:

Select FINALIZE and then press the keyboard's Enter key.  
 \* If operating using a mouse, left click the FINALIZE button.

The screen that will now be displayed depends on the setting of EDIT MENU from the SYSTEM MENU screen.

If this is set to DISABLE, a screen seeking confirmation of finalizing will appear. In this case, perform finalizing as described below.	If this is set to ENABLE, a screen for editing title menus will appear. Use this screen to confirm that the title menu is as required, to modify the display style, and to input title names (see Page 53).
--	---

#### 2. Make the appropriate selection in the confirmation screen.



- Selected YES and then press the SET button to continue finalizing.**
  - The finalizing process will begin.
  - A bar showing the state of progress will be displayed during finalizing.
  - The progress bar will disappear when finalization has been completed and the normal screen display will then be restored.
  - (The REC CONTROL panel will not be displayed.)
  - Select NO from the confirmation screen to cancel finalizing and return to the previous screen.

**Notes**

- A maximum of 30 minutes will be required to complete finalizing.
- When finalizing is carried out, all of the disc's recorded video and audio are stored in accordance with the DVD Video Standard, accordingly, this content can also be replayed as DVD video.
- Although a disc finalized using this DVD recorder may in principle be played on other DVD players, there is no guarantee that all of its content will be playable.
- The action to be taken by this DVD recorder when a finalized disc is inserted or when playback of a title has ended is specified by DISC IN ACTION and TITLE END respectively from the RECORDER MENU (2/27) screen.
- DISC IN ACTION is to be set before recording a title.
- DISC IN ACTION is to be set before finalizing.

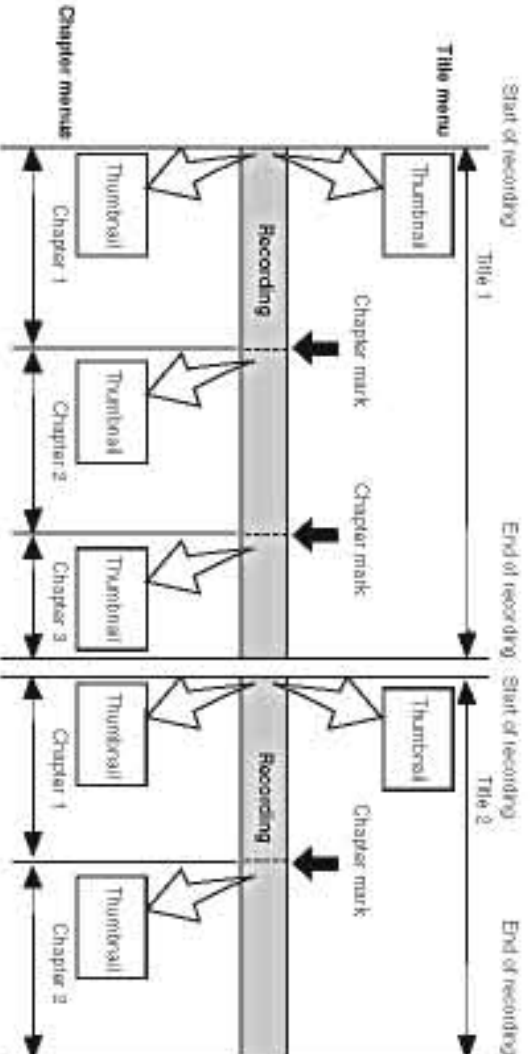
# Title & Chapter Menu Settings

## BD-X200 Title & Chapter Menus

This DVD recorder can automatically create title and chapter menus in response to recording operations and can save these to the disc being recorded.

When the disc is subsequently played, these title and chapter menus can be used to access specific sections of stored video and audio.

- When recording is stopped using the STOP button or a similar action (i.e., disc closing), a title number and a thumbnail (corresponding to the frame at the start of recording) will be created to form part of the disc's title menu. A single disc can contain up to 99 different titles.
- Similarly, if a chapter mark is inserted during recording, a chapter number and a thumbnail (corresponding to the frame at the chapter mark) will be created to form part of the title's chapter menu. Chapter marks are used as targets for skipping during playback. Each title can contain up to 99 chapters.



### Display Styles

A total of eight different display styles can be used with title and chapter menus. The PRESET STYLE MENU screen can be used to select the type of style to be used in the creation of the title and chapter menus. In addition, each of the display styles can be modified as required. (see Page 46)

Depending on the style used and the number of menu items, the title and chapter menus may extend over more than one page.

### Notes

- This DVD recorder can store a total of six different display patterns for title and chapter menus. At the time of purchase, your BD-X200 will contain two different template files. Any of the stored display patterns can be selected to change the styles applied to each of the title and chapter menus.
- In addition, original title and chapter menus can also be created using Easy menu, a freeware application for editing menu templates. (see Page 46)

### Modifying Chapter Menus

A chapter menu's display style and thumbnails can be edited at the end of recording (i.e., during title closing); furthermore, titles and comments for the chapter menu can also be input at this time. (EDIT MENU from the SYSTEM MENU screen must be set to ENABLE for this to be possible.) (see Page 47)

### Modifying the Title Menu

The style used for the title menu and the text input for the title name may both be modified before finalizing is carried out. (EDIT MENU from the SYSTEM MENU screen must be set to ENABLE for this to be possible.) (see Page 53)

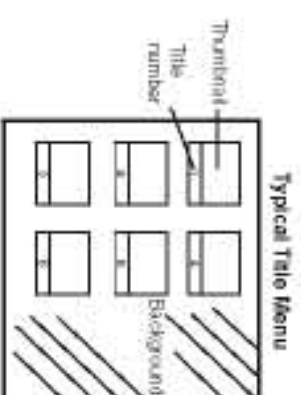
### Note

- Thumbnail of the title menu will be the top thumbnail of the chapter menu.
- Once a title is closed, it will no longer be possible to modify the chapter menu.
- No modifications whatsoever will be possible when the disc has been finalized.
- When a disc is finalized, its title menu will be used to create the top menu.
- Thumbnail creation method during wide-signal recording can be selected in THUMBNAIL FORM of the RECORDER (2/2) menu screen.

# Title & Chapter Menu Settings

## Selecting and Changing Styles for Title & Chapter Menus

Title and chapter menus are used during playback of a DVD to select a title or chapter for viewing. Your BD-X200 provides a total of eight different styles for displaying the title and chapter menus. Use the following procedure during the recording process to select styles for these menus.



### Notes

- This DVD recorder can store a total of eight display styles, where each style is a combination of title and chapter menu display characteristics.
- The title menu can be displayed by pressing the TOP MENU button on the front panel while in Stop or Playback mode; furthermore, the chapter menu can then be opened using the MENU button.

## Confirming or Selecting a Style

Display styles can be selected and modified using the PRESET STYLE MENU screen.

1. Press the SET UP button to display the Setup Menu, select PRESET STYLE, and then press the SET button.
  - The PRESET STYLE MENU screen will appear.

2. Confirm the settings for the currently selected style.
  - The STYLE parameter will display the type number of the style currently selected.
  - Select STYLE and then press the SET button to display the corresponding STYLE screen.

### TITLE PATTERN

The display pattern currently selected for the title menu. Each display pattern uses different numbers, positions, and sizes for thumbnails, in addition to a different background.

### CHAPTER PATTERN

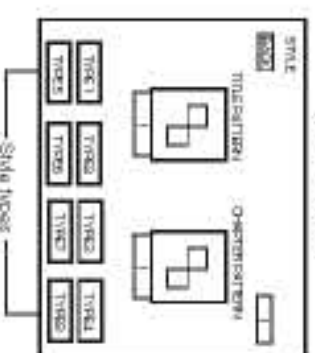
The display pattern currently selected for chapter menus. Each display pattern uses different numbers, positions, and sizes for thumbnails, in addition to a different background.

3. Use the cursor buttons (▲, ▼, ►, and ◀) to select one of the eight style types and to display the corresponding STYLE screen, containing both title and chapter patterns.

4. To use a specific style, select the corresponding type number and then press the SET button.

This type number will then be stored in the DVD recorder's memory. Following this, the screen's BACK button will be highlighted. The SET button can now be pressed to return to the PRESET STYLE MENU screen.

BACK is used to exit the STYLE screen without the SET button being pressed for the newly selected type; the style setting will not be updated.





## Selecting Display Styles

The PRESET STYLE MENU screen can be used to change the styles used for displaying title and chapter menus. One of eight different types of style can be selected for each of the title and chapter menus. This DVD recorder can also store a total of six different display patterns for title and chapter menus. At the time of purchase, your BD-X200 will contain five different template files. Any of the stored display patterns can be selected to change the styles applied to each of the title and chapter menus.



### 1. Open the PRESET STYLE MENU screen.

This screen allows patterns to be modified for the style indicated by the STYLE parameter.

**TITLE PATTERN** : Shows the pattern number for the current title-menu display style as indicated by the STYLE parameter.

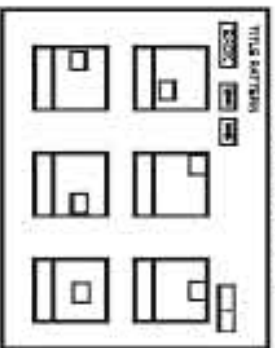
**CHAPTER PATTERN** : Shows the pattern number for the current chapter-menu display style as indicated by the STYLE parameter.

When the STYLE parameter's number setting is changed, the patterns used for title and chapter menus in the new style will be displayed by TITLE PATTERN and CHAPTER PATTERN respectively.

### 2. Change the display patterns for the title and chapter menus as required.

For example, let's change the title menu's display pattern from 1 to 4. Select TITLE PATTERN from the PRESET STYLE MENU screen and press the SET button.

- The TITLE PATTERN screen will appear:



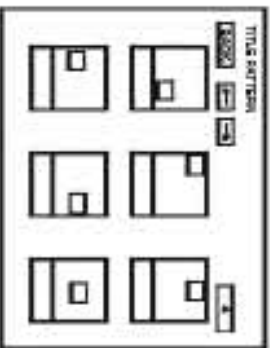
### 3. Use the cursor buttons (▶, ◀, ▲, and ▼) to select the fourth pattern on the TITLE PATTERN screen, and then press the SET button.

- The title menu's display pattern changes to No. 4, and the BACK button becomes highlighted.

### 4. With the BACK button highlighted, press the SET button and return to the PRESET STYLE MENU screen.

- If BACK is used to exit the TITLE PATTERN screen without the SET button being pressed for the newly selected pattern, the pattern setting will not be updated. To change the display pattern for chapter menus, select CHAPTER PATTERN from the PRESET STYLE MENU screen and then proceed in the same way as described above.

**Note**  
The TITLE PATTERN screen and CHAPTER PATTERN screen show the patterns that are currently stored in your BD-X200.  
Display pattern: A combination of thumbnail characteristics (i.e., position, quantity, and size) and the type of menu background used.



## Title & Chapter Menu Settings

### Selecting and Changing Styles for Title & Chapter Menus (continued)

#### Ending Settings in the PRESET STYLE MENU Screen



- To end settings in the PRESET STYLE MENU screen, select MENU and press the SET button to return to the Setup Menu.

- To end menu settings:  
Either press the front panel's SET UP button or select EXIT from the Setup Menu and then press the SET button.

#### EasyMenu: Firmware for Editing Menu Templates

The free application EasyMenu can be used to create original DVD menus on your PC. Menu templates created with this application can then be transferred to your BD-X200 using a network cable, thus allowing you to make imaginative and creative DVDs with the minimum of effort. EasyMenu can be downloaded from the following web page. Please refer to the software manual for details regarding usage and precautions.  
<http://www.livcolor.com/en/indlist/ncr000004/>



Transfer the patterns via a network.

- Main Specifications (please refer to the above-mentioned home page for the most up-to-date information.)  
OS : Windows XP  
Properties set : Thumbnail number, size, and position; background image (per page), and chapter comments.  
Thumbnail highlighting format and color; navigation button design and layout.  
Readable image files : BMP and JPEG  
Layout size : 720 x 480 (NTSC)



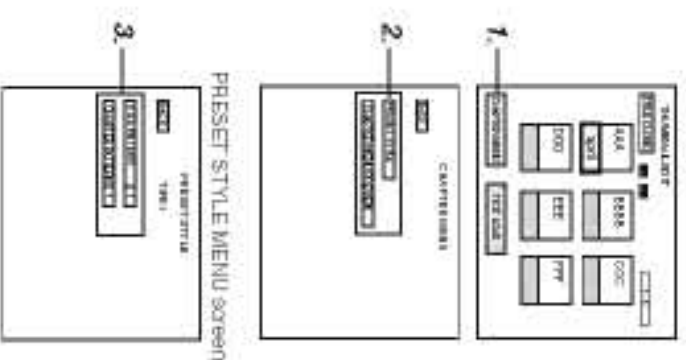
## Title & Chapter Menu Settings

### Changing & Checking Chapter Menu Styles

Although display styles for chapter menus are created using settings from the PRESET STYLE MENU screen as described above, the following procedure can be used to modify these styles at the end of title recording. In addition, it will also be possible at this time to confirm that chapter menus are as required.

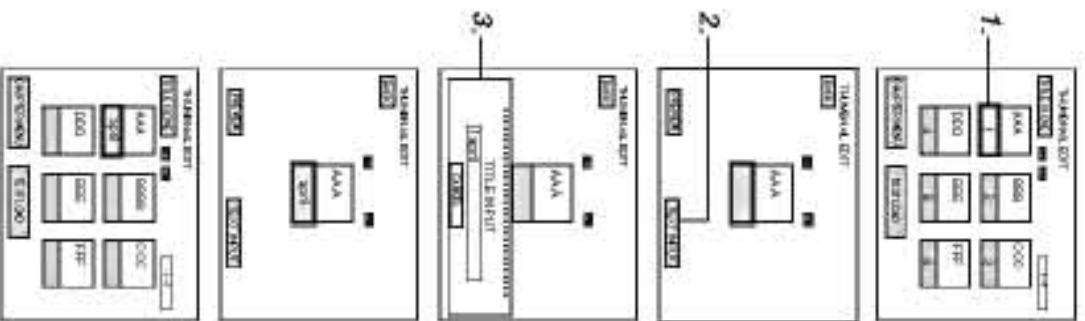
These actions are carried out by selecting and confirming CHAPTER MENU from the THUMBNAI EDIT screen.

