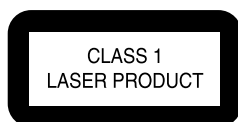


Service
Service
Service



Service Manual



Contents	Page
1 Technical Specs and Connection Facilities	2
2 Safety Instructions, Warnings, Notes	4
3 Directions for Use	5
4 Mechanical-, Dismantling Instructions, and Service Hints	14
5 Diagnostic Software, Trouble Shooting and Test Instructions	16
6 <i>Block-, Wiring Diagram and Testpoint Overview</i>	
Block Diagram	23
Wiring Diagram	24
7 <i>Electrical Diagrams and Print-Layouts</i>	<i>Diagram PWB</i>
Power Supply Unit	25 26
MPEG Board: Processor (Diagram M1)	27 30-31
MPEG Board: Audio/Power (Diagram M2)	28 30-31
MPEG Board: Video & SCART (Diagram M3)	29 30-31
Front Board (Diagram D)	32 33
8 Alignments(Not Applicable)	35
9 Circuit Descriptions (Not Applicable)	35
List of Abbreviations (Not Applicable)	35
IC Data	35
10 Spare Parts List	38

©Copyright 2002 Philips Consumer Electronics B.V. Eindhoven, The Netherlands.
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.



PHILIPS

1. Technical Specifications and PWB Location Drawing

1.1 Technical Specifications

PLAYBACK SYSTEM

DVD Video
 Video CD & SVCD
 CD (CD-Recordable and CD-Rewritable)
 MP3 CD

VIDEO PERFORMANCE

CVBS 1 Vpp into 75 ohm
 RGB (SCART) 0.7 Vpp into 75 ohm
 Black Level Shift On/Off

AUDIO FORMAT

Digital	MPEG/AC-3/DTS	Compressed
	PCM	Digital
		16, 20, 24 bits
		fs, 44.1, 48, 96 kHz

MPEG MP3 MPEG Audio L3
 Analogue Stereo Sound
 Full decoding of Dolby Digital multi-channel surround sound

AUDIO PERFORMANCE

DA Converter	24 bits
Signal-Noise (1kHz)	90 dB
Dynamic Range (1kHz)	80 dB
DVD	fs 96 kHz 4 Hz - 44 kHz
DVD/SVCD	fs 48 kHz 4 Hz - 22 kHz
SVCD/VCD/CD	fs 44.1 kHz 4 Hz - 20 kHz
MPEG MP3	MPEG Audio L3

TV STANDARD (PAL/50Hz) (NTSC/60Hz)

Number of lines	625	525
Playback	Multistandard	(PAL/NTSC)

CONNECTIONS

SCART	Euroconnector
Video Output	Cinch (yellow)
Audio L+R output	Cinch (white/red)
Digital Output	1 coaxial
	IEC958 for CDDA / LPCM/ MPEG1
	IEC1937 for MPEG2, Dolby Digital and DTS

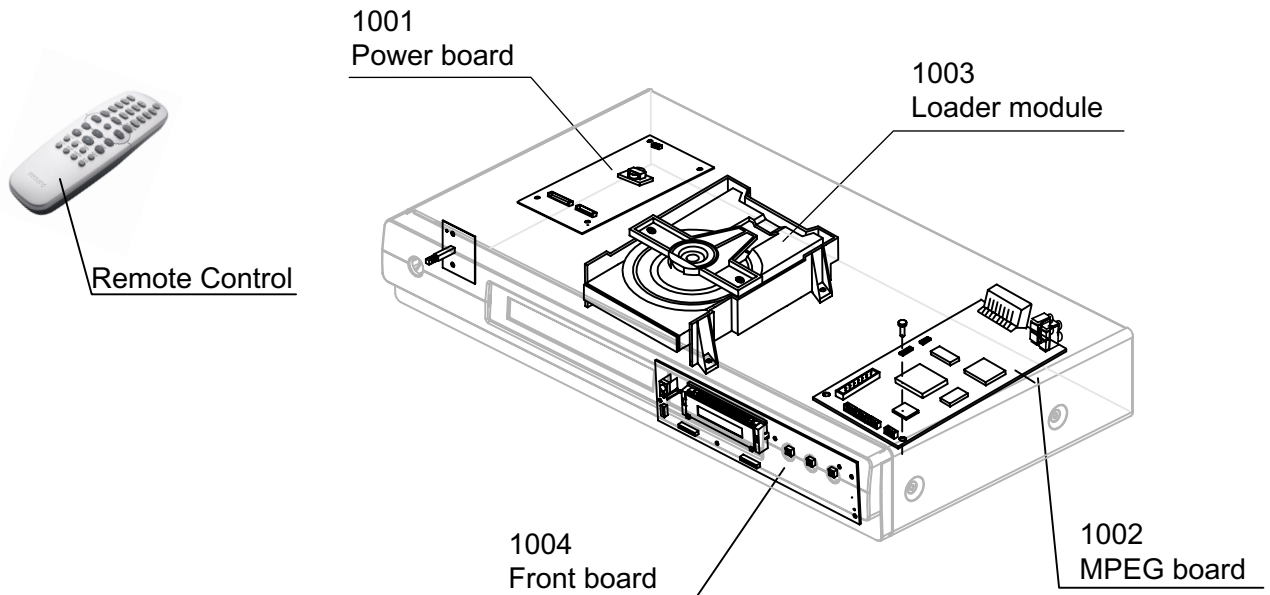
CABINET

Dimensions (w x h x d)	435 x 235 x 71 mm
Weight	Approximately 2.7 Kg

Specifications subject to change without prior notice

1.2 PWB Location Drawing

PCB LOCATION DVD640/001/021/051



PARTS 12NC LIST

DVD615/001/021/051	
1001 PSU board	3141 018 02930
1002 MPEG board	3141 018 02760
1003 Loader module	3141 018 02660
1004 Front board	3141 018 02750
Remote control	3141 017 90201

Figure 1-1 PWB Location Drawing

2. Safety Instructions, Warnings and Notes

2.1 Safety Instructions

2.1.1 General Safety

Safety regulations require that during a repair:

- Connect the unit to the mains via an isolation transformer.
- Replace safety components, indicated by the symbol ▲, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that after a repair, you must return the unit in its original condition. Pay, in particular, attention to the following points:

- Route the wires/cables correctly, and fix them with the mounted cable clamps.
- Check the insulation of the mains lead for external damage.
- Check the electrical DC resistance between the mains plug and the secondary side:
 1. Unplug the mains cord, and connect a wire between the two pins of the mains plug.
 2. Set the mains switch to the 'on' position (keep the mains cord unplugged!).
 3. Measure the resistance value between the mains plug and the front panel, controls, and chassis bottom.
 4. Repair or correct unit when the resistance measurement is less than 1 MΩ.
 5. Verify this, before you return the unit to the customer/user (ref. UL-standard no. 1492).
 6. Switch the unit 'off', and remove the wire between the two pins of the mains plug.

2.1.2 Laser Safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

Laser Device Unit

Type	: Semiconductor laser GaAlAs
Wavelength	: 650 nm (DVD) : 780 nm (VCD/CD)
Output Power	: 20 mW (DVD+RW writing) : 0.8 mW (DVD reading) : 0.3 mW (VCD/CD reading)
Beam divergence	: 60 degree

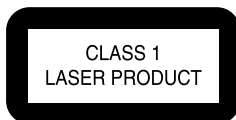


Figure 2-1 Class 1 Laser Product

Note: Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

2.2 Warnings

2.2.1 General

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD, symbol ⚡). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are at the same potential as the mass of the set by a wristband with resistance. Keep components and tools at this same potential. Available ESD protection equipment:
 - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
 - Wristband tester 4822 344 13999.
- Be careful during measurements in the live voltage section. The primary side of the power supply (pos. 1005), including the heatsink, carries live mains voltage when you connect the player to the mains (even when the player is 'off!'). It is possible to touch copper tracks and/or components in this unshielded primary area, when you service the player. Service personnel must take precautions to prevent touching this area or components in this area. A 'lightning stroke' and a stripe-marked printing on the printed wiring board, indicate the primary side of the power supply.
- Never replace modules, or components, while the unit is 'on'.

2.2.2 Laser

- The use of optical instruments with this product, will increase eye hazard.
- Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.
- Repair handling should take place as much as possible with a disc loaded inside the player.
- Text below is placed inside the unit, on the laser cover shield:

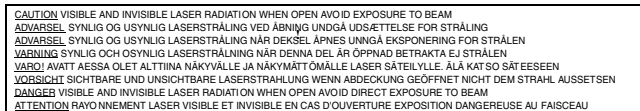


Figure 2-2 Warning text

2.2.3 Notes

Dolby

Manufactured under licence from Dolby Laboratories. "Dolby", "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories. Confidential Unpublished Works. ©1992-1997 Dolby Laboratories, Inc. All rights reserved.



Figure 2-3

Trusurround

TRUSURROUND, SRS and symbol (fig 2-4) are trademarks of SRS Labs, Inc. TRUSURROUND technology is manufactured under licence from SRS labs, Inc.



Figure 2-4

3. Directions for Use

Introduction

Thank you for purchasing this Philips DVD player. This Owner's Manual explains the basic operation of this DVD player.

Environmental Information

All unnecessary packaging has been omitted. We have tried to make the packaging easy to separate into three materials: cardboard (box), polystyrene foam (buffer) and polyethylene (bags, protective foam sheet).

Your DVD player consists of materials which can be recycled and reused if disassembled by a specialised company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

Supplied accessories

- Remote control
- Batteries (two AA size) for remote control
- Audio cable
- SCART cable (not available for all versions)
- CVBS cable
- Owner's Manual

Safety Information

- Before operating the DVD player, check that the operating voltage indicated on the typeplate (or the voltage indication beside the voltage selector) is identical with the voltage of your local power supply. If not, please consult your dealer.
- Place the DVD player on a flat, hard and stable surface.
- There must be sufficient room in front of the player for the drawer to be opened.

- In cabinet, allow about 2.5cm (1 inch) of free space all around the player for adequate ventilation.
- Do not expose your player to extreme of temperature or humidity.
- If the DVD player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens of the disc unit inside the DVD player. Should this occur, the DVD player would not operate normally. Leave the power on for about one hour with no disc in the DVD player until normal playback is possible.
- The mechanical parts of the set contain self-lubricating bearings and must not be oiled or lubricated.
- **When the DVD player is switched to Standby mode, it is still consuming some power. To disconnect the system from the power supply completely, remove the AC power plug from the wall socket.**

Symbols Used in this Manual

The below symbols appear in some headings and notes with the following meanings:

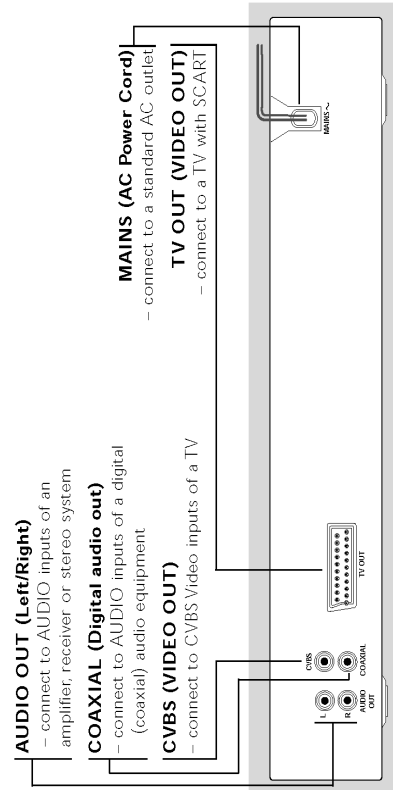
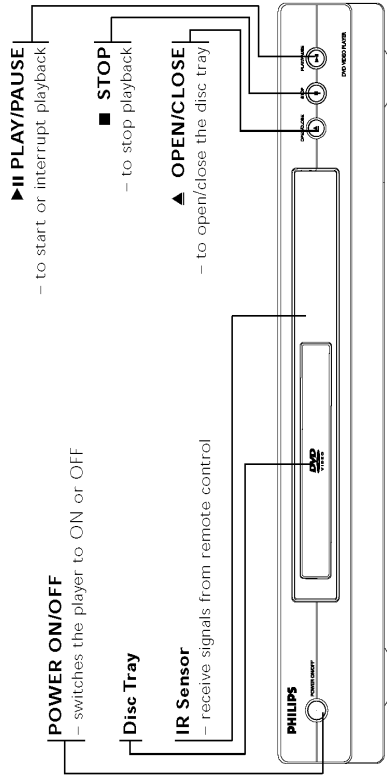
	- Description refers to playback of DVD-video discs
	- Description refers to playback of Video CDs
	- Description refers to playback of Audio-CDs
	- Description refers to playback of Super Video CDs

Helpful Hints!

- **Some DVD video discs require specific functions or allow only limited functions during playback.**
- "👉" **may appears on the TV screen which means that the function is not available on that specific DVD video disc.**

Functional Overview

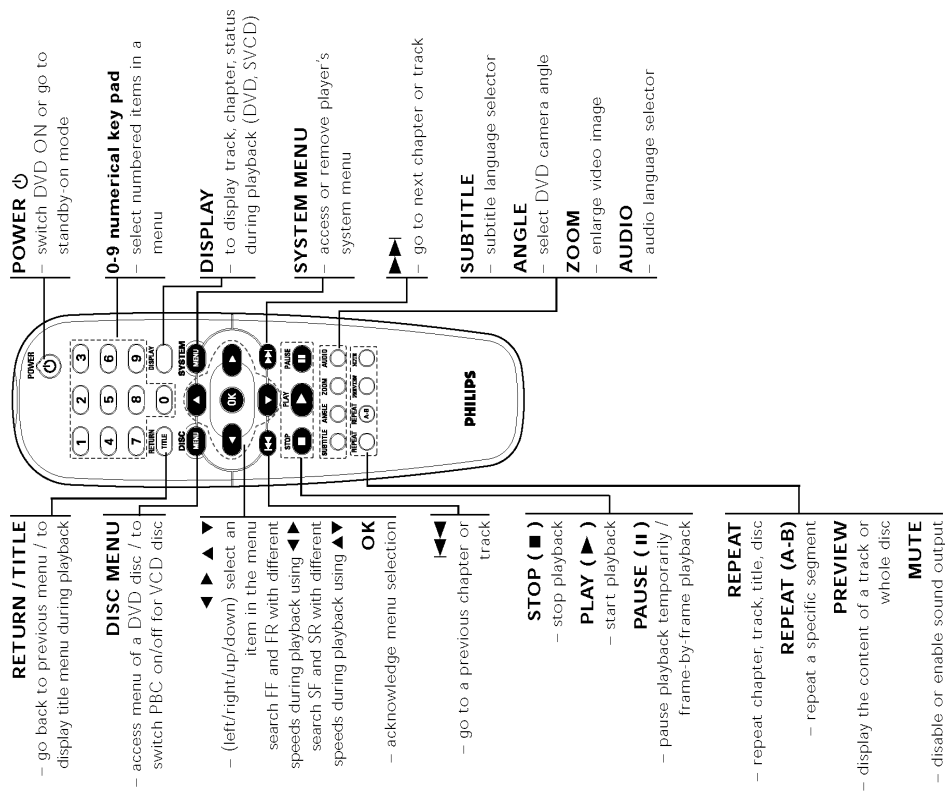
Front and Rear Panels



Caution: Do not touch the inner pins of the jacks on the rear panel. Electrostatic discharge may cause permanent damage to the unit.

Functional Overview

Remote Control



Note:

- Press numerical key pad "1" for 2 seconds to OPEN/CLOSE disc tray.

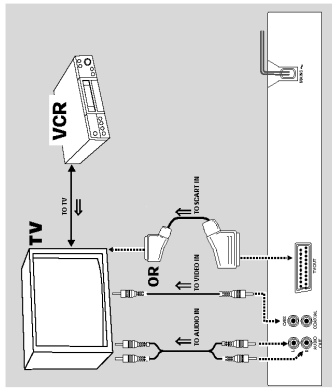
Preparation

English

If your TV is not equipped with a SCART input, you can select the following connection:

If your TV has a CVBS/Video input connector,

- 1 Connect the CVBS VIDEO OUT on the DVD player to the CVBS VIDEO IN.
- 2 Connect the Left and Right AUDIO OUT on the DVD player to the Left and Right AUDIO IN on the TV.



Basic Connections

- Please refer to the instruction manuals of your TV, VCR, Stereo System or other devices as necessary to make the best connections. Make one of the following connections, depending on the capabilities of your existing equipment.

The following guidelines are options for the best picture and sound quality available on your DVD player.

Picture

- 1 Use the CVBS Video Output for good picture quality.
- 2 Use SCART Output for best picture quality.

Sound

Digital audio connections provide the clearest sound. Connect one of the DVD player's DIGITAL AUDIO OUT (COAXIAL) to your amplifier or receiver.

- 1 If digital connections are not possible, connect the DVD player's Left and Right (white and red) AUDIO OUT to your amplifier, receiver, stereo or TV.

Warning!

- Never make or change connections with the power switched on.
- Connect the DVD player directly to your TV, instead of eg. a VCR, to avoid distortion because DVD video discs are copy protected.
- Do not connect the DVD player AUDIO OUT to PHONO IN of your amplifier or receiver.

Connecting to a TV

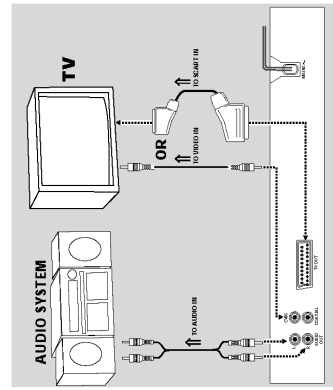
- 1 Connect the SCART (TV OUT) on the DVD player to the corresponding connector on the TV IN.

Note:

- Ensure that the "TV" indication on SCART cable is connected to the TV set and "DVD" indication on SCART cable is connected to the DVD player.

Connecting to an Audio System

- 1 You can also listen to the sound of audio CDs and DVD video discs by connecting to an optional stereo system.
- 2 Connect the Left and Right AUDIO OUT on the DVD player to the Left and Right AUDIO IN on the stereo system.



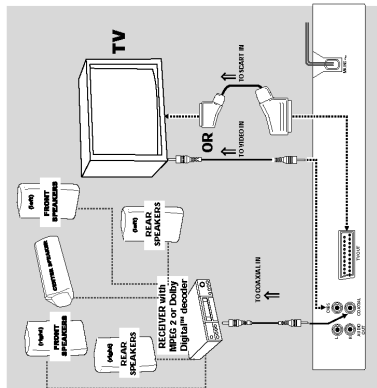
Preparation

Connecting to Optional Equipment

- A digital component with a built-in MPEG-2 or Dolby Digital™ decoder allows you to enjoy the surround sound while producing the effect of being in a movie theater or a concert hall.
- The player outputs the surround sound signals from the DIGITAL OUT COAXIAL connectors.

If your receiver has a MPEG 2 or Dolby Digital™ decoder,

- 1 Connect the COAXIAL DIGITAL AUDIO OUT of the DVD player to the COAXIAL DIGITAL AUDIO IN on your receiver.

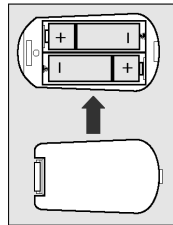


Notes:

- If the audio format of the digital output does not match the capabilities of your receiver, the receiver will produce a strong, distorted sound or no sound at all.
- To see the selected audio format of the current DVD in the Setup Menu, refer to "Setup Menu".
- MP3 Audio is not available on the Digital Output.

Inserting batteries into the Remote Control

- 1 Open the battery cover.
- 2 Insert batteries (AA size) with the correct polarity as indicated by the + and - symbols inside the battery compartment.
- 3 Close the cover.



CAUTION!

- Remove batteries if they are exhausted or not to be used for a long time.
- Do not use old and new or different types of batteries in combination.
- Batteries contain chemical substances, so they should be disposed off properly and kept away from children.

Using the Remote Control

- Direct the remote control at the remote sensor of the DVD player.
- Do not drop the remote control.
- Do not leave the remote control near extremely hot or humid places.
- Do not spill water or put anything wet on the remote control.

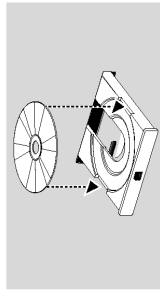
Switching On

- 1 Connect the AC power cord to the power outlet.
- 2 Switch on the TV and DVD player.
- 3 Set the TV to the correct Video IN channel. (eg. EXT1, EXT2, AV1, AV2, AUDIO/VIDEO, etc. (Refer to your TV owner's manual for detail))
 - The player display lights up and the default screen appears on the TV.
- 4 If you are using an external equipment (eg. audio system or receiver), turn them on and select the appropriate input source that was used to connect to the DVD player output. Refer to the equipment owner's manual for details.

Operation

Basic Playback

- 1 Press POWER ON/OFF on the front panel.
- 2 Press OPEN/CLOSE ▲ on the front panel to open disc loading tray.
- 3 Place the chosen disc in the tray, with the label facing up.
- 4 Press OPEN/CLOSE ▲ again to close the tray. → Playback starts automatically.



Notes:

- DVDs may have a region code. Your player will not play discs that have a region code different from the region code of your player.
- If Disc Lock is set to ON and the disc inserted is not authorised, the 4-digit code must be entered and/or the disc must be authorised (see 'Disc Lock').

General Features

- Note:**
- Unless stated, all operations described are based on remote control use. Some operations can be carried out using the menu bar on the TV screen.