### Changing the Display Style



1. Select **CHAPTER MENU** from the **THUMBNAI EDIT** screen and press the **SET** button.
    - The **CHAPTER MENU EDIT** screen will appear.
  2. Select **PRESET STYLE** from the **CHAPTER MENU EDIT** screen and then press the **SET** button.
    - The **PRESET STYLE MENU** screen will appear.
    - The style number set using the **PRESET STYLE** parameter will be displayed in this screen.
  3. To change the display **PATTERN**:
    - Select **PATTERN** and then press the **SET** button.
    - Turn to page 44 for details regarding the editing procedure.
- \* **TITLE PATTERN** and **CHAPTER PATTERN** changed here are also reflected in **PRESET STYLE** of the **SETUP MENU**.

### Entering Names and Comments for Chapter Menus



Use the following procedure to apply names to the thumbnails used in chapter menus, and also to add comments to be displayed on a chapter menu screen.

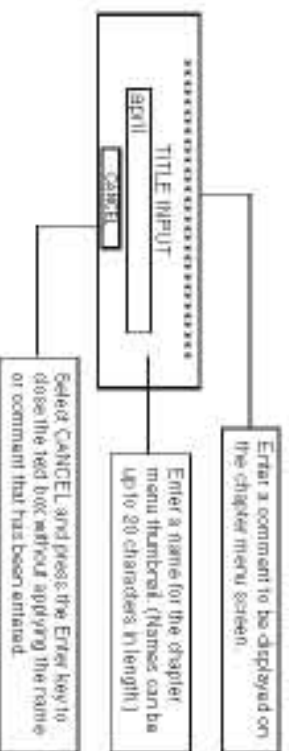
Names and comments are entered using a keyboard.

Set **KEYBOARD STYLE** from the **SYSTEM MENU** screen in accordance with the keyboard's input language.

The following description assumes that all operations are carried out by keyboard.

For example, let's now apply a name to the first chapter.

1. Use the arrow keys to select the first chapter from the **THUMBNAI EDIT** screen, and then press the **Enter** key.
  - The thumbnail screen for this chapter will be displayed.
2. Select **TITLE** using the arrow keys and then press the **Enter** key.
  - A box for inputting text will appear.
3. Enter a name or comment into the text box.



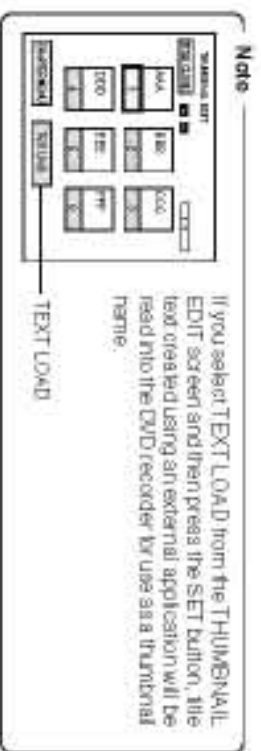
#### Notes

- The \* mark will become a backslash.
  - If text cannot be entered, press the **CTRL** key (right side) on the keyboard.
4. After the required text has been entered, press the **Enter** key.
    - The text box will close.
    - The field previously showing the chapter number will now be highlighted showing the text that was input.
    - The text that has been input will be displayed on the chapter menu screen.
  5. Select **BACK** and then press the **Enter** key.
    - The initial **THUMBNAI EDIT** screen will again be displayed, and the name or comment will be shown for the first chapter.

### Display Characters

The characters displayed in title and chapter menus depend on the title or chapter pattern that has been selected. A preview allows actual display characters to be confirmed. Note that at the time of purchase, display characters will be as follows.

PATTERN No.	Display characters
1	16
2	19
3	17
4	20 (15 + line return + 5)
5	16
6	—



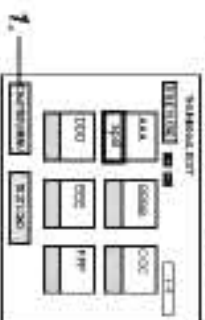
**Note**  
If you select **TEXT LOAD** from the **THUMBNAI EDIT** screen and then press the **SET** button, the text created using an external application will be read into the DVD recorder for use as a thumbnail title.



## Checking the Chapter Menu Screen

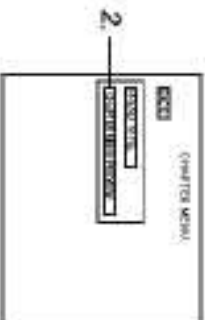
Use the following procedure to see how the chapter menu looks when the selected display style is used.

### THUMBNAIL EDIT START screen



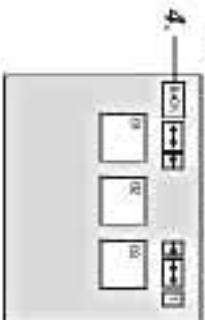
1.

### CHAPTER MENU EDIT screen



2.

### CHAPTER MENU PREVIEW screen



4.

1. Select **CHAPTER MENU** from the **THUMBNAIL EDIT START** screen and press the **SET** button.
  - The **CHAPTER MENU EDIT** screen will appear.

2. Select **CHAPTER MENU PREVIEW** from the **CHAPTER MENU EDIT** screen and press the **SET** button.
  - The **CHAPTER MENU PREVIEW** screen will appear. Here, it will be possible to preview the first page of the chapter menu.

3. Confirm that the other pages are as required.
  - Select **←** from the **CHAPTER MENU PREVIEW** screen and press the **SET** button to move to the next page.
  - Select **→** and press the **SET** button to move to the previous page.
  - **←** and **→** can be used in combination with the **SET** button to skip forward or back in units of ten pages.

4. Complete the preview process.
  - To do this, select **BACK** from the **CHAPTER MENU PREVIEW** screen and press the **SET** button.
  - The **CHAPTER MENU EDIT** screen will reappear.

5. Select **BACK** from the **CHAPTER MENU EDIT** screen and press the **SET** button to return to the **THUMBNAIL EDIT** screen.

#### Notes

- Up to 20 seconds per page will be required to create preview displays. More time may be required depending on the number of thumbnails per page.
- During creation of preview displays, jump by selecting the **←** button can only be made to the page being created.

## Title & Chapter Menu Settings

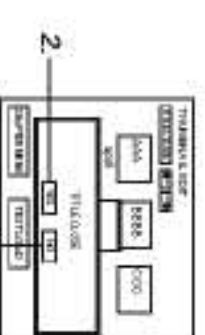
### Ending the Editing of Chapter Menus

Once all of the necessary changes and checks have been made using the **THUMBNAIL EDIT** screen, title closing must be carried out.

Please ensure that title closing is performed as the last stage of chapter menu editing. Even if the chapter menu is to be left unchanged, title closing must be carried out to leave the **THUMBNAIL EDIT** screen. Note that when the closing has been completed, chapter menu details will be permanently set.



1.



2.

Select **NO** and then press the **SET** button to close the confirmation window. The title will not be closed in this case.

1. Select **TITLE CLOSE** from the **THUMBNAIL EDIT** screen and press the **SET** button.
  - A confirmation window will appear.
2. If you wish to proceed with title closing, select **YES** and then press the **SET** button.
  - Title closing will begin. The state of progress during the closing is displayed using a progress bar.



- When title closing has been completed, the progress bar will disappear.

#### Notes

- A maximum of 10 minutes will be required to complete title closing.
- If **EDIT MENU** from the **SYSTEM MENU** screen is set to **DISABLE**, title closing will be carried out automatically whenever recording is ended by, for example, pressing the **STOP** button. In such a case, title and chapter menus are created using preset settings.

## Title & Chapter Menu Settings

### Changing & Checking Title Menu Styles & Names (continued)

#### Checking the Title Menu Screen

If EDIT MENU from the SYSTEM MENU screen is set to ENABLE, the TITLE MENU EDIT screen will be displayed upon disc finalizing. Using this screen, it will be possible to change the title menu's display style, to enter the names, and to confirm that the title and chapter menus are as required.

- Thumbnail of the title menu will be the top thumbnail of the chapter menu.

#### Opening the TITLE MENU EDIT screen



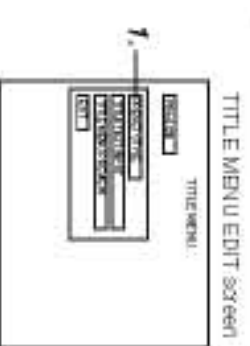
**Settings**

Set EDIT MENU from the SYSTEM MENU screen to ENABLE.

**Procedure**

The TITLE MENU EDIT screen will be displayed when finalizing of the disc is started.

#### Changing the Display Style



TITLE MENU EDIT screen

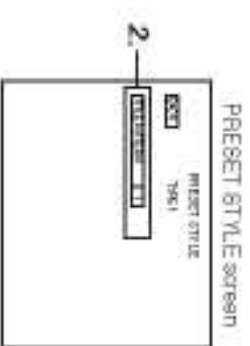
**1. Select PRESET STYLE from the TITLE MENU EDIT screen and press the SET button.**

- The PRESET STYLE screen will appear.

**2. To change the display PATTERN:**

Select TITLE PATTERN and then press the SET button. For more details regarding the editing procedure, refer to page 45.

\* The TITLE PATTERN changed here is also reflected in PRESET STYLE of the SETUP MENU.

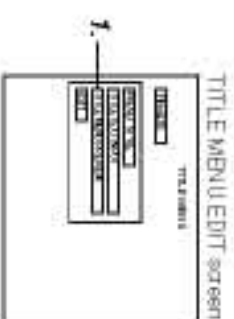


PRESET STYLE screen

## Title & Chapter Menu Settings

### Changing & Checking Title Menu Styles & Names (continued)

#### Checking the Title Menu Screen



TITLE MENU EDIT screen

**1. Select TITLE MENU PREVIEW from the TITLE MENU EDIT screen and press the SET button.**

- The TITLE MENU EDIT screen will appear.

**2. Confirm that the other pages are as required.**

Select ← from the TITLE MENU PREVIEW screen and press the SET button to move to the next page. Starting with the first page of the title menu, the display will move forward through the pages each time → is selected and the SET button is pressed.

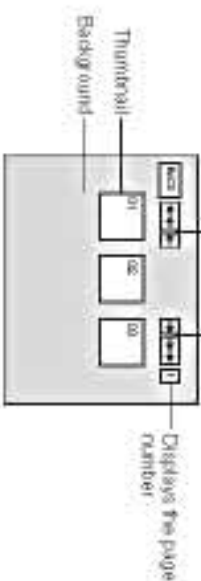
Select ← and press the SET button to move to the previous page. ← and → can be used in combination with the SET button to skip forward or back in units of ten pages.



TITLE MENU PREVIEW screen

Displays the previous page

Displays the next page number



**3. Complete the preview process.**

To do this, select BACK from the TITLE MENU PREVIEW screen and press the SET button.

- The TITLE MENU EDIT screen will reappear.

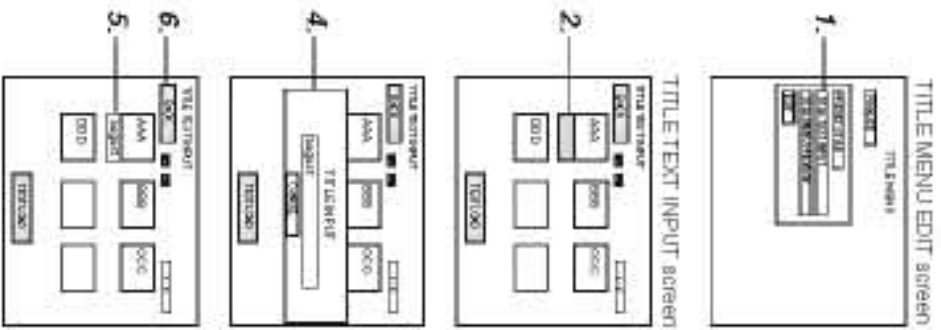
**4. If you wish to finalize the disc, select FINALIZE from the TITLE MENU EDIT screen and then press the SET button.**

\* see page 56

#### Notes

- Up to 20 seconds may be required per page to display the PREVIEW screen. More time may be required depending on the number of thumbnails per page.
- During creation of preview displays, jump by selecting the → button can only be made to the page being created.

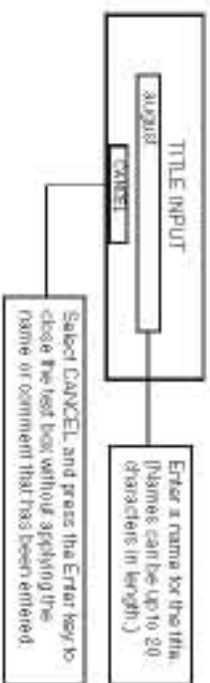
## Entering Names for the Title Menu



Use the following procedure to enter names for titles in the title menu.

- Names and comments are entered using a keyboard.
  - Set KEYBOARD STYLE from the SYSTEM MENU screen in accordance with the keyboard's input language.
- Select TITLE TEXT INPUT from the TITLE MENU EDIT screen and press the Enter key.
    - The TITLE TEXT INPUT screen is displayed.

- Use the arrow keys to select the title for which text is to be input.
  - The currently selected title is highlighted.
- Press the Enter key.
  - A box for inputting text will appear.
- Enter a name or comment into the text box.



### Notes

- The \* mark will become a backslash.
  - If text cannot be entered, press the CTRL key (right side) on the keyboard.
- After the required text has been entered, press the Enter key.
    - The text box will close.
    - The name just entered will be applied to the selected title.
  - Select BACK and then press the Enter key.
    - The TITLE MENU EDIT screen will reappear.

### Display Characters

The characters displayed in title and chapter menus depend on the title or chapter pattern that has been selected. A preview allows actual display characters to be confirmed. Note that at the time of purchase, display characters will be as follows:

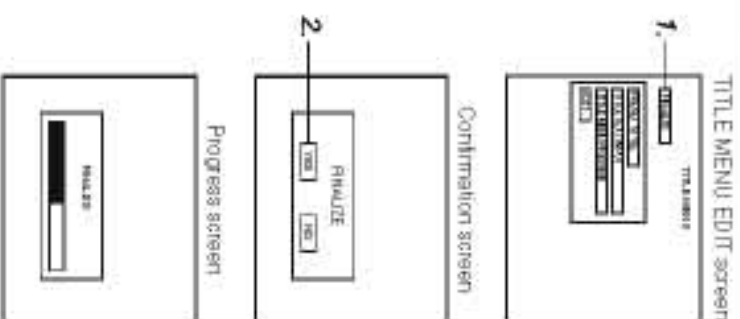
PATTERN No.	Display characters
1	16
2	10
3	17
4	20 (15 + line return + 5)
5	16
6	—



## Title & Chapter Menu Settings

### Changing & Checking Title Menu Styles & Names (continued)

#### Finalizing Discs



- Select FINALIZE from the TITLE MENU EDIT screen and press the SET button.
  - A confirmation window will appear.