Video Control during playback

STOP DVD VCD CD SVCD

- 1 You can resume playback from the point where the playback was last stopped by pressing the STOP key once.
- 2 Playback will start from the beginning if you press STOP key twice to stop playback.

PAUSE/STEP

- 1 Press PAUSE once to get a still picture during playback.
 - Playback will pause.
- 2 To step forward to the next picture frame, press PAUSE again.
- 3 To resume normal playback, press PLAY.

SEARCH (Fast Forward and Fast Backward)

- 1 Press ◀ or ▶ during playback to go to the fast forward / backward searching.
- 2 Press ◀ or ▶ again to increase the speed for searching.
- 3 To resume normal playback, press PLAY.

SLOW MOTION (Slow Forward and Slow Backward)

- 1 Press ▲ or ▼ during playback to get slow motion effect.
- 2 Press ▲ or ▼ again to get different playback forward/backward speed.
- 3 To resume normal playback, press PLAY.

VCD CD SVCD

- 1 Press ▲ during playback to get slow motion effect.
- 2 Press ▲ again to get different playback forward speed.
- 3 To resume normal playback, press PLAY.

Note:

- SLOW BACKWARD feature is not available for SVCD/VCD/CD discs.

Smart Picture

- You can select one of the predefined sets of colour settings and one set (Personal) which you can define yourself (see "Smart Picture" in Setup Menu).
- 1 Press SMART PICTURE on the front panel to change the settings (Bright, Standard, Soft and Personal).

Operation

English

Audio Control during playback

MUTE



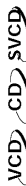
- 1 Press MUTE to disable the sound output.
- 2 Press MUTE again to enable the sound output again.

SURROUND SOUND



- 1 The DVD player can reproduce virtual surround sound effect.
- 2 Press DISPLAY on the remote control.
- 3 Use ◀▶ to highlight 3D option.
- 3 Press ▲▼ to switch between ON or OFF mode.

Audio Channel Selection



- 1 SVCD discs has two stereo audio channels which are used for playing karaoke or for selecting the audio language. (eg. choose one channel for music background of the song while playing a karaoke disc).
- 2 Press AUDIO on the remote control to select the preferred audio channel.
- 3 VCD discs has only one channel. Mono left audio or mono right audio channel by pressing the AUDIO on the remote control.

Repeat



Repeat chapter/title/disc

- To repeat the current chapter, press REPEAT.
- To repeat the current title, press REPEAT a second time.
- To exit Repeat mode, press REPEAT a third time.



Repeat track/disc

- To repeat the current track, press REPEAT.
- To repeat the entire disc, press REPEAT a second time.
- To exit Repeat mode, press REPEAT a third time.

Repeat A-B DVD, VCD, SVCD, CD

- DVD-Video Discs: repeat a sequence in a title
 - Video and Audio CDs: repeat a sequence in a track
- 1 Press REPEAT A-B at your chosen starting point.
 - 2 Press REPEAT A-B again at your chosen end point.
 - 3 The playback of the repeat sequence begins. To exit the sequence, press REPEAT A-B.

5 Disc Resume



- The RESUME feature applies not only to the disc in the player, but also to the last four discs you have played.
- 1 Simply reload the disc on the disc tray.
 - 2 Press PLAY while disc is loading.
- Playback resume from the point at which you've last stopped.

OSD (On-Screen Display)



- A number of operations can be done with the menu bar on the screen.
- 1 Press DISPLAY on the remote control to access to the menu bar.

Title Selection

- 1 Press ◀▶ to highlight TITLE number option.
 - 2 Press ▲▼ to change the Title number.
- Playback will start from the selected Title.

Chapter Selection

- 1 Press ◀▶ to highlight CHAPTER number option.
 - 2 Press ▲▼ to change the Chapter number.
- Playback will start from the selected Chapter.

Time Search

The Time Search function allows you to start playing at any chosen time on the disc.

Press ◀▶ to highlight Time Display.

DVD discs:

- CC: Total time played in Current Chapter
- CR: Remainder time in Current chapter
- TC: Total time played in Current Title
- TR: Remainder time in Current Title

SVCD or VCD discs:

- DC: Total time played in Current Disc
- DR: Remainder time in Current disc
- TC: Total time played in Current Track
- TR: Remainder time in Current track

- 2 Press ◀▶ to highlight item TIME and playback starts from the selected time position on the disc.

- Enter hours, minutes and seconds from left to right in the time edit box using remote control numerical key pad.
- Press OK to confirm the selected time.

Zoom DVD, VCD, SVCD

The Zoom function allows you to enlarge the video image.

Press ZOOM on the remote control to activate the zoom function.

- 2 Use the ◀▶▶ keys to pan across the screen.
- Playback will continue.

- 3 To exit Zoom mode, select zoom to "ZOOM OFF" by pressing ZOOM key on the remote control.

Note:

- This function is subject to availability of the disc.

Operation

English

Special DVD Features

Playing a title/chapter

- DVD video discs may have one or more TITLES, and each TITLE may have one or more CHAPTERS.

- 1 Insert a disc and close the tray, playback starts automatically.

→ The display on the screen shows the type of disc loaded, disc's information and playing time.

- 2 When the Disc Menu appear on the TV screen, use ◀▶▶ keys or numerical keys on the remote control to select an option and continue playback.

- 3 If the titles are numbered, press the numerical keys or use the ◀▶ keys to select desired title in the menubar.

- 4 Press OK to confirm the selection.

Camera Angle DVD

Some discs contain scenes which have been shot simultaneously from various angles.

This DVD player allows you to select the desired camera angle.

- Press ANGLE on the remote control repeatedly to display the multiple angles (1/4, 3/4, 2/4, 1/4).

Note:

- This function is subject to availability of the DVD disc.

Changing the audio language DVD

- Press AUDIO on the remote control repeatedly to select the different languages.

Note:

- This feature is subject to availability of the disc.

Subtitles DVD, SVCD

- 1 Press the SUBTITLE key on the remote control repeatedly to select the different subtitles.
- 2 Press SUBTITLE for about 2 seconds to switch subtitle off.

Note:

- This feature is subject to availability of the disc.

Operation

English

Special VCD & SVCD Features

Playback Control (PBC)

- 1 Load a Video CD with PBC and press PLAY.
- 2 Press DISC MENU on the remote control to select PBC ON or OFF.
- 3 Use ◀◀◀ or ▶▶▶ to select your preferred page.
- 4 If the PBC menu consists of a list of numbered index menu, enter your choice with the numerical key pad (0-9) or ◀◀▶▶ keys for direct selection.
- 4 Press OK to confirm playback.

Notes:

- You can also press RETURN to enter the index menu during playback.
- This feature is subject to availability of the disc.

If you want to skip the index menu and playback from the beginning,

- Press DISC MENU on the remote control to switch off the function.
- For karaoke discs, even if the PBC function is off, you can still use the ◀◀◀ or ▶▶▶ to select your preferred track.

Preview VCD, SVCD

- At stop mode, press PREVIEW on the remote control.
- The preview menu will be displayed.



1. INTRO

DVD player will playback every track for few seconds with full screen to obtain a summary of the disc content.

- 1 Press numerical key pad '1'.
- 2 Press OK to confirm.
- The full screen of each track will appear in sequence.
- 3 Press STOP to quit previewing.

2. DISC
Reduce the picture of 9 tracks enough to display in a full screen.



- 1 Press numerical key pad '2'.
- 2 Press OK to confirm.
- The preview of 9 track with full screen will appear.
- 3 To select other tracks beyond this page, press ◀◀◀ or ▶▶▶.
- 4 Press the numerical key pad to select preferred track.
- 5 Press OK to confirm.

3. TRACK

Reduce the picture of a single track enough to display in a full screen.



- 1 Press numerical key pad '3'.
- 2 Press OK to confirm.
- The preview of one track with 9 parts in a full screen will appear.
- 3 To select other tracks, press ◀◀◀ or ▶▶▶.
- 4 Press the numerical key pad to choose the starting point.
- 5 Press OK to playback the starting point.

4. EXIT

- 1 Press numerical key pad '4'.
- 2 Press OK to exit.

MP3 CD Playback

English

MP3 Disc Features

Support following MP3-CD formats (ISO9660 format):

- Max. 30 characters
- Max. nested directory is 8 levels
- The max. ALB number is 32
- Supported VBR bit-rate
- Supported sampling frequencies for MP3 disc are: 32 kHz, 44.1 kHz, 48 kHz
- Supported Bit-rates of MP3 disc are: 32, 64, 96, 128, 192, 256 (kbps)

Following formats can't be supported

- The files like *.WMA, *.AAC, *.DLF, *.M3U, *.PLS
- Chinese filenames
- The non-session closed discs
- The discs recorded under UDF format

Downloading MP3 files from the Internet or copying songs from your own legal discs is a delicate process.

Sound Quality	Bit-rate	Approximate Relation Ratio	Approximate MP3 CD time	Comment
AMF ratio	32 kbps	60:1	60 hrs.	Source quality significantly affected
FM ratio	64 kbps	30:1	30 hrs.	
MP ratio	96 kbps	15:1	15 hrs.	Reduced sound quality
CD like	128 kbps	10:1	10 hrs.	Compression ratio
CD*	256 kbps	5:1	5 hrs.	Compression ratio
CD*	288 kbps	3:1	3 hrs.	Support to play CD, instead

You may experience an occasional "skip" while listening to your MP3 files. This is normal.

Additional note for MP3 disc Playback:

- In compliance with the SDMI, digital-out is muted while playing MP3 discs.
- Due to the recording nature of Digital Audio MP3 (DAM), only Digital Audio music will play.
- The disc reading time may exceed 10 seconds due to the large number of songs compiled onto one disc.
- For multi-session discs, only the first session will be available.

Album/Title

This feature allows you to view and select the next or previous MP3 disc, Album/Title.

- 1 Press ◀◀◀ / ▶▶▶ to scroll through the previous or next Track.
- 2 You can also select the desired album/track number directly using the numeric keys on the remote control.

Note:

- In STOP mode, numbers are used for ALBUM selection.
- In PLAY mode, numbers are used for TRACK selection.
- Only the following functions are possible for MP3 discs:
 - STOP / PLAY / PAUSE
 - SKIP NEXT / PREVIOUS
 - REPEAT (TRACK / ALBUM / DISC)

MP3 Discs - Album/Track/Disc

- To repeat a track, press REPEAT.
- REP ONE appears on the player display.
- To repeat the entire disc, press REPEAT a second time.
- REP ALL appears on the player display.
- To exit REPEAT mode, press REPEAT a third time.
- REPEAT OFF appears on the player display.

Setup Menu

Basic Operations

- 1 At Stop mode, press SYSTEM MENU to enter the Setup menu.
- 2 Press OK to enter to next submenu or confirm your selection.
- 3 Use ◀▶ keys to enter the submenu or return to previous menu.
- 4 Use ▲▼ keys to select the preferred option.
- 5 Press SYSTEM MENU again to exit from the Setup Menu.
 - All settings will be stored in the DVD player's memory even if the DVD player is switched to power off.

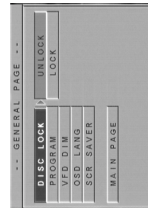
General Setup

Some settings are essential during the start up of the DVD player. For example: DISC LOCK, PROGRAM, OSD LANGUAGE and SCREEN SAVER.

- 1 Press SYSTEM MENU to enter the Setup menu.
- 2 Press ▲▼ keys to choose GENERAL SETUP menu.
- 3 Press OK to confirm selection.
- 4 Press ▲▼ keys to choose GENERAL SETUP menu on the TV screen.
- 5 Press OK to enter to next submenu or confirm your selection.

Disc Lock

When a disc is locked with a code, the code will be store in the DVD player's memory. During playback of the locked disc, the DVD player will prompt for the password.



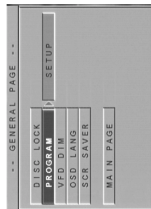
- 1 Press ▲▼ keys to select the DISC LOCK in the General Setup menu and press OK to confirm.
- 2 Enter the submenu by pressing the ▶ key.
 - LOCK: Lock the disc being played.
 - UNLOCK: Unlock the disc.
- 3 Press ◀ key to return to General Setup menu.

Notes:

- When playback a locked disc, the DVD player will prompt to enter your password or 3308 (default) password.
- To change the password, refer to option PASSWORD in PREFERENCE menu.

Program (not available for DVD discs)

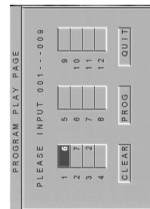
- 1 Select PROGRAM using ▲▼ keys and press OK to open the menu.
- 2 Enter the submenu by pressing the ▶ key.
 - SETUP: To access into Program mode.



- 3 Press OK to enter into the Program page.

Storing a track

- 1 Enter a valid track number using the numerical key pad.
- 2 Press ◀▶ keys to move the cursor to next selected position.
- 3 Repeat above sequence to enter another track number until the whole program is completed.
- 4 Press ◀◀ or ▶▶ to program more tracks.



Exclude a track

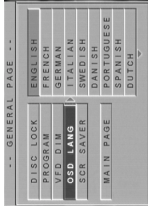
- 1 Press ◀▶ keys to move the cursor to the track that you want to exclude.
- 2 Enter an invalid track number.

Setup Menu

English

OSD Language

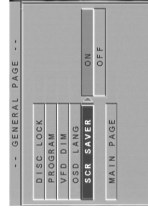
There are 14 languages available for information display on the TV screen.



- 1 Press ▲▼ keys to select the OSD LANG in the General Setup menu and press OK to confirm.
- 2 Enter the submenu by pressing the ▶ key.
- 3 Use the ▲▼ keys to highlight an option.
 - ENGLISH: OSD information will be displayed in English.
 - FRENCH: OSD information will be displayed in Français and etc.
- 4 Press OK and press ◀ key to return to General Setup menu.

Screen Saver

This function is used to turn on or off the screen saver.



- 1 Press ▲▼ keys to select the SCR SAVER in the General Setup menu and press OK to confirm.
- 2 Enter the submenu by pressing the ▶ key.
- 3 Use the ▲▼ keys to highlight an option.
 - ON: At stop mode, screen saver will turn on within 5-6 minutes.
 - OFF: Screen is disable.
- 4 Press OK and press ◀ key to return to General Setup menu.

Cancel all tracks

- 1 Press ◀▶ keys to move the cursor to the CLEAR button.
- 2 Press OK to erase all tracks.
- 3 Now you can input your favourite tracks again.

Playback tracks

- 1 When programming is completed, Press ◀▶ keys to move the cursor to the PROG button.
- 2 Press OK.
 - Playback starts with the selected programmed sequence.

Stop the program playback

- 1 At the program page, Press ◀▶ keys to move the cursor to the QUIT button.
- 2 Press OK to exit this menu or press STOP key twice.

VFD Dim

This function is used to adjust the brightness of the display on the front panel.

- 1 Press ▲▼ keys to select the VFD DIM in the General Setup menu and press OK to confirm.
- 2 Enter the submenu by pressing the ▶ key.
- 3 Use the ▲▼ keys to highlight an option.
 - 100: VFD brighter than normal.
 - 70: standard brightness
 - 40: VFD to dim mode
 - OFF: switch off front panel display
- 4 Press OK and press ◀ key to return to General Setup menu.

Setup Menu

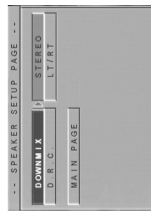
English

Speaker setup

This menu contains setup options of your speaker system, such as DOWNMIX and D.R.C. (Dynamic Range Compression).

- 1 Press SYSTEM MENU to enter the Setup menu.
- 2 Press **▲** keys to choose SPEAKER SETUP menu.
- 3 Press OK to confirm selection.
- 4 To exit to default screen, select MAIN PAGE.

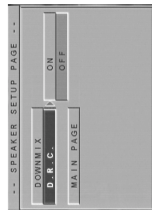
DOWNMIX mode



- 1 Press **▲** keys to select the DOWNMIX in the Speaker Setup menu and press OK to confirm.
- 2 Enter the submenu by pressing the **▶** key.
- 3 Use the **▲** keys to highlight an option.
 - STEREO: This setting will downmix the signal of Dolby Digital and DTS into stereo signals directly output from L/R connector.
 - L/R/T: Select this settings when the DVD player is connected to a Dolby Pro Logic decoder which send a signal output from the DVD player.
- 4 Press OK and press **◀** key to return to Speaker Setup menu.

D.R.C (Dynamic Range Compression)

To optimised the dynamic sound output. High volume outputs are softened, enabling you to watch your favourite action movie without disturbing others.



- 1 Press **▲** keys to select the D.R.C. in the Speaker Setup menu and press OK to confirm.
- 2 Enter the submenu by pressing the **▶** key.
- 3 Use the **▲** keys to highlight an option.
 - ON: Enable D.R.C.
 - OFF: Disable D.R.C.
- 4 Press OK and press **◀** key to return to Speaker Setup menu.

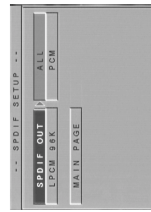
SPDIF setup

- 1 Press SYSTEM MENU to enter the Setup menu.
- 2 Press **▲** keys to choose SPDIF SETUP menu.
- 3 Press OK to confirm selection.
- 4 To exit to default screen, select MAIN PAGE.

Note:

- SPDIF is the abbreviation of Sony Philips Digital Interface which is a protocol of digital data transferring.

SPDIF OUT setup



- 1 Press **▲** keys to select the SPDIF OUT in the SPDIF Setup menu and press OK to confirm.
- 2 Enter the submenu by pressing the **▶** key.
- 3 Use the **▲** keys to highlight an option.
 - ALL: Original digital signals output
 - PCM: Convert to PCM signals to digital output.
- 4 Press OK and press **◀** key to return to SPDIF Setup menu.

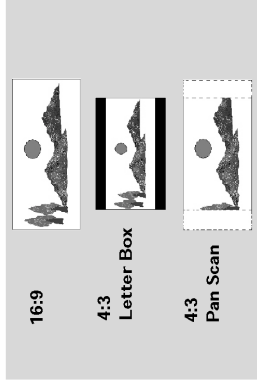
Setup Menu

English

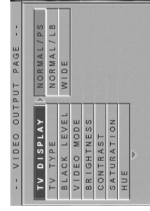
TV Display

Select the aspect ratio of the TV to be connected.

- 16:9** → when you connect a wide-screen TV to the DVD player.
- 4:3 LETTER BOX** → when you connect a normal TV to the DVD player. Displays a wide picture with bands displayed on the upper and lower portions of the TV screen.
- 4:3 PAN SCAN** → when you connect a normal TV to the DVD player. Displays the wide picture on the whole TV screen with a portion automatically cut off.

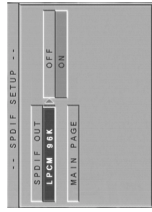


- 1 Press **▲** keys to select the TV DISPLAY in the General Setup menu and press OK to confirm.
- 2 Enter the submenu by pressing the **▶** key.
- 3 Use the **▲** keys to highlight an option.



- 4 Press OK and press **◀** key to return to VIDEO OUTPUT Setup menu.

LPCM 96K mode



- 1 Press **▲** keys to select the LPCM 96K in the SPDIF Setup menu and press OK to confirm.
- 2 Enter the submenu by pressing the **▶** key.
- 3 Use the **▲** keys to highlight an option.
 - ON: Detect the loading disc for appropriate sampling rate.
 - OFF: The decoding process is under the sampling rate of 48KHz.
- 4 Press OK and press **◀** key to return to SPDIF Setup menu.

Video Out Setup

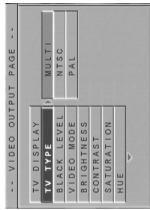
Some settings that are included in VIDEO OUT PAGE menu are: TV DISPLAY, VIDEO OUTPUT, TV TYPE, BLACK LEVEL, VIDEO MODE, BRIGHTNESS, CONTRAST, SATURATION, HUE

- 1 Press STOP twice.
- 2 Press SYSTEM MENU to enter its menu.
- 3 Select the VIDEO OUTPUT SETUP by pressing **▲** key and OK the confirm selection.

Setup Menu

TV Type

This player is equipped with an NTSC/PAL settings to ensure that the DVD player system matches your TV.

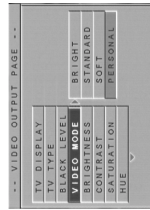


- Press **▲** keys to select the TV TYPE in the General Setup menu and press **OK** to confirm.
- Enter the submenu by pressing the **▶** key.
- Use the **▲** keys to highlight an option.
 - **MULTI**: Video output is depending on the format of the disc.
 - **NTSC**: DVD player will output only NTSC system.
 - **PAL**: DVD player will output only PAL system.
- Press **OK** and press **◀** key to return to VIDEO OUTPUT Setup menu.

Smart Picture

You can select one of the predefined set of colour settings and one set (Personal) which you can define yourself.

Video mode



- You can choose one picture setting from a fixed predefined set (Bright, Standard and Soft).
- Press **▲** keys to select the VIDEO MODE in the VIDEO OUTPUT Setup menu and press **OK** to confirm.
 - Enter the submenu by pressing the **▶** key.

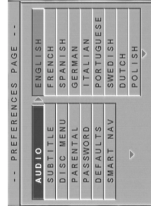
Preferences setup

Some settings that are included in PREFERENCES menu are: AUDIO, SUBTITLE, DISC MENU, PARENTAL CONTROL, PASSWORD, DEFAULT and SMART NAV.