- Select YES and then press the SET button.
  - The disc finalizing process will begin.
  - The state of progress during finalizing is displayed using a progress bar.
  - When the disc has been finalized, the progress bar will disappear and the E-E screen will return.

### Notes

- A maximum of 20 minutes will be required to complete finalizing.
- When finalizing is carried out, all of the discs recorded video and audio are stored in accordance with the DVD Video Standard; accordingly, this content can then also be replayed as DVD video.
- Although a disc finalized using this DVD recorder may in principle be played on other DVD players, there is no guarantee that all of its content will be playable.
- The action to be taken by this DVD recorder when a finalized disc is inserted or when playback of a title has ended is specified by DISC IN ACTION and TITLE END respectively from the REORDERER MENU (22) screen.
- Select EXIT from the TITLE MENU EDIT screen and then press the SET button to return to the E-E screen without finalizing the disc.



# Playback

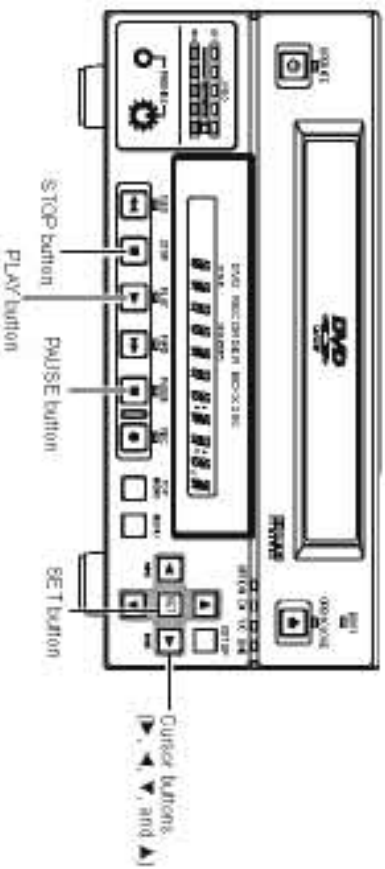
## Playing Discs

This DVD recorder can also be used to playback discs that it has recorded and finalized.

When a disc is finalized, its title menu will be used to create the top menu.

The action taken by your DVD-X200 when a disc it has finalized is inserted or when playback of a title has ended will depend on the settings of DISC IN ACTION and TITLE END as set on the RECORDER MENU (2/2) screen during recording.

\* Playback may not proceed smoothly with discs recorded using different devices, regardless of whether or not they have been finalized.



### 1. Insert a disc.

The action of the DVD recorder depends on the setting of DISC IN ACTION from the RECORDER MENU (2/2) screen. The following table describes the operators to be performed in either case.

DISC IN ACTION setting made during recording	TITLE
MENU	Playback starts automatically from the first title.

**2. Select the number of the title to be played.**  
Use the **▶**, **◀**, **▼**, and **▲** buttons to select the title number for playback.

**3. Press the SET button to begin playback.**

### 4. Set to Still mode.

This is done by pressing the PAUSE button.

- The DVD recorder enters Still mode.
- If the PAUSE button is then pressed again in Still mode, the DVD recorder will advance playback by a single frame.

### 5. Restart playback.

Press the PLAY button.

### 6. The DVD recorder will behave as follows when title playback has ended.

These actions will depend on the setting made for TITLE END from the RECORDER MENU (2/2) screen during recording:

TITLE END SETTING made during recording	REPEAT
MENU	The DVD recorder enters Stop mode and displays the title menu.
REPEAT	Repeat playback is carried out within the title menu.

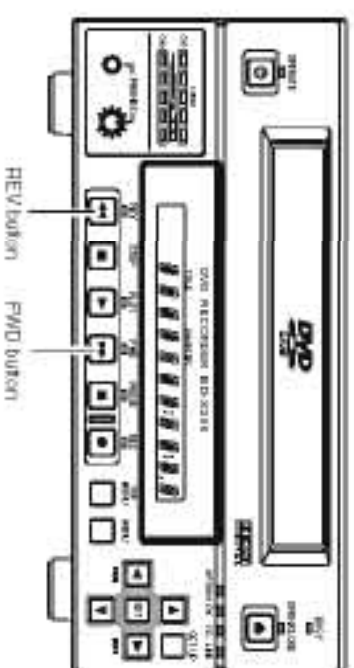
### 6. Stop playback.

This is done by pressing the STOP button.

- The DVD recorder enters Stop mode.

# Playback

## Fast & Slow Playback



### Fast-Forward & Fast-Reverse Play

#### Fast-forwarding

- Press the FWD button during playback or fast-reverse play to start fast-forward play.
- If pressed again during fast-forward play, the button toggles the speed of fast-forward play between x3 and x15.

#### Fast-reversing

- Press the REV button during playback or fast-forward play to start fast-reverse play.
- If pressed again during fast-reverse play, the button toggles the speed of fast-reverse play between x3 and x15.

### Slow-Forward & Slow-Reverse Play

#### Slow-forwarding

- Press the FWD button in Still mode or during slow-reverse play to start slow-forward play.
- If pressed again during slow-forward play, the button toggles the speed of slow-forward play between x0.5 and x0.06.

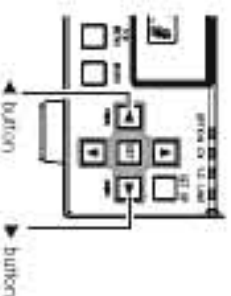
#### Slow-reversing

- Press the REV button in Still mode or during slow-forward play to start slow-reverse play.
- If pressed again during slow-reverse play, the button toggles the speed of slow-reverse play between x0.5 and x0.06.

#### Notes

- The DVD recorder can be returned to Playback mode during fast-forward, fast-reverse, slow-forward, or slow-reverse play by pressing the PLAY button. Still mode can be activated by pressing the PAUSE button. Stop mode is activated by pressing the STOP button.
- The displayed playback speed is not an exact value.

## Playing the Previous or Next Chapter



- Press the **▶** button while the DVD recorder is playing to move playback to the start of the next chapter.

- Press the **◀** button while the DVD recorder is playing to move playback to the start of the current chapter.

- If the **▶** button is pressed while the DVD recorder is playing the final chapter, playback will return to the beginning of that chapter.

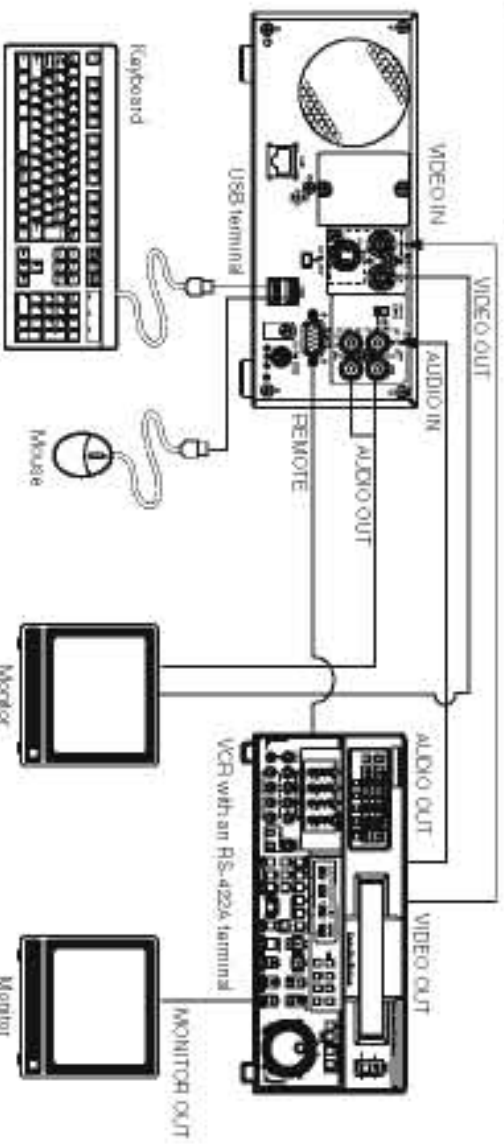
- The **▶** button is deactivated during playback of the final chapter.

# Synchronous Recording

## Recording Playback Signals From a VCR with RS-422A

RS-422A control can be used to record playback signals from a VCR with an RS-422A terminal to a disc in your BD-X200. It will also be possible to control that VCR using the DVD recorder's REMOTE CONTROL screen.

### Signal Connections



- Connect the RS-422A REMOTE terminal on the rear of the DVD recorder to the remote RS-422A terminal on the VCR using an RS-422A cable.
- Connect the DVD recorder's VIDEO LINE IN and AUDIO IN terminals to the VCR's video out and audio out terminals.
- Connect the DVD recorder's VIDEO LINE OUT and AUDIO OUT terminals to the monitor's video in and audio in terminals.
- A keyboard and mouse can be used as an alternative to the DVD recorder's buttons when using the REMOTE CONTROL screen. If used, these are to be connected to each of the USB terminals on the rear panel.

### Setup Procedures

- Insert the tape for playback into the VCR. Ensure that this tape contains an SMPTE time code.
- Insert a recordable disc into your BD-X200.

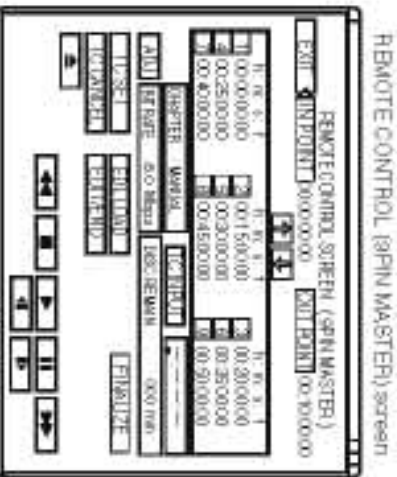
### Settings

- **VCR** : Enable control via RS-422A.
- **BD-X200** : Set REMOTE SELECT from the REMOTE MENU screen to SPIN MASTER.



**Note**  
When pressing and holding the REC button more than 2 seconds while the DVD recorder is stopped, encoded output images can be checked while the button is being held.

- When REMOTE SELECT is set to SPIN MASTER, the REMOTE CONTROL (SPIN MASTER) screen will appear. This screen is used to perform editing operations, and the corresponding operations are described on the following pages.



# Synchronous Recording

## Recording Playback Signals From a VCR with RS-422A (continued)

### Editing Via the REMOTE CONTROL (SPIN MASTER/DV MASTER) Screen

A keyboard and mouse can be used as an alternative to the DVD recorder's buttons when using the REMOTE CONTROL (SPIN MASTER/DV MASTER) screen.

- **Front panel** : Select using the cursor buttons (▶, ◀, ▲, and ▼), and confirm the selection using the SET button.
- **Keyboard** : Selected using the arrow keys (←, →, ↑, and ↓), and confirm the selection using the Enter key.
- **Mouse** : Left click the required button.
- When the REMOTE CONTROL screen is being displayed, the DVD recorder's F.WD, REV, PLAY, REC, PAUSE, MENU and TOP MENU buttons will be disabled.

**In Point (start point for editing):**  
Set the time code (hours : minutes : seconds : frames) of the position on the playback tape where recording is to be started.

**Out Point (end point for editing):**  
Set the time code (hours : minutes : seconds : frames) of the position on the playback tape where recording is to be stopped.

**Chapter list:**  
This displays the time codes of chapter marks:  
• The In Point's time codes registered as the first chapter mark.  
• A total of 96 chapters can be setup.  
• When CHAPTER CREATION from the REORDER MENU (22) screen is set to MANUAL, it will be possible to setup chapter marks at any position on the playback tape.

**TC IN PUT:** This field is used to input time codes for the In Point, Out Point, and chapter marks from the keyboard.

**DISC REMAIN:** This field shows an estimate of the remaining space for recording on the disc.

**FINALIZE:** This button is used to finalize the disc.

**TC SET**  
**TC CANCEL**  
**EDL LOAD**  
**EDIT END**

**ADJUST:** This button can be pressed to determine the remaining disc time based on the editing time and to also set a suitable bit rate. This setting is then displayed in the BIT RATE field.

**CHAPTER:** The right-hand field indicates the current setting for CHAPTER CREATION from the REORDER MENU (22) screen.  
• When set to MANUAL, chapter marks can be registered in this screen's chapter list.  
• When set to AUTO, the DVD recorder's chapter auto-creates function will set chapters. In such a case, it will not be possible to register chapters using this screen's chapter list.  
• Chapter marks are inserted at GOP intervals (i.e., 15 frames). It will not be possible to insert chapter marks that are closer together than this interval.

**VCR Control Panel**  
The buttons provided in this panel are used to control VCR operations. When a button is selected and confirmed, the VCR will carry out the corresponding operation. It is important to remember that these buttons do not control operation of this DVD recorder.

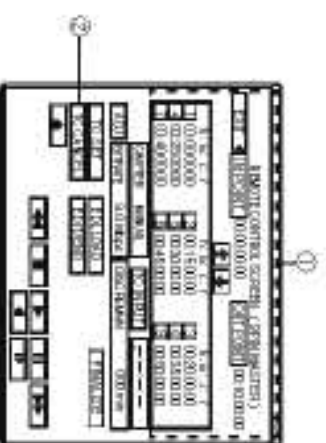
◀ : Eject  
▶ : Fast reverse or fast reverse play  
◀▶ : Frame-Reverse play  
⏸ : Stop  
⏹ : The action to be taken by the DVD recorder in response to pressing of the ▶ or ◀▶ button (i.e., F.F./REV or SEARCH) is selected using REM. F.F./REV. MODE from the REMOTE MENU screen.

⏹ : Pause  
▶ : Play  
▶▶ : Frame-advance play  
▶▶▶ : Fast forward or fast-forward play

## Synchronous Recording

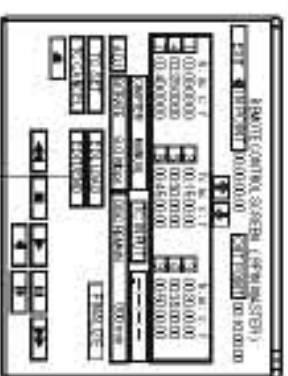
### Recording Playback Signals From a VCR with RS-422A (continued)

#### 2. Deleting the In Point, Out Point, and Chapter Marks



- Use the cursor buttons (←, →, ↑, ↓, and ▲) to select the point to be deleted (i.e., In Point, Out Point, or a chapter mark from the chapter list), and then press the SET button.
- Use the cursor buttons (←, →, ↑, ↓, and ▲) to select TO CANCEL and press the SET button.
  - The selected point (i.e., the In Point, Out Point, or a chapter mark from the chapter list) will be deleted.
  - Whenever a chapter mark is deleted, the chapter list will be renumbered.