- Press **STOP** twice.
- Press SYSTEM MENU to enter its menu.
- Select the PREFERENCES by pressing **▲** key and **OK** the confirm selection.

Audio language

DVD discs are available for multi-audio languages. Use these settings to select your preferred default language.



- Press **▲** keys to select the AUDIO in the PREFERENCES menu and press **OK** to confirm.
- Enter the submenu by pressing the **▶** key.
- Use the **▲** keys to highlight an option.
- Press **OK** and press **◀** key to return to PREFERENCES menu.

- Notes:**
- This feature is subject to availability of the disc.
 - If the language selected is not available on the disc, the default language designated by each disc will be selected.

Subtitle language

DVD discs are available for multi-subtitle languages. Use these settings to select your preferred default language.

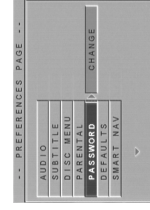


- Press **▲** keys to select the SUBTITLE in the PREFERENCES menu and press **OK** to confirm.
- Enter the submenu by pressing the **▶** key.
- Use the **▲** keys to highlight an option.
- Press **OK** and press **◀** key to return to PREFERENCES menu.

- Notes:**
- This feature is subject to availability of the disc.
 - If the language selected is not available on the disc, the default language designated by each disc will be selected.

Password

You can change the setup of parental control and disc lock. Enter your password when required by the DVD player.



Setup Menu

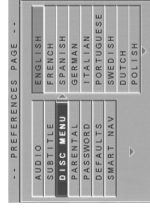
English

- Press **▲** keys to select the SUBTITLE in the PREFERENCES menu and press **OK** to confirm.
- Enter the submenu by pressing the **▶** key.
- Use the **▲** keys to highlight an option.
- Press **OK** and press **◀** key to return to PREFERENCES menu.

- Notes:**
- This feature is subject to availability of the disc.
 - If the language selected is not available on the disc, the default language designated by each disc will be selected.

Disc menu language

DVD discs are available for multiple disc menu languages. Use these settings to select your preferred default language.



- Press **▲** keys to select the DISC MENU in the PREFERENCES menu and press **OK** to confirm.
- Enter the submenu by pressing the **▶** key.
- Use the **▲** keys to highlight an option.
- Press **OK** and press **◀** key to return to PREFERENCES menu.

- Notes:**
- This feature is subject to availability of the disc.
 - If the language selected is not available on the disc, the default language designated by each disc will be selected.

English

Setup Menu

- 1 Press **▲▼** keys to select the **PASSWORD** in the Preferences menu and press **OK** to confirm.
- 2 Enter the submenu by pressing the **▶** key.
- 3 Use the **▲▼** keys to highlight an option.



- 4 Enter the current 4 digit code.
- 5 Enter a new 4-digit code when the DVD player prompts for a new code.
- 6 Enter the code a second time to reconfirm.
- 5 Press **PLAY** key to return to Preferences menu.
→ The new 4 digit code will take effect.

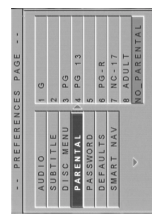
Note:

- If you forget the password, you can enter the default password 3308 and replace your password after logging in.

Parental Control

Parental Control allows you to prevent discs from being played by your children or to have certain discs played with alternative scenes.

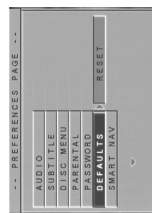
- If you set a rating for the player, all scenes with the same rating or lower will be played.
- If no suitable ratings is found, playback will stop and the 4-digit code has to be entered.
- VCD, SVCD, CD and illegal DVD discs have no level of definition, thus Parental Control is not available on these discs.



- 1 Press **▲▼** keys to select the **PARENTAL** in the Preferences menu and press **OK** to confirm.
- 2 Enter the submenu by pressing the **▶** key.
- 3 Use the **▲▼** keys to highlight a rating from 1 to 8 for the loaded disc.
- Select **NO PARENTAL** and press **OK** to deactivate the Parental Control feature. Press **OK** and press **◀** key to return to Preferences menu.

Default

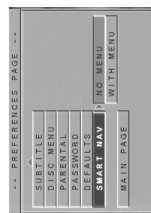
Use **DEFAULT** feature if problems occur during setting the DVD player. This feature will reset all settings to factory default and all the personal settings will be erased.



- 1 Press **▲▼** keys to select the **DEFAULTS** in the Preferences menu and press **OK** to confirm.
- 2 Enter the submenu by pressing the **▶** key.
- 3 Press **OK**.

Smart Navigator

Smart Navigator menu will be displayed during picture CD and MP3 CD playback.



- 1 Press **▲▼** keys to select the **SMART NAV** in the Preferences menu and press **OK** to confirm.
- 2 Enter the submenu by pressing the **▶** key.
- 3 Use the **▲▼** keys to highlight an option.
→ **NO MENU**; playback all images or MP3 musics in sequence automatically
→ **WITH MENU**; playback images or MP3 musics in the selected folder.
Press **OK** to confirm your selection.
- 4

Troubleshooting

WARNING

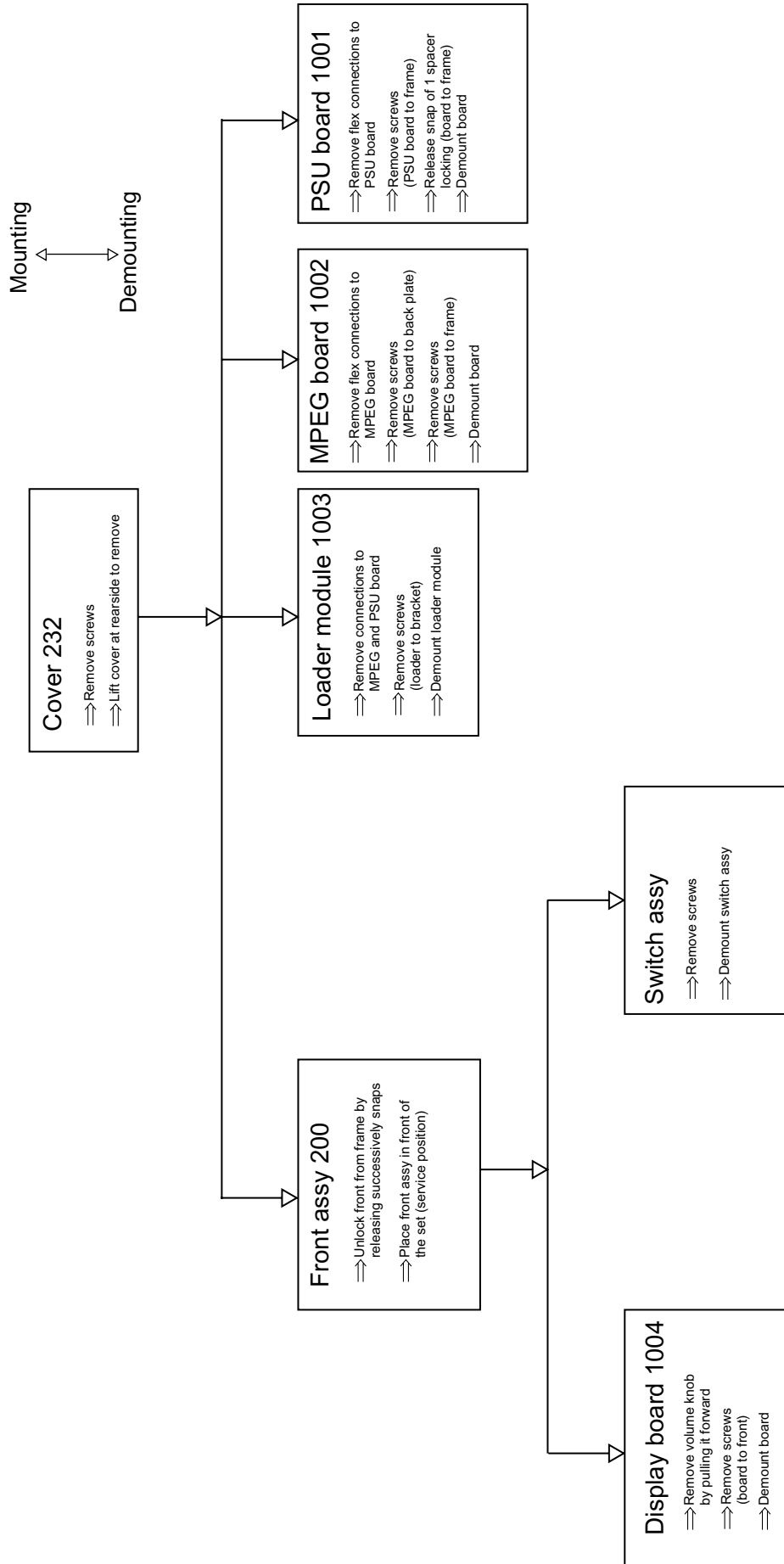
Under no circumstances should you try to repair the system yourself, as this will invalidate the warranty. Do not open the system as there is a risk of electric shock. If a fault occurs, first check the points listed below before taking the system for repair.

Problem	Solution
No power	– Check if the AC power cord is properly connected.
No picture	– Check if the TV is switched on. – Check the video connection.
Distorted picture	– Sometimes a small amount of picture distortion may appear. This is not a malfunction.
Completely distorted picture or black/white picture with DVD or Video CD	– Make sure the NTSC/PAL setting at the DVD player matches the video signal of your television. (See NTSC/PAL Conversion/Settings)
No sound or distorted sound	– Adjust the volume.
No audio at digital output	– Check that the speakers are connected correctly. – Check the digital connections.
No sound and picture	– Check the settings menu to make sure the digital output is set to ALL or PCM. – Check if the audio format of the selected audio language matches your receiver capabilities.
Disc can't be played	– Check that the SCART cable is connected to the correct device (See Connecting to a TV) – Ensure the disc label is facing up. – Check if the disc is defective by trying another disc. – Region code incorrect.
Picture freezes momentarily during playback	– Check the disc for fingerprints/scratches and clean with a soft cloth wiping from centre to edge.
No return to start-up screen when disc is removed	– Reset the unit by switching the player off, then on again.
The player does not respond to the remote control	– Aim the remote control directly at the sensor on the front of the player. – Reduce the distance to the player. – Replace the batteries in the remote control. – Re-insert the batteries with their polarities (+/- signs) as indicated.
Buttons do not work or player stops responding	– To completely reset the player, unplug the AC cord from the AC outlet for 5-10 seconds.
Player does not respond to some operating commands during playback.	– Operations may not be permitted by the disc. Refer to the instructions of the disc.
DVD Video player cannot read CDs/DVDs	– Use a commonly available cleaning CD/DVD to clean the lens before sending the DVD player for repair.

If you are unable to remedy a problem by following these hints, consult your dealer or service centre (HOTLINE).