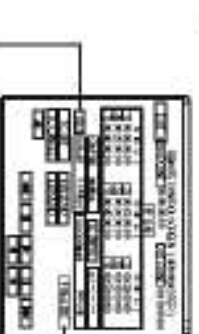
#### 3. Starting the Record Process



- Select EDIT/END from the REMOTE CONTROL screen and press the SET button.
  - VCR will begin playback by returning to the position 5 seconds before the IN POINT.
  - The unit will start record when the VCR reaches the IN POINT. Recording of video and audio from the VCR to the DVD will be carried out from the In Point to the Out Point with chapters being created as specified.
- When playback reaches the Out Point, title recording will end automatically.
  - The VCR will automatically adopt STOP mode at the time.
  - The DVD recorder will return to Stop mode and will end title recording.
  - If another title is to be recorded, repeat operations from the registration of the In Point and Out Point.

- Notes**
- Editing accuracy is ±5 frames.
  - If no In Point has been registered, recording will begin at the current tape position. However, the tape must be positioned before the Out Point and all chapter marks for this to be possible.
  - If no Out Point has been registered, a manual stop must be carried out to end recording. Select EDIT/END to end the editing process.
  - When the chapter auto-create function is used, chapters will be created at specific intervals.

#### Setting the Optimum Bit Rate



- ADJUST can be used to set the optimum bit rate (i.e., the amount of data per second) for the remaining space on a disc based on the recording time (or duration) between the In Point and the Out Point.
- D.S.C RBMAN displays an estimate of the available space for recording on the current disc.
  - BIT RATE displays the current bit-rate setting.
  - To set the bit rate that best suits the remaining disc capacity, select ADJUST and then press the SET button.

#### 4. Ending the Record Process

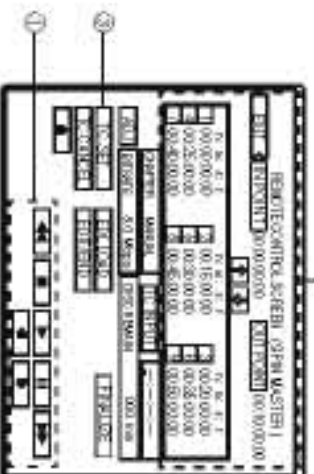
- If you intend to play the recorded disc on the DVD recorder or on another player, select FINALIZE and press the SET button. Once finalizing has been carried out, no additional recordings can be made on the disc.
- To remove the recorded disc from your BD-X200, press the OPEN/CLOSE button on the front panel.

#### 1. Registering the In Point, Out Point, and Chapter Marks

The following two methods can be used to register the In Point, Out Point, and chapter marks.

- Recording of time codes corresponding to tape positions.
  - Direct entry using a keyboard.
- Registering chapter marks: In order to register chapter marks using the REMOTE CONTROL screen, it will first of all be necessary to set CHAPTER CREATION from the REMOTE CONTROL screen (2/2) screen to MANUAL. If this parameter is set to AUTO, chapter marks will be automatically setup at specific intervals. The current setting for CHAPTER CREATION is indicated in this screen's CHAPTER field.

##### Recording from tape positions

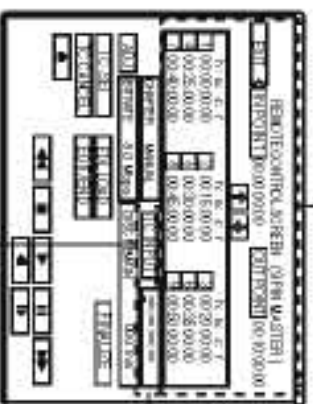


- Use the VCR Control Panel to start playback on the VCR. Press the STILL (H) button and pause VCR playback at the position to be registered. If necessary, use frame advance, and the like to set the exact position.

- Use the cursor buttons (←, →, ↑, ↓, and ▲) to select the point to be registered (i.e., the In Point or Out Point), and then press the SET button.
  - The selected point will be highlighted.

- Use the cursor buttons (←, →, ↑, ↓, and ▲) to select TO SET and press the SET button.
  - The time code will be registered for the selected point.
  - If both IN point and OUT point are not selected, the time code will be registered as a chapter point.
  - When a time code is registered for a chapter mark, the chapter list will be sorted from the smallest time-code values, and the newly registered point will be highlighted.
  - Editing can only be performed when there is continuous time codes up to 5 seconds from IN POINT.

##### Direct keyboard entry



- Use the arrow keys (←, →, ↑, ↓, and ▲) to select the point to be registered (i.e., the In Point or Out Point), and then press the Enter key.

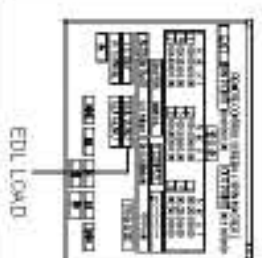
- Select the TC INPUT button using the cursor keys and input a time code (hours, minutes, seconds, frames) into the TC input field using the keyboard.

- Press the Enter key.
  - The time code will be registered for the selected point.
  - If both IN point and OUT point are not selected, the time code will be registered as a chapter point.
  - When a time code is registered for a chapter mark, the chapter list will be sorted from the smallest time-code values, and the newly registered point will be highlighted.

**Note**  
The framing mode will be matched to that used for time codes on the connected device. When in the drop frame mode, a value corrected automatically will be registered when inputting the frame to drop. (U-model only)

#### Saving & Loading Time-Code Settings

- Once settings have been made, they can be saved in your ED-X200's internal memory. Even if a different screen is opened or the power is turned off, stored data can then be loaded by selecting ED.LOAD from the REMOTE CONTROL screen and pressing the Set button.
- If CHAPTER CREATION from the REORDER MENU (2/2) screen is set to AUTO, it will not be possible to select ED.LOAD on the REMOTE CONTROL screen.
  - Whenever an external edit list (EDL) is read or time-code registration is started without performing ED.LOAD, the settings will be updated accordingly. As a result, even if ED.LOAD is selected in such a case, the previous data will not be reloaded.
- Refer to page 66 for more details regarding the loading of external EDL.

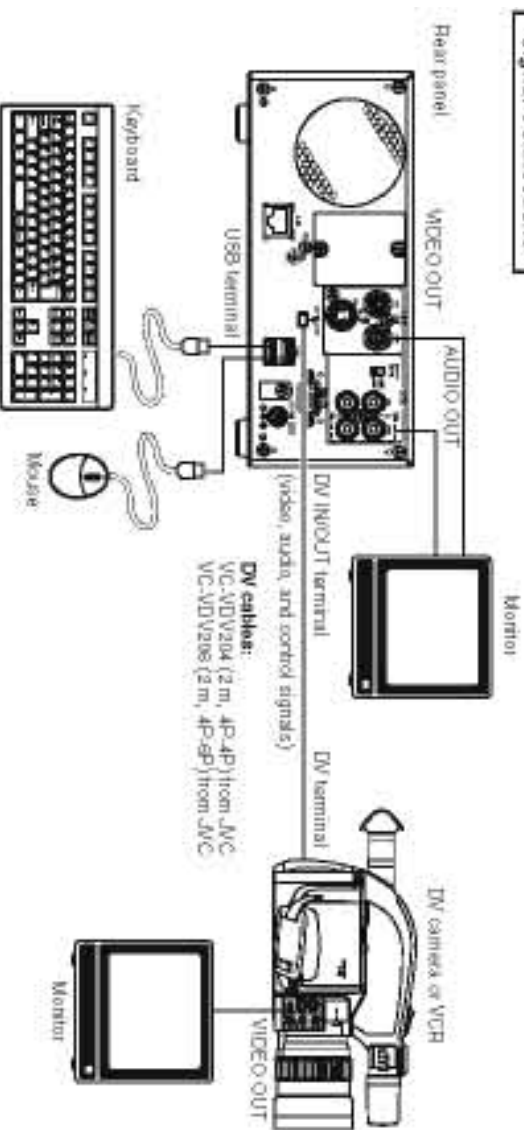




## Recording Playback Signals From a DV Camera or VCR

DV (IEEE1394) control can be used to record playback signals from a camera or VCR with a DV terminal to a disc in your BD-X200. It will then be possible to control that VCR using this DV D recorder's REMOTE CONTROL screen.

### Signal Connections



- Connect the DV IN/OUT terminal on the rear of your BD-X200 to the DV terminal on the DV camera or VCR using a DV (IEEE1394) cable. One of the commercially-available cables indicated above should be used for this purpose.
- Connect the DVD recorder's VIDEO LINE OUT and AUDIO OUT terminals to the monitor's video in and audio in terminals.
- A keyboard and mouse can be used as an alternative to the DV D recorder's buttons when using the REMOTE CONTROL screen. If used, these are to be connected to each of the USB terminals on the rear panel.

### Setup Procedures

- Insert the tape for playback into the camera or VCR. Ensure that this tape contains an EFMTE time code.
- Insert a recordable disc into your BD-X200.

### Settings

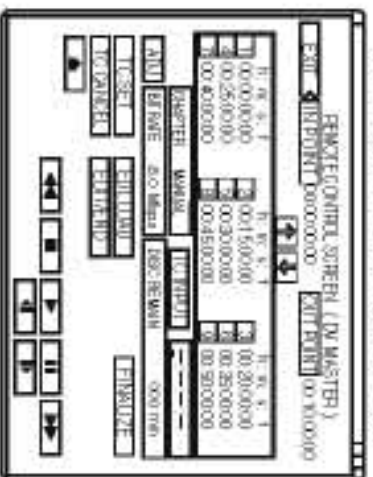
**DV camera or VCR** : Enable control via DV  
**BD-X200** : Set REMOTE SELECT to DV (MASTER).

REMOTE MENU screen



- When REMOTE SELECT is set to DV (MASTER), the REMOTE CONTROL (DV MASTER) screen will appear. This screen is used to perform editing operations, and the corresponding operations are described on pages 60 through 62.

REMOTE CONTROL (DV MASTER) screen



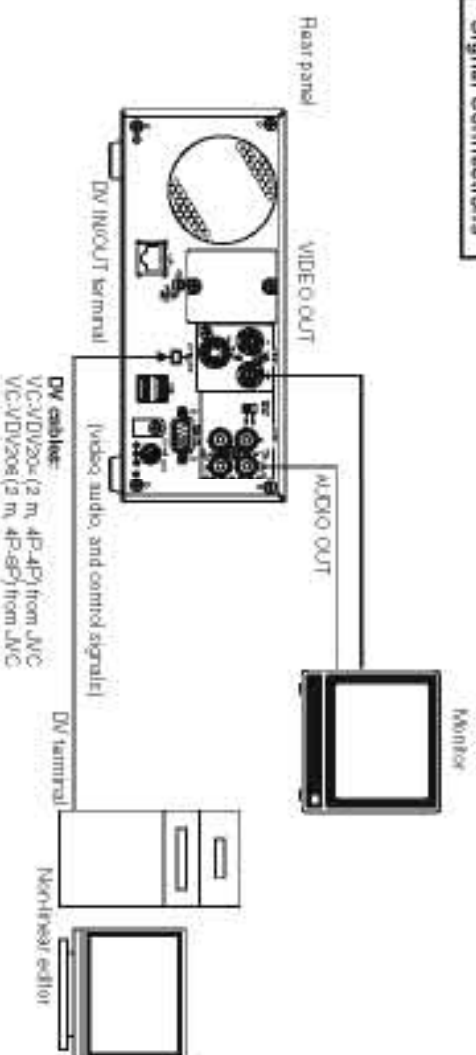
**Note**  
 When pressing and holding the REC button more than 2 seconds while the DVD recorder is stopped, encoded output images can be checked while the button is being held.

## Synchronous Recording

### Recording Video & Audio From a Non-Linear Editor

By connecting a non-linear editor featuring a DV terminal to this DVD recorder, audio and video processed using the editor can be easily recorded to a disc. In this case, the BD-X200 will be controlled by commands from the non-linear editor, and these commands will be communicated via the DV terminal.

### Signal Connections



- Connect the DV IN/OUT terminal on the rear of your BD-X200 to the DV terminal on the non-linear editor using a DV (IEEE1394) cable. One of the commercially-available cables indicated above should be used for this purpose.
- Connect the DVD recorder's VIDEO LINE OUT and AUDIO OUT terminals to the monitor's video in and audio in terminals.

### Setup Procedures

- Insert a recordable disc into your BD-X200.

### Settings

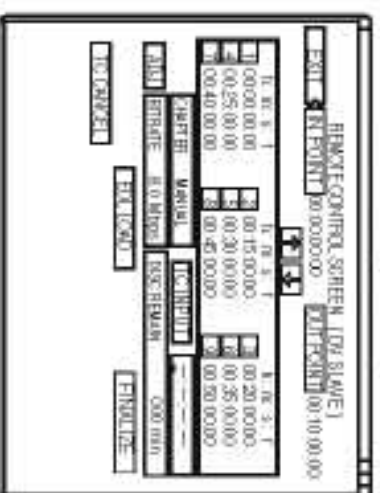
**BD-X200** : Set REMOTE SELECT from the REMOTE MENU screen to DV (SLAVE)

REMOTE MENU screen



- When REMOTE SELECT is set to DV (SLAVE), the REMOTE CONTROL (DV SLAVE) screen will appear. This screen can be used to set editing points and chapter marks. Refer to page 65 for details regarding usage of the REMOTE CONTROL (DV SLAVE) screen.

REMOTE CONTROL (DV SLAVE) screen



**Note**  
 When pressing and holding the REC button more than 2 seconds while the DVD recorder is stopped, encoded output images can be checked while the button is being held.

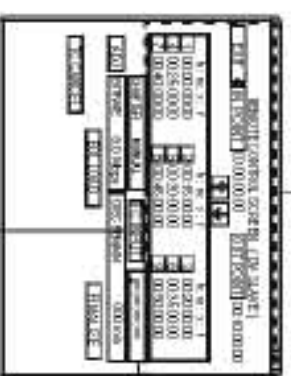
## Synchronous Recording

### Recording Video & Audio From a Non-Linear Editor (continued)

#### 1. Registering the In Point, Out Point, and Chapter Marks

Use the keyboard to directly enter the In Point, Out Point, and chapter marks.

Registering chapter marks : In order to register chapter marks using the REMOTE CONTROL screen, it will first of all be necessary to set CHAPTER CREATION from the REORDERMENU (2/2) screen to MANUAL. If this parameter is set to AUTO, chapter marks will be automatically setup at specific intervals. The current setting for CHAPTER CREATION is indicated in this screen's CHAPTER field.



#### Procedure

- ① Use the arrow keys (←, →, ↑, and ↓) to select the point to be registered (i.e., the In Point or Out Point), and then press the Enter key.
- ② Select the TC INPUT button using the cursor keys and input a time code (hours: minutes: seconds: frames) into the TC input field using the keyboard.
- ③ Press the Enter key.
  - The time code will be registered for the selected point.
  - If both In point and Out point are not selected, the time code will be registered as a chapter point.
  - When a time code is registered for a chapter mark, the chapter list will be sorted from the smallest time-code values, and the newly registered point will be highlighted.

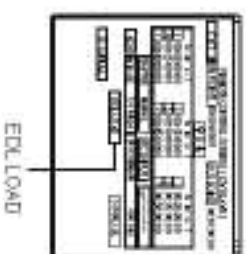
**Note**  
The framing mode will be matched to that used for time codes on the connected device. When in the drop frame mode, a value corrected automatically will be registered when inputting the same to drop (U-model only).

#### Saving & Loading Time-Code Settings

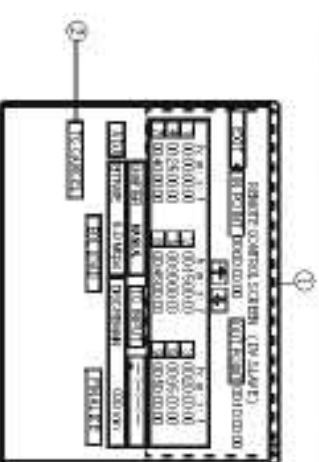
Once settings have been made, they can be saved on your BD-X200. Even if a different screen is opened or the power is turned off, stored data can then be loaded by selecting EDL LOAD from the REMOTE CONTROL screen and pressing the Set button.

- If CHAPTER CREATION from the REORDERMENU (2/2) screen is set to AUTO, it will not be possible to select EDL LOAD on the REMOTE CONTROL screen.
- Whenever an external edit list (EDL) is read or time-code registration is started without performing EDL LOAD, the settings will be updated accordingly. As a result, even if EDL LOAD is selected in such a case, the previous data will not be reloaded.

Refer to page 69 for more details regarding the loading of external EDL.



#### 2. Deleting the In Point, Out Point, and Chapter Marks



- ① Use the cursor buttons (←, →, ↑, and ↓) to select the point to be deleted (i.e., the In Point, Out Point, or a chapter mark) from the chapter list, and then press the SET button.
- ② Use the cursor buttons (←, →, ↑, and ↓) to select TC CANCEL, and press the SET button.
  - The selected point (i.e., In Point, Out Point, or a chapter mark) from the chapter list will be deleted.
  - Whenever a chapter mark is deleted, the chapter list will be sorted.

#### Editing Via the REMOTE CONTROL (DV SLAVE) Screen

A keyboard and mouse can be used as an alternative to the DVD recorder's buttons when using the REMOTE CONTROL (DV SLAVE) screen.

Front panel : Select using the cursor buttons (←, →, ↑, and ↓), and confirm the selection using the SET button.

Keyboard : Select using the arrow keys (←, →, ↑, and ↓), and confirm the selection using the Enter key.

Mouse : Left click the required button.

\* Setting of the In Point, Out Point, and chapter points can only be carried out by keyboard input.

**In Point (start point for editing):**  
Set the time code (hours: minutes: seconds: frames) at which recording is to be started.

**OUT POINT (end point for editing):**  
Set the time code (hours: minutes: seconds: frames) of the position to stop recording.

**Chapter list:**  
This displays the time codes of chapter marks. These time codes are displayed as relative values, with respect to the In Point.  
 • The In Point's time code is registered as the first chapter point.  
 • A total of 99 chapters can be setup.  
 • CHAPTER CREATION from the REORDER MENU screen must be set to MANUAL for this to be possible.

**TC INPUT:**  
This field is used to input time codes for the In Point, Out Point, and chapter marks from the keyboard.

**DISC REMAIN:**  
This field shows an estimate of the remaining space for recording on the disc.

**FINALIZE:**  
This button is used to finalize the disc.

**TC CANCEL:**  
This button is used to remove setting values for the In Point, Out Point, and chapter marks.

**EDL LOAD:**  
This button is used to load the most-recent edit list. It can be used whenever CHAPTER CREATION has been set to MANUAL.

**ADJUST:**  
This button can be pressed to determine the remaining disc time based on the editing time and also to set a suitable bit rate. This setting is then displayed in the BIT RATE field.

**CHAPTER:**  
The right-hand field indicates the current setting for CHAPTER CREATION from the REORDERMENU (2/2) screen.  
 • When set to MANUAL, chapter marks can be registered in the screen's chapter list.  
 • When set to AUTO, the DVD recorder's chapter auto-create function will set chapters. In such a case, it will not be possible to register chapters using the screen's chapter list.  
 • Chapter marks are inserted at GOP intervals (i.e., 15 frames). It will not be possible to insert chapter marks that are closer together than this interval.

## Synchronous Recording

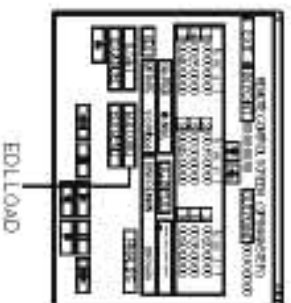
### In, Out & Chapter Points from External Edit Lists

When editing a tape edited using an external VCR or non-linear editor to a DVD, the edit list (or EDL) created during the editing process can be used to automatically set the In Point, Out Point, and chapter marks.

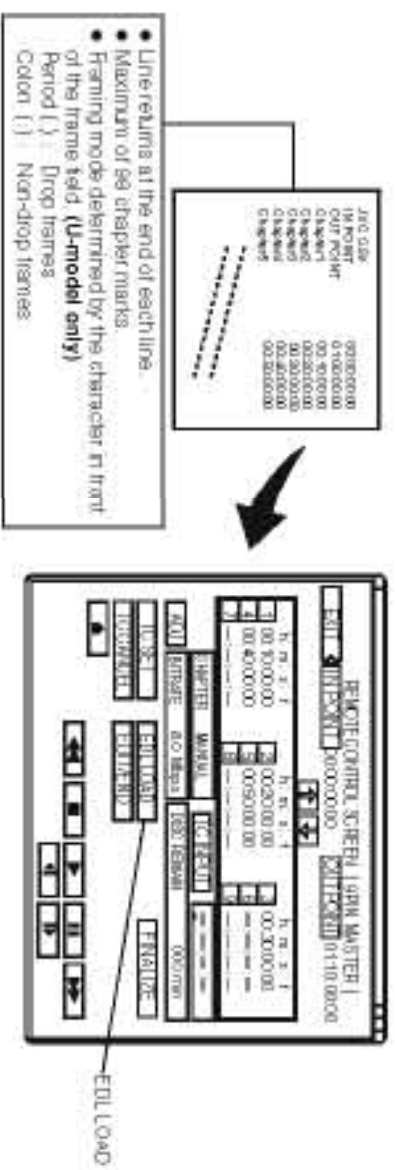
- Notes**
- Loading of external edit lists is possible when CHAPTER CREATION from the RECORDER [22] MENU screen is set to MANUAL.
  - The framing mode (for time codes (i.e., drop or non-drop)) will be matched to that of the edit list. **(U-model only)**
  - In order to be read, the EDL must be of CSV or Sony100 format.
  - The priority sequence for loading is CSV → Sony100 → internally-made EDL.
  - Chapter marks are inserted at GOP intervals (i.e., 15 frames). It will not be possible to insert chapter marks that are closer together than this interval.

#### Procedure

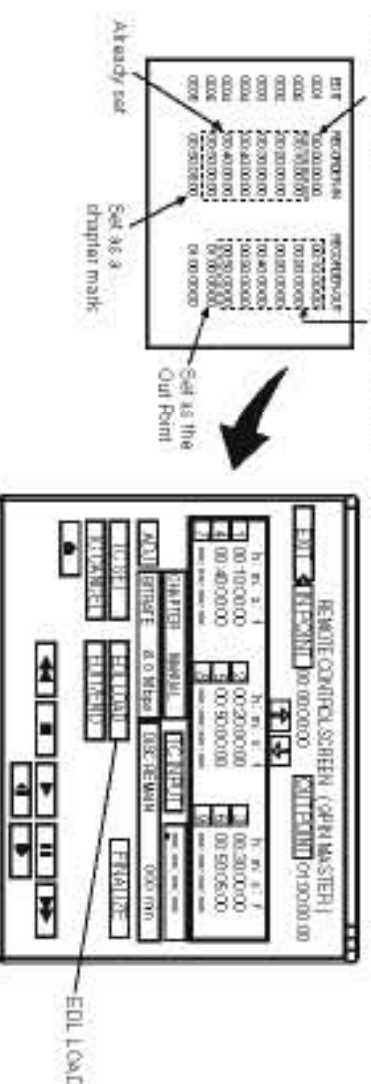
1. Transfer the external edit list to your BD-X200.
2. Select EDL LOAD from the REMOTE CONTROL screen and press the SET button.
  - The In Point, Out Point, and chapter marks are set in accordance with the EDL.



Example 1: Loading a CSV-format EDL



Example 2: Loading a Sony100-format EDL Recorder In and Recorder-Out time codes are read from the X-source and Y-source rows, and these are then set as the In Point, Out Point, and chapter marks for editing.



### 3. Starting the Record Process

- Use the non-linear editor to control the DVD recorder.
  - Each recording will be stored on the disc as a single title.
  - Recording of video and audio to the DVD will be carried out from the In Point to the Out Point with chapters being automatically created as specified.

- Notes**
- If no In Point has been set, recording will start in response to DV commands; however, since time codes are set for chapter marks as relative values with respect to the In Point, chapters may not be created as intended. It is recommended, therefore, that an In Point always be specified when chapters are to be created.
  - When the chapter auto-create function is used, chapters will be created at specific intervals.

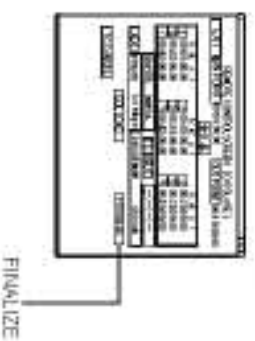
#### Setting the Optimum Bit Rate

- ADJUST can be used to set the optimum bit rate (i.e., the amount of data per second) for the remaining space on a disc based on the recording time (or duration) between the In Point and the Out Point.
- DISC REMAIN displays an estimate of the available space for recording on the current disc.
  - BIT RATE displays the current bit-rate setting.
- To set the bitrate that best suits the remaining disc capacity, select ADJUST and then press the SET button.



### 4. Ending the Record Process

- If you intend to play the recorded disc on this DVD recorder or on another player, select FINALIZE and press the SET button. Once finalizing has been carried out, no additional recordings can be made on the disc.
  - To remove the recorded disc from your BD-X200, press the OPEN/CLOSE button on the front panel.



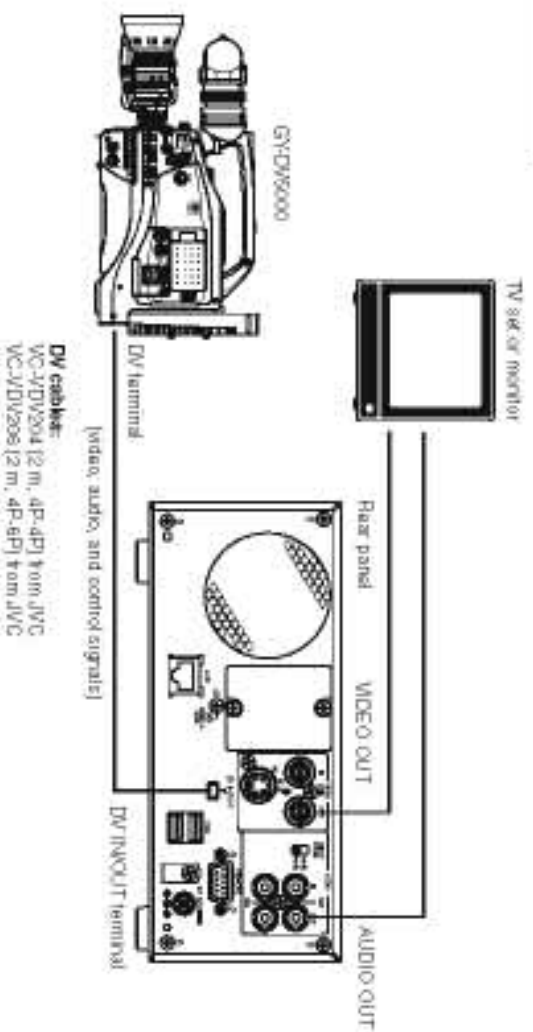


## Recording Operations Using a DV Camera Trigger

By connecting a camera featuring a DV terminal to this DVD recorder, audio and video from the camera can be easily recorded to a disc. In this type of situation, the DV camera's trigger button is used to control the BD-X200.

Supported cameras: GY-DV5000 and GY-DV9001.

### Signal Connections



- Connect the DV IN/OUT terminal on the rear of your BD-X200 to the DV terminal on the GY-DV9000 using a DV (IEEE1394) cable. One of the commercially-available cables indicated above should be used for this purpose.
- Connect the DVD recorder's VIDEO LINE OUT and AUDIO OUT terminals to the monitor's video in and audio in terminals.

### Setup Procedures

- Insert a recordable disc into your BD-X200.

### Settings

- GY-DV5000** : Set DV REC TRIGGER from the OTHERS MENU (12) screen to ON.
- BD-X200** : Set REMOTE SELECT from the REMOTE MENU screen to DV/TRIGGER. Input will automatically be DV.

REMOTE MENU screen



- The BD-X200 will adopt Slave mode. (It will not be possible to control recording operations from the DVD recorder.)

**Note**  
Not compatible with the REPLICATION feature of BR-DV6000.

### Procedure

- Recording on the BD-X200 will start and stop in response to operation of the trigger button on the GY-DV5000 or GY-DV9001.
- \* When using, make sure triggers are at least 1 second apart.