4. Mechanical- and Dismantling Instructions

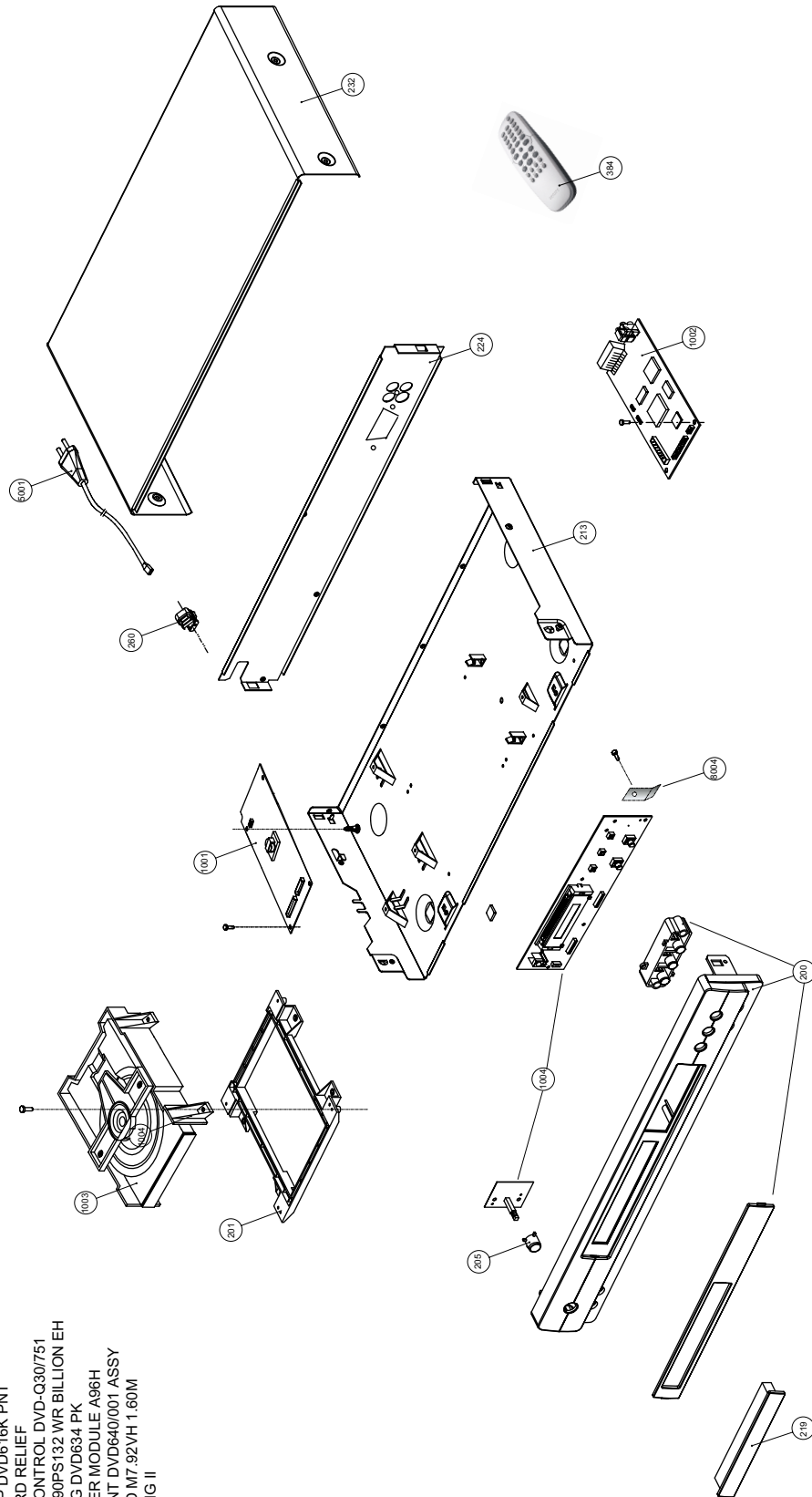
Dismantling Instructions



DISMANTLING INSTRUCTIONS DVD640/001/021/051

See exploded view for item numbers

- ITEM 12NC DESCRIPTION
- 0200 3141 017 76381 CAB FRONT ASSY DVD640/001
 - 0201 3141 014 24720 BRACKET
 - 0205 3141 017 75590 BUTTON POWER DVD616K PNT PRT
 - 0213 3141 017 76391 FRAME ASSY DVD640/051
 - 0219 3141 017 75600 DOOR DVD616K PRT
 - 0224 3141 017 76161 BACK PLATE DVD640/001 PNT PRT
 - 0232 3141 017 75610 COVER TOP DVD616K PNT
 - 0260 3140 113 21880 MAINS CORD RELIEF
 - 0384 3141 017 90220 REMOTE CONTROL DVD-Q30/751
 - 1001 3141 018 03220 PBAS PSU 90PS132 WR BILLION EH
 - 1002 3139 247 10721 PCB A MPEG DVD634 PK
 - 1003 3141 018 03140 DVD LOADER MODULE A96H
 - 1004 3141 019 21570 PBAS FRONT DVD640/001 ASSY
 - 5001 3141 018 71300 MAIN CORD M7.92VH 1.60M
 - 8004 3141 011 60630 EMC SPRING II



DVD640/001/021/051 EXPLODED VIEW

Figure 4-1 Exploded view

5. Diagnostic Software, Trouble Shooting and Test Instructions

5.1 Service Hints

5.1.1 Repair tips

Switched mode power supply

The power supply unit has to be replaced in case of failure. The schematic diagram provided in the service manual is only for information and no service parts will be available.

Atapi Engine

The Atapi Engine is an integrated unit of loader and servo board. The loader and servo board are non-repairable unit and in case of failure, it has to be replaced with a complete DVD Atapi Engine.

Mpeg board and Front Display

The Mpeg board and Front display has to be repaired down to component level.

5.1.2 Change of Software setting

The software setting can be change according to the following procedure:

- Press (OPEN/CLOSE) button on the front of the player or (1) on the remote control to open the disc tray.
- Enter the 4-digit code (0) (0) (0) (0) on the remote control.
- Enter one of the keys below to change the software setting.

– REGION CODE:	USA	==>	1
–	EUROPE	==>	2
–	AP	==>	3
–	LATAM	==>	4
–	INDIA / RUSSIA	==>	5
–	CHINA	==>	6
- The change should effect immediately with information indicated on TV screen.

5.1.3 Software upgrade via Download disc

Both the application and servo software can be flashed into the DVD player by means of a CD-ROM disc. The CD-ROM disc has to be made with a CD writer SW.

Application software

- Open disc tray on the player.
- Insert the DOWNLOAD DISC into the player and close disc tray.
- The upgrading operation will start automatically.
- Once the DOWNLOAD DISC is recognized, the player will automatically eject the disc tray.
- Remove the DOWNLOAD DISC.
- Upgrading of the software will continue with the status being shown on the FTD.
- Once when the software is upgraded, the disc tray will automatically close.
- The player will be restarted automatically and display on FTD will show (NO DISC)

Servo software

- Open disc tray on the player
- Insert the DOWNLOAD DISC into the player and close disc tray. The player should identify this file as MP3 format.
- Press (MENU), followed by (SUBTITLE)(AUDIO)(ANGLE) to enter Update Menu for the loader.

- From the menu, use arrow keys to move down and select UPGRADE menu item.
- Press right arrow button and then 'OK' to start upgrading.
- A flashing digit in the bottom line indicates the progress. It will start from 1 and upgrading will be completed when it reaches 30.
- The player will restart and upgrading is completed.

5.1.4 Verify setting

To check that the setting has change successfully.

- Press (DISPLAY) button on the remote control while disc tray is open.
- Two lines text will appear on the TV screen. That is how it looks like.

DVD640/634_V319_0522

RG 2 LD 0836 F6 Jpeg-0 3000

In text, the following numbers refer to:

- V319_0522 ==> refer to Application software version
- RG 2 ==> refer to region code
- LD 0836 ==> refer to servo software version
- F6 ==> refer to DVD634/640 front key matrix
- Jpeg-0 ==> refer to Picture CD On/Off

5.1.5 ComPair

There is no ComPair available for DVD640

5.2 Trouble Shooting

In this paragraph some troubleshooting tips are given to diagnos the DVD640 player. For detailed diagnostics, check the faulting tree since no built-in diagnostic software is available in the player.

5.2.1 M3.2 Atapi Engine

The Atapi engine is a non-repairable component. Hence, it is necessary to determine if any fault condition of the player are caused by the DVD engine before replacing it.

The engine is a stand-alone system, an integrated unit of the loader and servo board, which does not need to be connected to the Mpeg board to perform it basic operation. Once a stable voltage is supplied to the engine, some mechanical movement will be observed. Hence, to determine whether the engine is faulty, remove the 40 pins flex cable and observe the mechanical movement. If no mechanical movement is observed, the engine should be faulty and it should be reconfirm with a working engine.

The loader has an optical unit consisting of two lasers, one for CD with a wavelength of 780 nm, and one for, DVD with a wavelength of 650 nm. If any one type of disc (DVD or VCD / CD) cannot be identified by the player, it can be sure that the fault is due to the engine.