## DVD Dubbing

### Dubbing DVDs Using the LAN Terminal

When the LAN terminal is used to join two BD-X200 DVD recorders via an Ethernet connection, audio and video from a sender DVD can be dubbed onto a DVD on the receiver device.

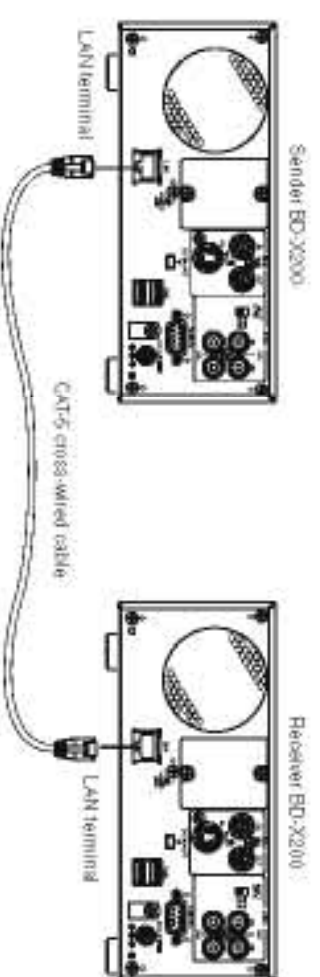
- Connected devices** : One BD-X200 SENDER (used for playback of the master DVD)  
One BD-X200 RECEIVER (used for DVD recording)

### Signal Connections

All connection and disconnection of cables should be carried out with the power turned off.

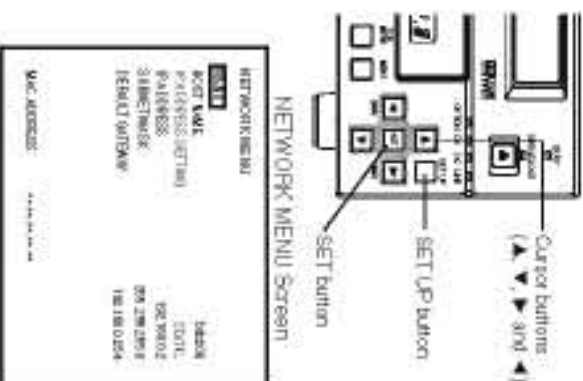
#### ■ Direct connection of two BD-X200s

Connect an Ethernet cable between the LAN terminals of the sender and receiver devices. A Category 5, cross-wired Ethernet cable should be used in this case.



## Network Settings

Use the following procedure to carry out network settings on both the sender and receiver devices.



1. Press the **SET UP** button to display the Setup Menu.
2. Select **NETWORK** from the Setup Menu and then press the **SET** button.
  - The NETWORK MENU screen will appear.
3. Use the following parameters from the NETWORK MENU screen to make settings required for dubbing.
  - **HOST NAME**  
Use the **▲** and **▼** cursor buttons or the **↑** and **↓** arrow keys to select this parameter, and then input the BD-X200's network name using the USB keyboard.
  - **IP ADDRESS, SUBNET MASK, and DEFAULT GATEWAY**  
(Names may be up to 20 characters in length.)  
Refer to the following table for more details regarding these parameters.
    - ① Select the required parameter using the **▲** and **▼** cursor buttons or the **↑** and **↓** arrow keys.
    - ② Select the digit to be set using the **▶** and **◀** cursor buttons or the **→** and **←** arrow keys.
    - ③ Change the selected digit using the **▲** and **▼** cursor buttons or the **↑** and **↓** arrow keys.
    - ④ Repeat steps ② through ③ to make all of the required settings, and then press the **SET** button or Enter key.
4. To return to the Setup Menu after all settings have been made, select **MENU** from the NETWORK screen, and then press the **SET** button or the **ENTER** key.
5. Press the **SET UP** button to return to the normal screen display.

**Setting example!**  
The value is different for each device.  
IP ADDRESS: 192.168.100.000  
SUBNET MASK: 255.255.255.000  
All devices are set to the same network.

Parameter	Description	Default setting
<b>HOST NAME</b>	The parameter is used to enter the BD-X200's network name using a keyboard. (Names may be up to 20 characters in length.)	bdx200
<b>IP ADDRESS SETTING</b>	This parameter cannot be set and is fixed in STATIC mode.	—
<b>IP ADDRESS</b>	Use this parameter to set the IP address. Make sure, however, that no two devices on a single network share the same IP address.	192.168.000.002
<b>SUBNET MASK</b>	Use this parameter to set the subnet mask. Connected BD-X200s should have the same network setting.	255.255.255.000
<b>DEFAULT GATEWAY</b>	Use this parameter to set the gateway address. Connected BD-X200s should have the same address.	192.168.000.254

## DVD Dubbing

### Dubbing DVDs Using the LAN Terminal (continued)


#### Dubbing

##### Setup Procedures

Sender device : Insert a finalized disc.  
Receiver device : Insert a blank DVD.

##### Procedure

Use the DUBBING screen to carry out the dubbing of DVDs.

1. 2. DVD → DVD dubbing screen
- 
1. **Sender and receiver devices**  
Open the DUBBING screen on both the sender and receiver devices.
    - ① Press the **SET UP** button to display the Main Setup menu.
    - ② Use the **▲** and **▼** buttons to select DUBBING and then press the **SET** button.
      - The DUBBING screen will appear.
  2. **Sender and receiver devices, set DVD → DVD from the DUBBING screen to EXECUTE and press the SET button.**  
Sender device:  
    - Search for the receiver device (see Page 79).
    - Receiver device:
    - A confirmation box for the sender device's IP address is displayed.

To end dubbing:  
 Sender device : Select **ABORT** and press the **SET** button.  
 Receiver device : The normal screen display will return.  
 Press the **SET UP** button to return to the normal screen display.
  3. **Receiver device**  
Set the IP address for the sender device as follows.
    - ① Use the on-screen confirmation box to set the required IP address.
      - The IP address of the currently-registered sender device will be displayed.
      - Press the **SET** button to use this IP address.
    - ② If setting a new sender-device IP address, set the IP address of the sender device.
      - Use the **▶** and **◀** cursor buttons to select the digit to be changed.
      - Press the cursor (**▲▼**) buttons to set the value of the selected digit.
      - Repeat the above for all digits, select **SET** using the **◀▶** buttons and press the **SET** button.
      - The sender-device IP address setting dialog box will be registered as the most up-to-date address on the receiver device.

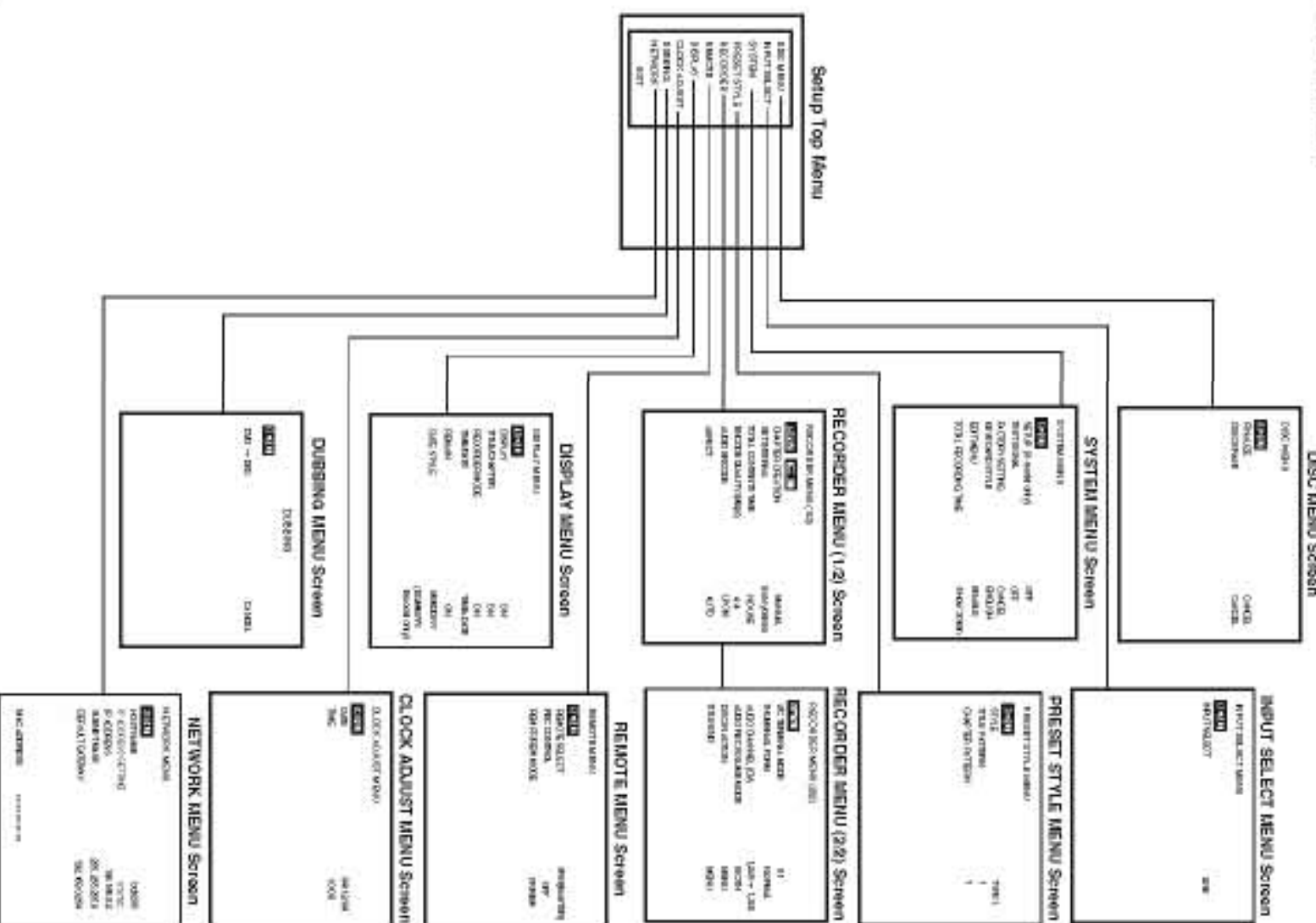
• When all of the necessary settings have been made, the status of the sender device will be displayed on the receiver device's monitor.  
 • The screen will not appear when setting the sender device trail.

IP address for the sender device

# Setup Menu

## Setup Menu Configuration

The Setup Menu screen is displayed on both the monitor and LCD display. As shown below, this screen is used to access the BD-Z300's setup menus:



#### 4. Sender device



#### 4. Sender device

- The sender device will begin searching for receiver devices.
- When connection has been completed, a dialog box for confirming the start of dubbing will appear.
- The IP address of the identified receiver device will be displayed in the dialog box for confirming the start of dubbing.

#### 5. Sender device

To proceed with dubbing, select **EXECUTE** in the confirmation box for the start of dubbing and press the **SET** button.

- DVD to DVD dubbing will begin.
- As dubbing is carried out, the state of progress will be displayed on the monitor connected to each device in the form of a progress bar.

#### Notes

- Dubbing will not be carried out if **CANCEL** is selected from the confirmation box for the start of dubbing.
- When dubbing a complete disc, approximately 90 minutes will be required to complete the process.
- Do not disconnect any cables during the dubbing process.
- If cable are accidentally disconnected, both devices should be turned off once and then restarted before subsequent use.

#### 5. Confirmation box for the start of dubbing

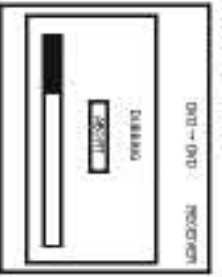


#### During Dubbing



State of progress

#### Receiver device



#### 6. DUBBING MENU screen



#### 6. Dubbing proceeds to completion.

When dubbing has ended, the display for the sender device returns to the DUBBING screen. Finalizing is performed automatically by the receiver device.

#### To cancel dubbing:

If **ABORT** from the DUBBING screen is selected and confirmed, the following confirmation box will be displayed.



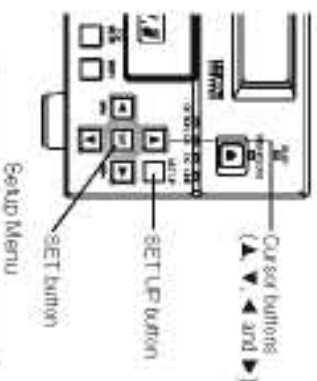
- Select **EXECUTE** and then press the **SET** button to cancel the dubbing process and return to the DUBBING menu.
- Select **CANCEL** and press the **SET** button to close the confirmation window without canceling the dubbing process.
- If dubbing is cancelled, the partially-recorded DVD will no longer be usable.



## Setting the Setup Menu

Settings made in the setup menus are stored in the BD-X2000's internal memory and will be retained even when the power is turned off. It is also possible to return to default settings whenever so required. In addition to the buttons on the front panel, a keyboard and mouse can also be used to perform operations on these menus. The following sections, however, will describe operations performed using the front panel buttons.

Keyboard : Select using the arrow keys (↑ and ↓), and confirm the selection using the Enter key.  
 Mouse : Left click the required item.



### Settings

Setup menu operations are carried out while monitoring the display on the monitor connected to the VIDEO LINE OUT terminal. In addition, setup menu content also appears on the LCD display.

#### 1. Open the Setup Menu screen.

To do this, press the SET UP button.

#### 2. Open the setup menu in which settings are to be modified.

- ① Use the ▲ and ▼ buttons to select the required screen.
- ② Press the SET button.
- The EXIT option can be selected to return to the normal screen display.

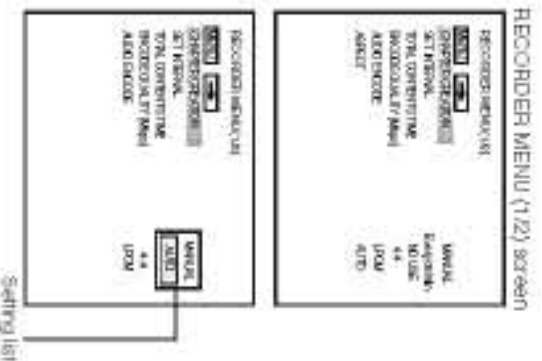
#### 3. Make the required settings in the setup menu.

- ① Use the ▲ and ▼ buttons to select the parameter to be set.
- ② Press the SET button.
  - A list of setting values will appear.
- ③ Use the ▲ and ▼ buttons to select the required value from the list and then press the SET button.
  - The setting value will be modified accordingly.
- ④ Repeat steps ① through ③ until all of the required settings have been made.

#### 4. Use either of the following methods to return to the normal screen display.

- To return to the Setup Menu, select MENU and press the SET button.
- To move to the next menu screen, select the → button at the top of the current screen and press the SET button.
- To return to the original menu screen, select either MENU or BACK and press the SET button.

4. Use either of the following methods to return to the normal screen display.
  - Press the SET UP button.
  - or
  - Select EXIT from the Setup Menu and press the SET button.



## Restoring to Default Settings



All settings from the various setup menus can be returned to the corresponding default settings by setting FACTORY SETTINGS from the SYSTEMMENU screen to EXECUTE and by then pressing the SET button.

## Setup Menu

### Setup Menus

The following table identifies and describes the parameters that may be set using the Setup Menus.

Top half : Appearance on monitor screen  
 Bottom half : Appearance on LCD display

Option	Description
DISC MENU	This button opens a menu that allows settings to be made for finalizing and other similar disc processes.
DISC MENU	
INPUT SELECT	This button opens a menu that allows input audio and video signals to be selected.
INPUT SEL	
SYSTEM	This button opens a menu that allows settings to be made for the DVD recorder itself.
SYSTEM	
PRESET STYLE	This button opens a menu that allows settings to be made for title menu and chapter menu display styles.
PRESET	
REORDER	This button opens a REORDERMENU screen containing two different pages of parameters. The REORDERMENU (1/2) screen allows settings to be made for the chapter creation method and the encoding of audio and video.
REORDER	The REORDER MENU (2/2) screen allows the settings required for recording to be made.
REMOTE	This button opens a menu that allows settings to be made for remote operators via the DVD recorder's RS-422A or DV terminal. In addition, the menu also allows indication of whether or not the REC CONTROL panel is to be displayed.
DISPLAY	This button opens a menu that allows settings to be made for the display of status and alarm information on the TV or monitor screen.
DISPLAY	
CLOCK ADJUST	This button opens a menu that allows setting of the internal clock's date and time.
CLOCK	
DUBBING	This button opens a menu that allows settings to be made for DVD dubbing.
DUB	
NETWORK	This button opens a menu that allows network settings to be made for LAN terminal usage.
NETWORK	
EXIT	This button is selected to return to the normal screen display.

## DISC MENU Screen

The following table identifies and describes the parameters that may be set using the DISC MENU screen.

Top half : Appearance on monitor screen  
Bottom half : Appearance on LCD display  
[ ] : Default setting

Parameter	Possible settings	Description
FINALIZE	[CANCEL] EXECUTE	This parameter indicates whether or not the recorded disc is to be finalized. If a disc recorded using this DVD recorder is to be played on a DVD player, it must first be finalized. Once finalizing has been carried out, no additional recordings can be made on the disc. CANCEL : Finalizing is not to be carried out. EXECUTE : Finalizing is to be carried out. * It will be necessary to close all files on a disc before it can be finalized. * A maximum of 20 minutes will be required to complete finalizing.
DISC ERASE	[CANCEL] EXECUTE	This parameter indicates whether or not a DVD-RW (video mode) is to be erased. CANCEL : This disc is not to be erased. EXECUTE : This disc is to be erased. In this process, all recorded data is erased from the disc, and it can then be recorded to as a new disc.
ERASE	[CAN] EXE	
MENU		This button is used to return to the Setup Menu screen.

## INPUT SELECT MENU screen

The following table identifies and describes the parameters that may be set using the INPUT SELECT MENU screen.

Top half : Appearance on monitor screen  
Bottom half : Appearance on LCD display  
[ ] : Default setting

Parameter	Possible settings	Description
INPUT SELECT	[LINE] Y/C DV	This parameter is used to select the audio and video input signals. LINE : The composite video signal from the VIDEO LINE IN terminal and the analog audio signals from the AUDIO IN terminals are to be used. Y/C : The YC separate signal from the Y/C IN terminal and the analog audio signals from the AUDIO IN terminals are to be used. DV : The digital video and audio signals from the DV INPUT terminal are to be used. * The horizontal indicator corresponding to the type of input signal selected on this screen will light up or start to flash. Setting of this parameter will not be possible when REMOTE SELECT from the REMOTE MENU screen has been set to DIV(MASTER), DIV(SLAVE), or DIV(TRIGGER). DV signals will be used for input at these times.
MENU		This button is used to return to the Setup Menu screen.

## Setup Menu

### SYSTEM MENU Screen

The following table identifies and describes the parameters that may be set using the SYSTEM MENU screen.

Top half : Appearance on monitor screen  
Bottom half : Appearance on LCD display  
[ ] : Default setting

Parameter	Possible settings	Description
SET UP (U model only)	[OFF] ON	This parameter is used to indicate whether or not a setup signal is to be added to analog video (i.e., composite or YC separate) during the recording process. The actual setting depends on whether the input analog signal contains a setup signal. OFF : This setting should be made when the input analog signal does not contain a setup signal. ON : This setting should be made when the input analog signal contains a setup signal.
SETUP (U model only)	[OFF] ON	
TEST SIGNAL	[OFF] ON	This parameter is used to indicate whether or not the color bar output by the DVD recorder's internal signal generator is to be displayed. OFF : The color bar is not displayed and video from the VIDEO LINE IN terminal is output to the monitor. ON : The color bar is displayed. Use this setting when the color bar is to be recorded.
TEST S	[OFF] ON	
FACTORY SETTING	[CANCEL] EXECUTE	This parameter is used to indicate whether or not all setup menu parameters are to be returned to their default settings. CANCEL : Default settings are not to be restored. EXECUTE : Default settings are to be restored.
FACTRY	[CAN] EXE	
KEYBOARD STYLE	[ENGLISH] FRENCH ITALIAN GERMAN SPANISH JAPANESE	This parameter is set when using a USB keyboard, and its purpose is to indicate the keyboard's layout (or language) as one of the following: ENGLISH FRENCH ITALIAN GERMAN SPANISH JAPANESE
KEYBOARD	[ENG] FIN ITL GER ESP JPN	<b>Note</b> The system must be restarted after this parameter is changed.
EDIT MENU	[ENABLE] DISABLE	This parameter is used to indicate whether or not a screen for editing the title and chapter menus is to be displayed when the closing or finalizing is performed. ENABLE : The menu editing screen is to be displayed. Upon title closing, the TITLE/QUAL EDIT screen will be displayed for the corresponding chapter menu. (See Page 47). Upon finalizing, the TITLE MENU EDIT screen will be displayed for the title menu. (See Page 59).
EDIT	[ON] OFF	DISABLE : The menu editing screen is not to be displayed.
TOTAL RECORDING TIME	—	This button displays the total time for recording and erasing operations. (X-Hour:XXMin)
MENU	—	This button is used to return to the Setup Menu screen.

## PRESET STYLE MENU SCREEN

The following table identifies and describes the parameters that may be set using the PRESET STYLE MENU screen.  
 Top half : Appearance on monitor screen  
 Bottom half : Appearance on LCD display  
 [ ] : Default setting

Parameter	Possible settings	Description
STYLE	[TYPE 1] TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6 TYPE 7 TYPE 8	This parameter is used to select one of the eight different display styles that have been provided for title and chapter menus (see Page 44).
STYLE	[T1] T2 T3 T4 T5 T6 T7 T8	
TITLE PATTERN	[1] to 8	This parameter is used to open the TITLE PATTERN screen. That screen can then be used to select a display pattern for the title menu.
TITLE P	[1] to 8	
CHAPTER PATTERN	[1] to 8	This parameter is used to open the CHAPTER PATTERN screen. That screen can then be used to select a display pattern for the chapter menus.
CHAP P	[1] to 8	
MENU		This button is used to return to the Setup Menu screen.

## Setup Menu

### RECORDER MENU SCREEN

The following table identifies and describes the parameters that may be set using the RECORDER screen.  
 Top half : Appearance on monitor screen  
 Bottom half : Appearance on LCD display  
 [ ] : Default setting

#### RECORDER MENU (1/2) screen

Parameter	Possible settings	Description
CHAPTER CREATION	[MANUAL] AUTO	This parameter is used to indicate whether or not chapters are to be created automatically at set intervals while recording. <b>MANUAL</b> : Chapters are not to be created automatically. <b>AUTO</b> : Use this setting when chapters are to be set manually. Chapters are to be created at set intervals during recording. The SET INTERVAL parameter below is used to specify the interval.
CHAPTER	[MANU] AUTO	
SET INTERVAL	Every 0 min [Every 0 min] Every 5 min Every 15 min 1 [5] 59	This parameter becomes active whenever CHAPTER CREATION has been set to AUTO. It is used to set the time interval for automatic chapter creation and is set in units of minutes.
INTERV	1 [5] 59	
TOTAL CONTENTS TIME	[NO USE] 0:01 9:59	If you already know the duration of the video to be recorded, this parameter can be set to the corresponding time to allow your BD-X200 to select the optimum encoding bitrate. (Date & setting in hours and minutes between 00:00 and 9:59) • If the recording time is set using this parameter, ENCODE QUALITY will be set automatically, and this setting may not be modified manually. • If this function is not to be used, set it to NO USE. When this setting is made, ENCODE QUALITY will be returned to its previous setting.
CONTENTS	[000] 001 959	
ENCODE QUALITY (Mbps)	[8.0] Setting range described on right. [9.0]	This parameter can be set when TOTAL CONTENTS TIME has been set to NO USE. Speedically it allows a set setting of the encoding bit rate (i.e., the amount of data per second). The actual setting range depends on the setting that has been made for AUDIO QUALITY.
QUALITY	[9.0]	
AUDIO ENCODE	[DOLBY DIGITAL] MPEG	This parameter is used to set the encoding format for audio data. <b>LPCM</b> : Linear PCM encoding (Non-compressed). <b>DOLBY DIGITAL</b> : Dolby AC3 encoding (Compressed). <b>MPEG</b> : MPEG3 encoding (Compressed). ( <b>E-model only</b> )
A ENC	LPCM [DOLBY DIGITAL] MPEG	
ASPECT	[AUTO] 4:3 LETTER BOX SQUEEZE	The screen aspect distinction signal of recorded video is selected. <b>AUTO</b> : Aspect distinction signal is recorded according to the screen/aspect ratio of the input video. <b>4:3</b> : Constantly records aspect distinction signal of 4:3 aspect ratio. <b>LETTER BOX</b> : Constantly records aspect distinction signal of letterbox video. (Content at the top and bottom of the screen is blacked out.) <b>SQUEEZE</b> : Constantly records aspect distinction signal of squeezed video. (Content at the left and right of the screen is compressed.) <b>Note</b> : Setting this item to LETTER BOX or SQUEEZE will not change the output image during recording and is reflected only in the recording to the disc.
ASPECT	[AUTO] 4:3 LETT SQUE	
MENU		This button is used to display the RECORDER MENU (2/2) screen. This button is used to return to the Setup Menu screen.



## Setup Menu

### REMOTE MENU screen

#### RECORDER MENU (2/2) screen

Parameter	Possible settings	Description
V/C TERMINAL MODE	S1 [S2]	This parameter is used to set the specification for the DVD recorder's VIDEO V/C INPUT terminal in order to enable the recording of wide-screen discrimination signals. S1 : S1 terminal mode is to be adopted. A discrimination signal for normal video with a 4:3 aspect ratio and squeezed video is to be recorded. S2 : S2 terminal mode is to be adopted. A discrimination signal for normal video with a 4:3 aspect ratio, squeezed video, and letterbox video is to be recorded. Squeezed video : 16:9 wide-screen content with the left and right sides compressed for normal aspect screens. Letterbox video : Content with the top and bottom of the screen blacked out.
V C TM	S1 [S2]	
THUMBALL FORM	[NORMAL] V CUT H CUT V+H CUT	Thumbball creation method for chapter and title menus during wide-signal recording is selected. NORMAL : The input signal is to be converted into thumbballs without modification. If the input video has an aspect ratio of 4:3, the corresponding thumbballs are also to have this aspect ratio. V CUT : In this case, the top and bottom of the video content is to be removed to form thumbballs. H CUT : In this case, the left and right of the video content is to be removed to form thumbballs. (SQUEEZE) V+H CUT : In this case, the top, bottom, left, and right of the video contents is to be removed to form thumbballs. (LETTERBOX)
AUDIO CHANNEL (DV)	[1,2ch → 1,2ch] 3,4ch → 1,2ch	This parameter is to be set when recording an audio signal from the DV IN/OUT terminal. Specifically, it indicates whether the signals from channels 1 and 2 or from channels 3 and 4 are to be recorded. (Only selectable for 32-KHz) 1,2ch → 1,2ch : Channels 1 and 2 are to be recorded. 3,4ch → 3,4ch : Channels 3 and 4 are to be recorded.
DV CH	[1,2] 3,4	
AUDIO REC VOL MODE	[BOTH] INDEPENDENCE	This parameter is used to select the method for adjustment of audio recording levels. Specifically, both channels can be adjusted while maintaining the same level, or each channel can be adjusted independently.
VRMODE	[BOTH] INDE	BOTH : Both channels are to be adjusted while maintaining the same level. INDEPENDENCE : Both channels are to be adjusted independently.
DISC IN ACTION	[MENU] TITLE	This parameter is used to indicate the action to be taken when a completed (i.e., finalized) disc is inserted into the DVD recorder or another DVD player. In order to be effective, this setting must be made during the recording process.
DISC IN	[MENU] TTL	MENU : The title menus to be displayed. TTL : Playback of the main contents is to begin.
TITLE END	[MENU] REPEAT	This parameter is used to indicate the action to be taken when playback of a title on a completed (i.e., finalized) disc has ended. In order to be effective, this setting must be made during the recording process.
TITLE END REPEAT	[MENU] REPT	MENU : The title menu is to be displayed. REPEAT : Playback is to be repeated within the current title.
BACK		This button is used to return to the RECORDER MENU (1/2) screen.

## Setup Menu

### REMOTE MENU screen

The following table identifies and describes the parameters that may be set using the REMOTE MENU screen.