5.3 Fault Finding Trees

5.3.1 No Operation

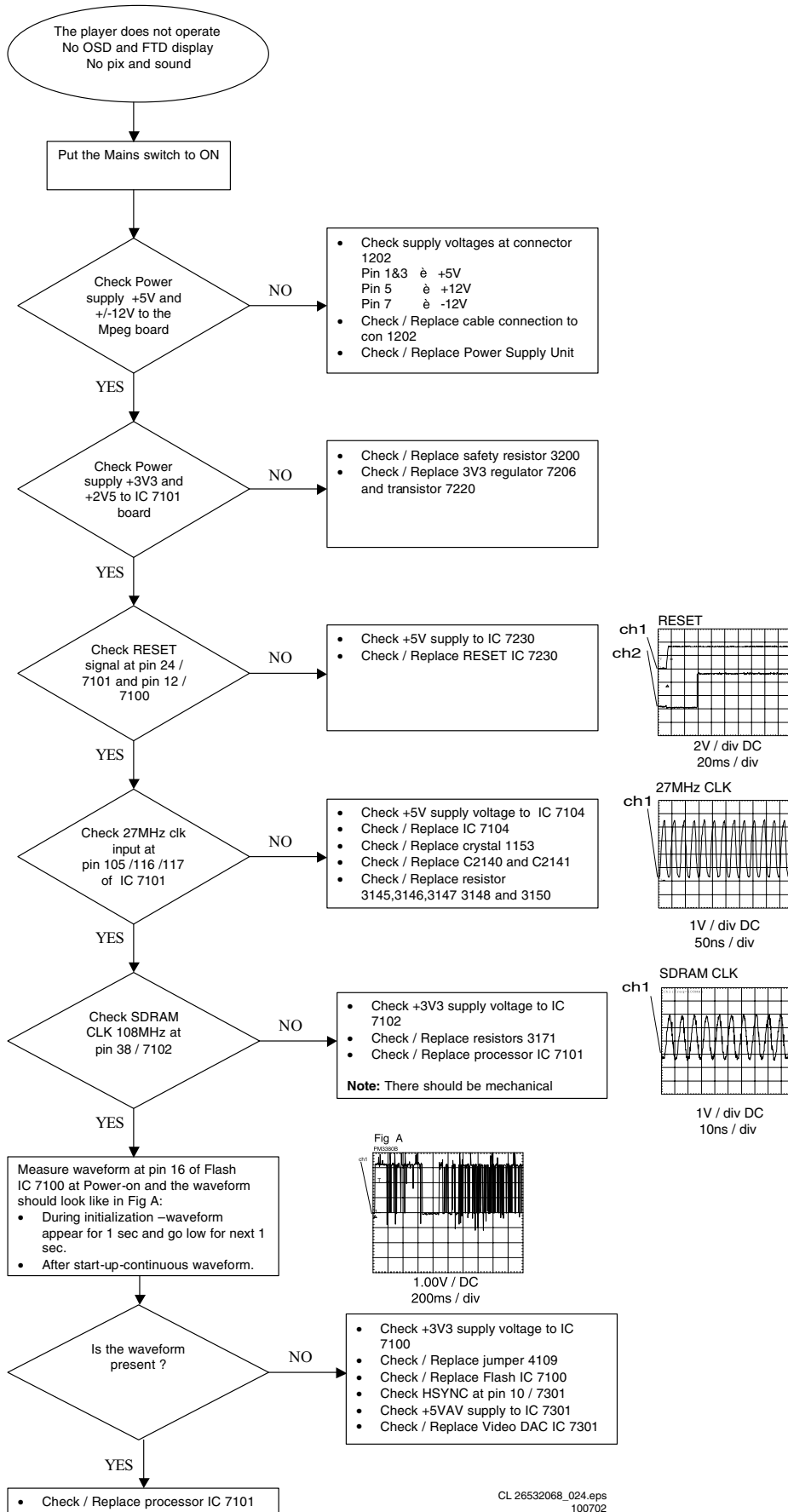


Figure 5-1 No operation

5.3.2 No Picture

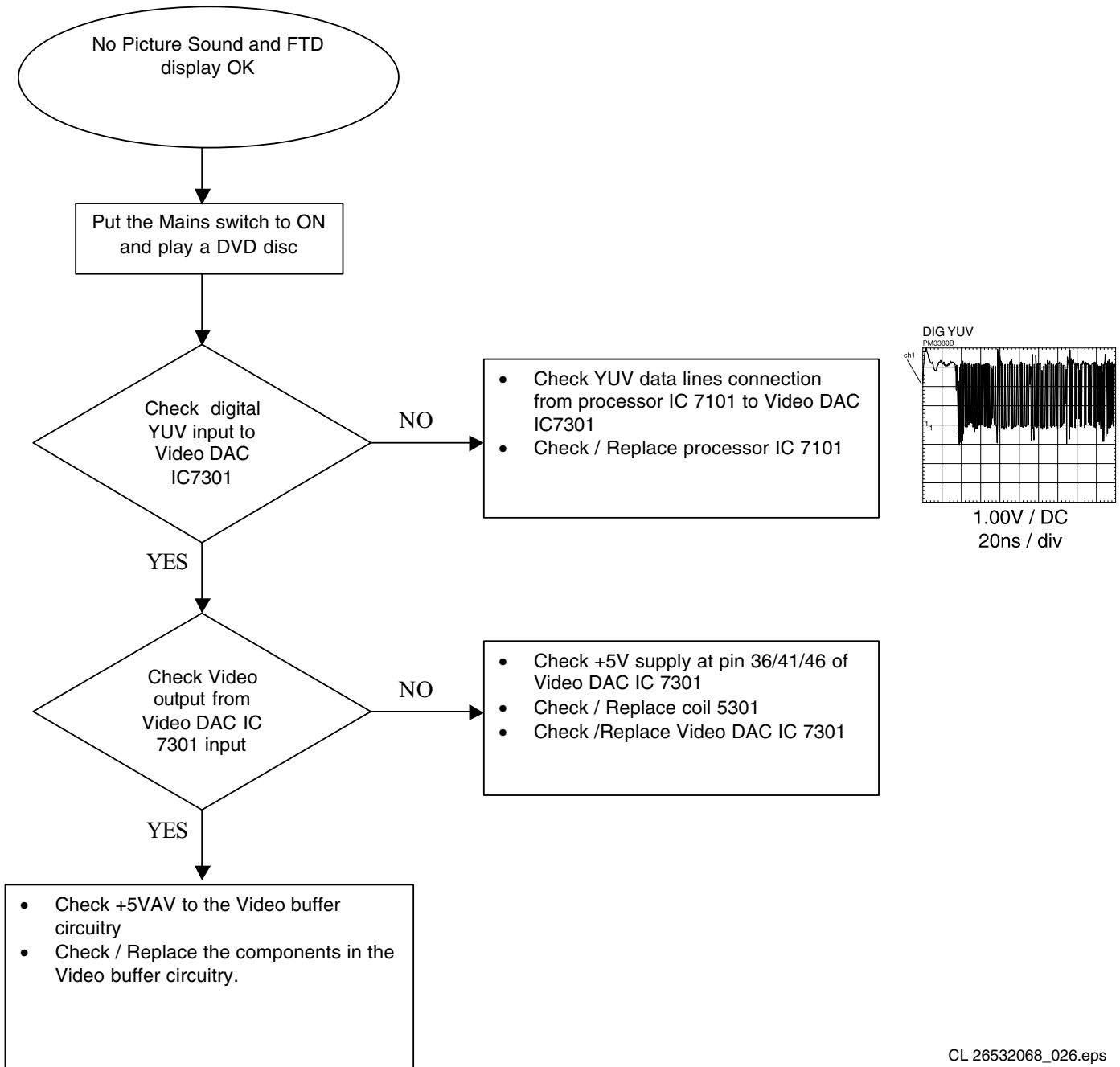


Figure 5-2 No Picture

5.3.3 No Color

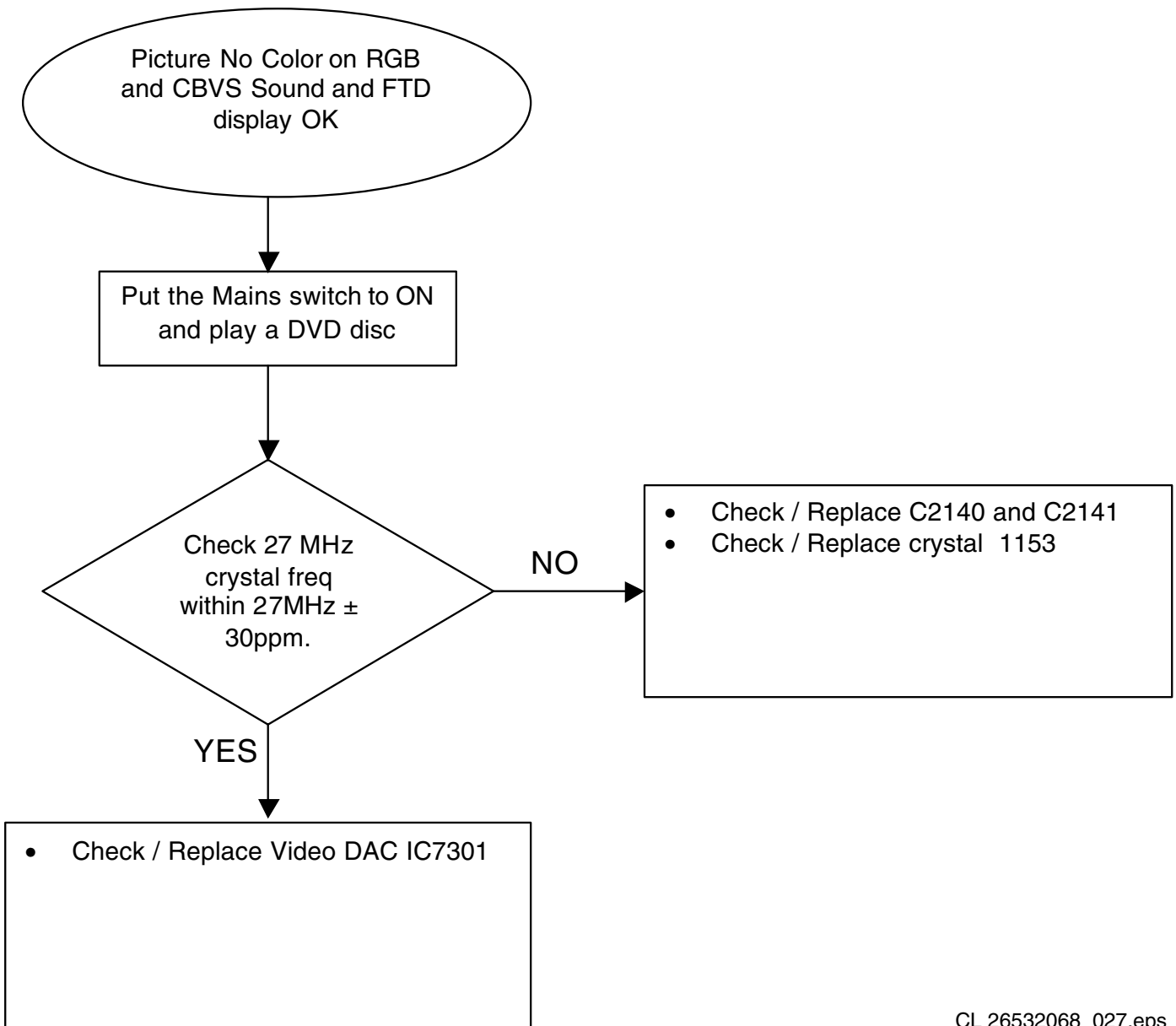
CL 26532068_027.eps
040702