Top half : Appearance on monitor screen  
Bottom half : Appearance on LCD display  
[ ] : Default setting

Parameter	Possible settings	Description
REMOTE SELECT	[OFF] SPIN(MASTER) DV(MASTER) DV(SLAVE) DV(TRIGGER)	This parameter is used to select a method for controlling external devices connected via the RS-422A REMOTE terminal or the DV IN/OUT terminal. OFF : Control is not to be carried out via the RS-422A REMOTE terminal or the DV IN/OUT terminal. This is the standard setting for normal operation. SPIN(MASTER) : This setting is made when recording audio and video from a VCR connected to the RS-422A REMOTE terminal. When selected, the REMOTE CONTROL (SPIN MASTER) screen appears, and this screen can be used to carry out recording operations. DV(MASTER) : This setting is made when recording audio and video from a DV camera or video connected to the DV IN/OUT terminal. When selected, the REMOTE CONTROL (DV MASTER) screen appears, and this screen can be used to carry out recording operations. DV(SLAVE) : This setting is made when recording audio and video from a non-linear editor connected to the DV IN/OUT terminal. When selected, the REMOTE CONTROL (DV SLAVE) screen appears. In addition, the BD-X200 will become the slave device and will be controlled by the non-linear editor. DV(TRIGGER) : This setting is made when the BD-X200 is connected to a DV camera, featuring a DV record triggering function, and it allows this DVD recorder to record video from the camera in response to operation of its trigger button.
REMOTE	[OFF] SPIN DVM DVS DVT	
REC CONTROL	[OFF] ON	This parameter is used to indicate whether or not the REC CONTROL panel is to be displayed on the monitor screen. ON : The REC CONTROL panel is to be displayed only when a recordable disc has been inserted and the DVD recorder is in Stop, Recording, or Recording Pause mode. OFF : The REC CONTROL panel not to be displayed.
REC	[OFF] ON	
REM FF/REW MODE	[FF/REW] SEARCH	This parameter is used to select the command output via the RS-422A REMOTE terminal or DV terminal when the FF or REW button is pressed on the REMOTE CONTROL (SPIN MASTER/DV MASTER) screen.
SEARCH	[F R] SEA	FF/REW : A FF or REW command is to be output accordingly. SEARCH : A forward-search or reverse-search command is to be output accordingly.
MENU		This button is used to return to the Setup Menu screen.

## DISPLAY MENU screen

The following table identifies and describes the parameters that may be set using the DISPLAY screen.

Top half : Appearance on monitor screen  
Bottom half : Appearance on LCD display  
[ ] : Default setting

Parameter	Possible settings	Description
DISPLAY	[OFF] [ON]	This parameter is used to indicate whether or not status and alarm information is to be displayed on the monitor screen. OFF : No such data is to be displayed on-screen. ON : Data is to be displayed on-screen. When this parameter has been set to ON, the following parameters can be used to indicate which types of status information will be displayed.
DISPLY	[OFF] [ON]	
TITLE/CHAPTER	[OFF] [ON]	This parameter is used to indicate whether or not the DVD's title, chapter number, and elapsed time are to be displayed on-screen during recording and playback. OFF : No such data is to be displayed on-screen. ON : This data is to be displayed on-screen. Note, however, that nothing will be displayed when OFF has been set for the DISPLAY parameter.
TITLE	[OFF] [ON]	
REORDER MODE	[OFF] [ON]	This parameter is used to indicate whether or not the DVD recorder's current status is to be displayed on-screen. OFF : The status is not to be displayed on-screen. ON : The status is to be displayed on-screen. Note, however, that nothing will be displayed when OFF has been set for the DISPLAY parameter.
MODE	[OFF] [ON]	
TIME/DATE	[OFF] [DATE] [TIME] [TIME+DATE]	This parameter is used to indicate whether or not the current date and/or time are to be displayed on-screen. OFF : No such information is to be displayed on-screen. DATE : Only the date is to be displayed. TIME : Only the time is to be displayed. TIME+DATE : Both date and time are to be displayed.
DATE	[OFF] [DATE] [TIME] [TIME+DATE]	<ul style="list-style-type: none"> <li>When the DVD recorder is stopped or recording, data from the internal clock is displayed. When playing a disc, the date and time of disc finalizing are displayed.</li> <li>Even if DATE, TIME, or DATE+TIME have been selected, nothing will be displayed when OFF has been set for the DISPLAY parameter.</li> </ul>
REMAIN	[OFF] [ON]	This parameter is used to indicate whether or not the disc's remaining time (in minutes) is to be displayed on-screen. OFF : No such data is to be displayed on-screen. ON : This data is to be displayed on-screen.
REMAIN	[OFF] [ON]	<ul style="list-style-type: none"> <li>During recording, the remaining space available for recording is displayed (in minutes).</li> <li>During playback, the time remaining in the current title is displayed.</li> </ul> <p>Nothing will be displayed when OFF has been set for the DISPLAY parameter.</p> <p><b>Note</b></p> <p>The remaining space available for recording will depend on factors such as the number of titles recorded and the data encoding method. Accordingly, this value should be treated as an estimate and not as an exact value.</p>
DATE STYLE	YY/MM/DD MM/DD/YY (U model) DD/MM/YY (E model)	This parameter is used to select the display style for dates. YY/MM/DD : Dates are to be displayed in year, month, and day sequence. MM/DD/YY : Dates are to be displayed in month, day, and year sequence. DD/MM/YY : Dates are to be displayed in day, month, and year sequence.
DATE STYLE	Y/M/D M/D/Y (U model) D/M/Y (E model)	
MENU		This button is used to return to the Setup Menu screen.

## Setup Menu

### CLOCK ADJUST MENU screen

The following table identifies and describes the parameters that may be set using the CLOCK ADJUST MENU screen.

Top half : Appearance on monitor screen  
Bottom half : Appearance on LCD display  
[ ] : Default setting

Parameter	Possible settings	Description
DATE		This parameter is used to set the date.
DATE		
TIME		This parameter is used to set the time.
TIME		
MENU		This button is used to return to the Setup Menu screen.

### DUBBING screen

The following table identifies and describes the parameters that may be set using the DUBBING screen.

Top half : Appearance on monitor screen  
Bottom half : Appearance on LCD display  
[ ] : Default setting

Parameter	Possible settings	Description
DVD → DVD	[CANCEL] [EXECUTE]	This parameter is to be selected to enable DVD-to-DVD dubbing via the LAN terminal. CANCEL : Dubbing is not to be carried out. EXECUTE : Dubbing is to be carried out. (see Page 70)
dub	[CAN] [EXE]	
MENU		This button is used to return to the Setup Menu screen.

## NETWORK MENU Screen

The following table identifies and describes the parameters that may be set using the NETWORK MENU screen.

Top half : Appearance on monitor screen  
Bottom half : Appearance on LCD display  
[ ] : Default setting

Parameter	Possible settings	Description
HOST NAME ----- HOST	bdx200	This parameter is used to enter the BD-X200's network name using a keyboard. Names may be up to 20 characters in length. Alphanumerical characters and hyphen (-) are allowed.
IP ADDRESS ----- IP ADD	[192.168.0.2]	This parameter is used to set the IP address. It is important to ensure that no two devices on a single network share the same IP address.
SUBNET MASK ----- SUBNET	[255.255.255.0]	This parameter is used to set the subnet mask. Connected BD-X200s should have the same network setting.
DEFAULT GATEWAY ----- GATE	[192.168.0.254]	This parameter is used to set the gateway address. Connected BD-X200s should have the same address.
MENU		This button is used to return to the Setup Menu screen.

## Others

### Troubleshooting

Before requesting for repair, please check the following URL:  
<http://www.lvo-victor.co.jp/english/product/>  
If problem persists, contact either the store where the BD-X200 was purchased or your nearest LVC authorized dealer.

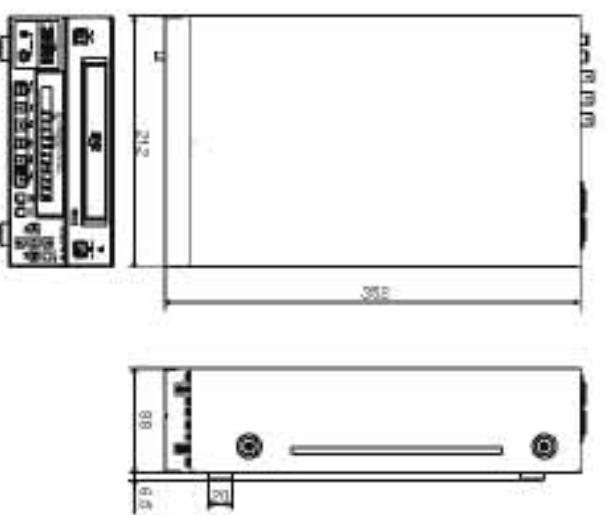


## Others

### Specifications

Recording format	DVD Video Version 1.1	<b>General</b>	Network terminal	RJ-45 (Category5), 100 BASE-Tx
Disc format	ISO9660-compatible UDF	USB terminal	USB 1.1 x2	
Recordable media	DVD-R For General Version 2.0 DVD-RW Version 1.1	Power supply	19 V DC	
Recording signals	Must conform to DVD Video Format	Power consumption	91 W 1.63 A	
<b>Video Signals</b>		Weight	4.5 kg (device only)	
Line input	1.0 V(p-p), 75 Ω unbalanced	Dimensions	212 mm (W) x 952 mm (D) x 88 mm (H) (not including feet and other protrusions)	
Y/C input	Y signal - 1.0 V(p-p), 75 Ω unbalanced C signal - 0.286 V(p-p), 75 Ω unbalanced	Permissible operating temperature	5°C to 35°C	
Line output	1.0 V(p-p), 75 Ω unbalanced	Permissible operating humidity	20 to 80% RH	
Encoding format	ISO/IEC19818-2 (MPEG-2 video)	Permissible storage temperature	-20°C to 60°C	
Quantization	8 bit	Permissible storage humidity	5 to 80% RH	
Sampling rate	13.5 MHz			
<b>Audio Signals</b>		<b>AC adaptor section</b>		
Line input	-8 dBs, 10 kΩ minimum, unbalanced +4 dBs, high impedance, unbalanced	Input	AC 100 V to 240 V ~, 50 Hz/60 Hz, 1.6A MAX.	
Line output	-8 dBs, 1 kΩ minimum, unbalanced	Output	DC 19 V $\overline{\text{---}}$ 6.3 A	
Standard level	-20 dBFS	<b>Accessories</b>		
Dynamic range	66 dB	AC adaptor	X1	
Recording format	LPCM / DOLBY DIGITAL	Power cord	X1	
Quantization	16 bit			
Sampling rate	48 kHz			
Number of channels	2			
<b>DV Interface</b>				
I/O	IEEE1394			

■ External Dimensions (Unit: mm)

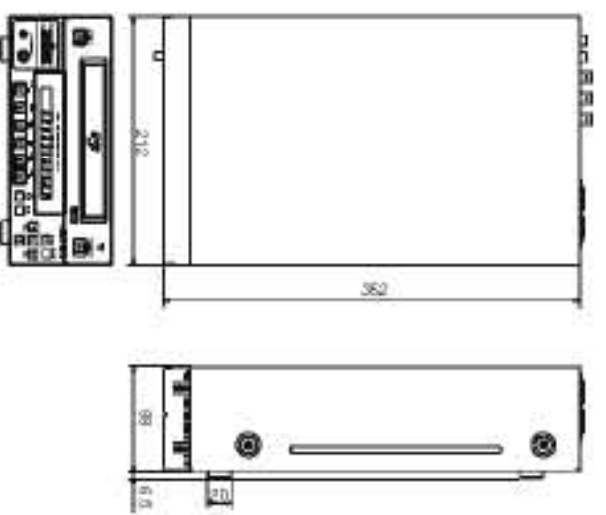


## Others

### Specifications

Recording format	DVD Video Version 1.1	<b>General</b>	Network terminal	RJ-45 (Category5), 100 BASE-Tx
Disc format	ISO9660-compatible UDF	USB terminal	USB 1.1 x2	
Recordable media	DVD-R For General Version 2.0 DVD-RW Version 1.1	Power supply	19 V DC	
Recording signals	Must conform to DVD Video Format	Power consumption	91 W 1.63 A	
<b>Video Signals</b>		Weight	4.5 kg (device only)	
Line input	1.0 V(p-p), 75 Ω unbalanced	Dimensions	212 mm (W) x 952 mm (D) x 88 mm (H) (not including feet and other protrusions)	
Y/C input	Y signal - 1.0 V(p-p), 75 Ω unbalanced C signal - 0.9 V(p-p), 75 Ω unbalanced	Permissible operating temperature	5°C to 35°C	
Line output	1.0 V(p-p), 75 Ω unbalanced	Permissible operating humidity	20 to 80% RH	
Encoding format	ISO/IEC19818-2 (MPEG-2 video)	Permissible storage temperature	-20°C to 60°C	
Quantization	8 bit	Permissible storage humidity	5 to 80% RH	
Sampling rate	13.5 MHz			
<b>Audio Signals</b>		<b>AC adaptor section</b>		
Line input	-8 dBs, 10 kΩ minimum, unbalanced +4 dBs, high impedance, unbalanced	Input	AC 100 V to 240 V ~, 50 Hz/60 Hz, 1.6A MAX.	
Line output	-8 dBs, 1 kΩ minimum, unbalanced	Output	DC 19 V $\overline{\text{---}}$ 6.3 A	
Standard level	-20 dBFS	<b>Accessories</b>		
Dynamic range	66 dB	AC adaptor	X1	
Recording format	LPCM / DOLBY DIGITAL / MPEG	Power cord	X2	
Quantization	16 bit			
Sampling rate	48 kHz			
Number of channels	2			
<b>DV Interface</b>				
I/O	IEEE1394			

■ External Dimensions (Unit: mm)



### About the audio mode during DV input

When inputting Audio UNLOCK mode signals from the DV input, high harmonic signals modulated from the audio source may be recorded as noise in rare cases. If this occurs, set the audio mode of the input source to LOCK mode, or use the LINE input or YC input.

This unit can detect audio signals of UNLOCK mode during DV input. When UNLOCK mode is detected, the unit displays:

"DV A UNLOCK" on the unit LCD  
"UNLOCKED AUDIO/DV" on the screen

until recording is started.

(May also be displayed when playing back a blank tape.)

In order to achieve higher quality recording, setting the source of DV input to the LOCK mode is recommended.

• About audio LOCK/UNLOCK mode

For DV digital signals, synchronous relationship of video and audio signals is referred to as LOCK mode, and asynchronous relationship of video and audio signals is referred to as UNLOCK mode.

In the case of DV 44.1kHz mode is normally the UNLOCK mode.  
For the 48 kHz and 32 kHz modes, settings differ depending on the inputting video device. Please check instruction manual of the used.

This product uses partial third-party software.  
For information concerning the software used, login via FTP by inputting the following into the unit and view the readme.txt file:  
User: anonymous  
Password: None  
(If the IP address of the unit is set to 192.168.0.2, FTP connection can be established by entering ftp://196.168.0.2 in the address bar of Internet Explorer.)