Figure 5-3 Pix no color

5.3.4 No Sound

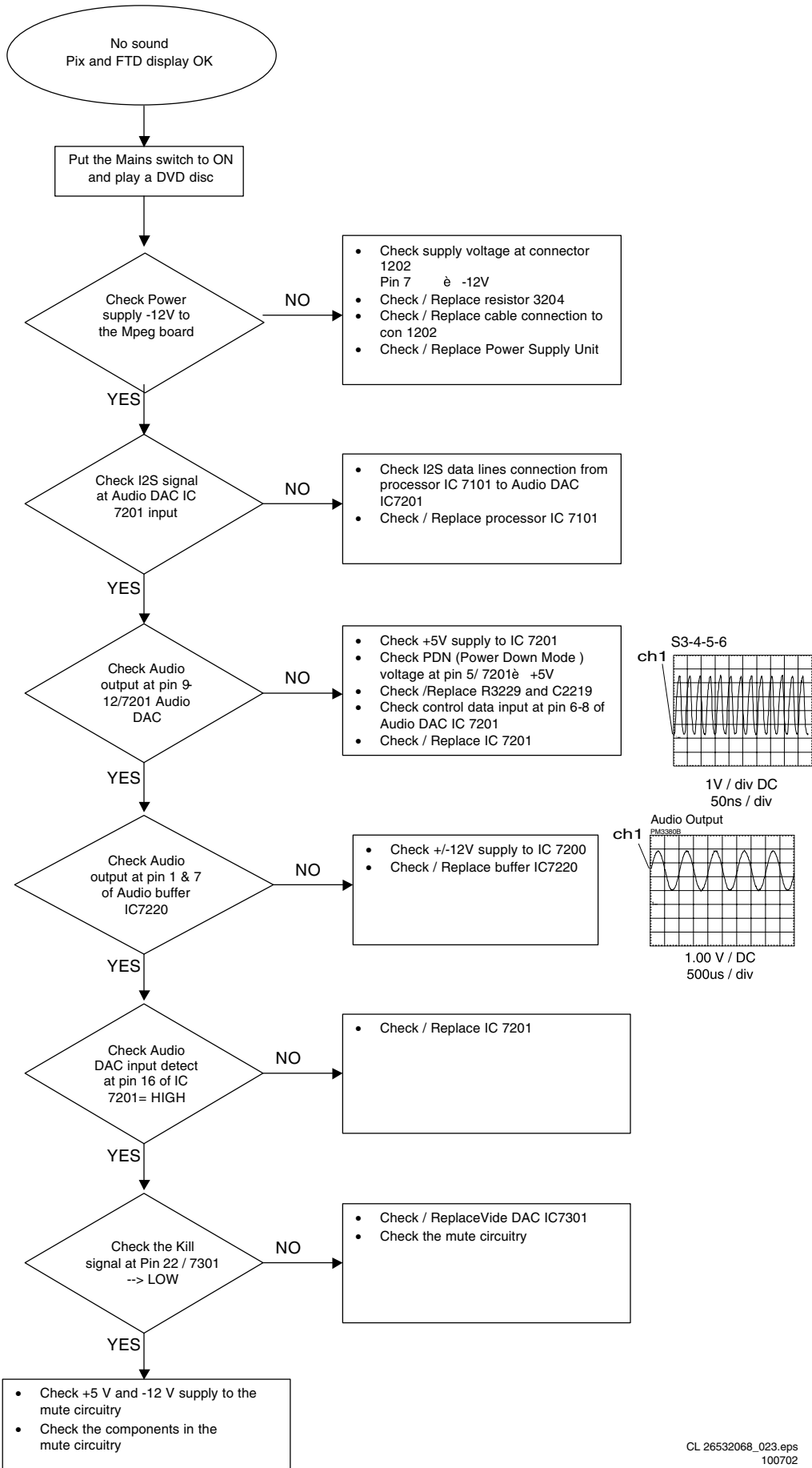
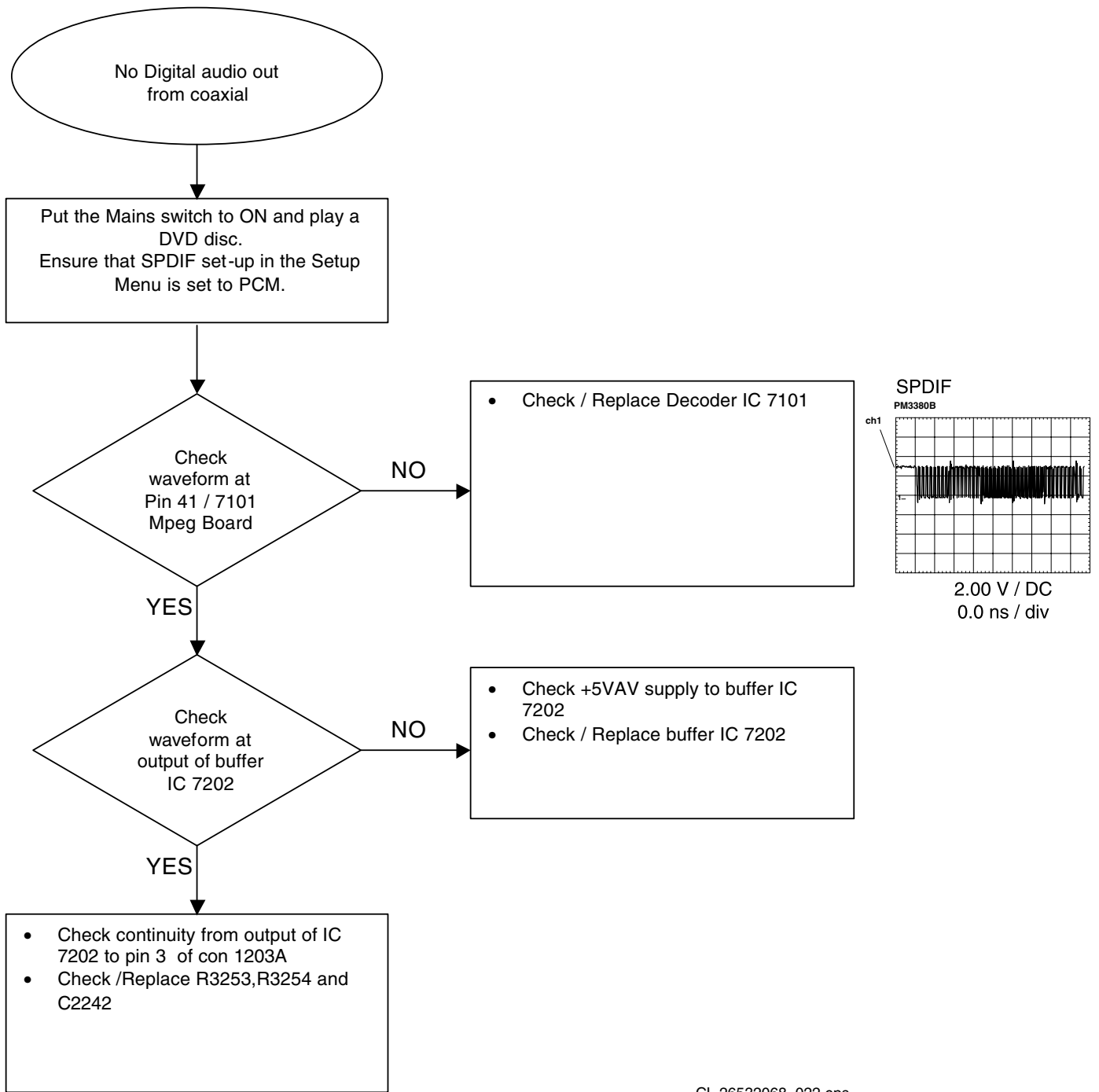


Figure 5-4 No sound

5.3.5 No Digital Audio Out



CL 26532068_022.eps
030702

Figure 5-5 No Digital audio out

5.3.6 No RC and FTD Display

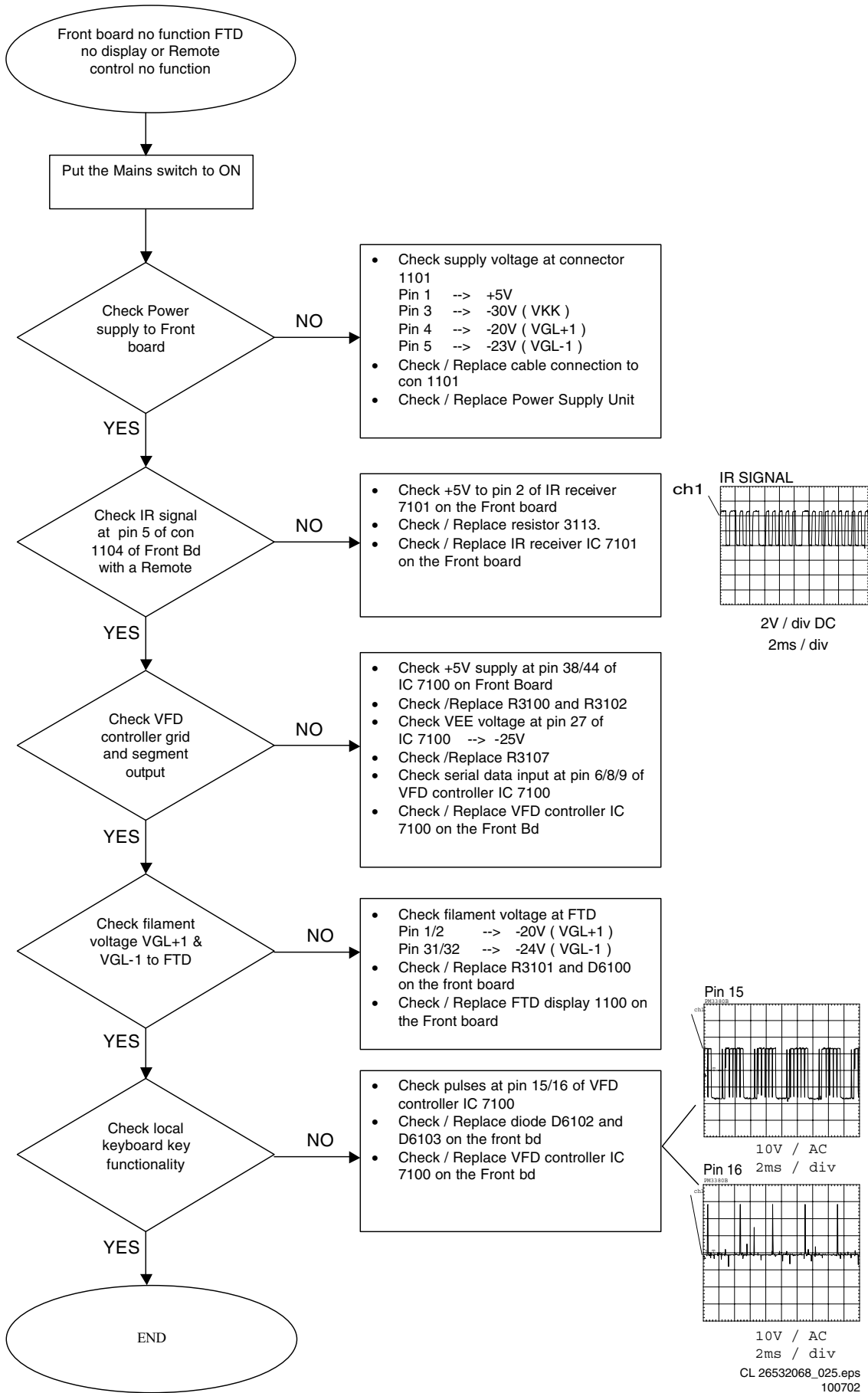
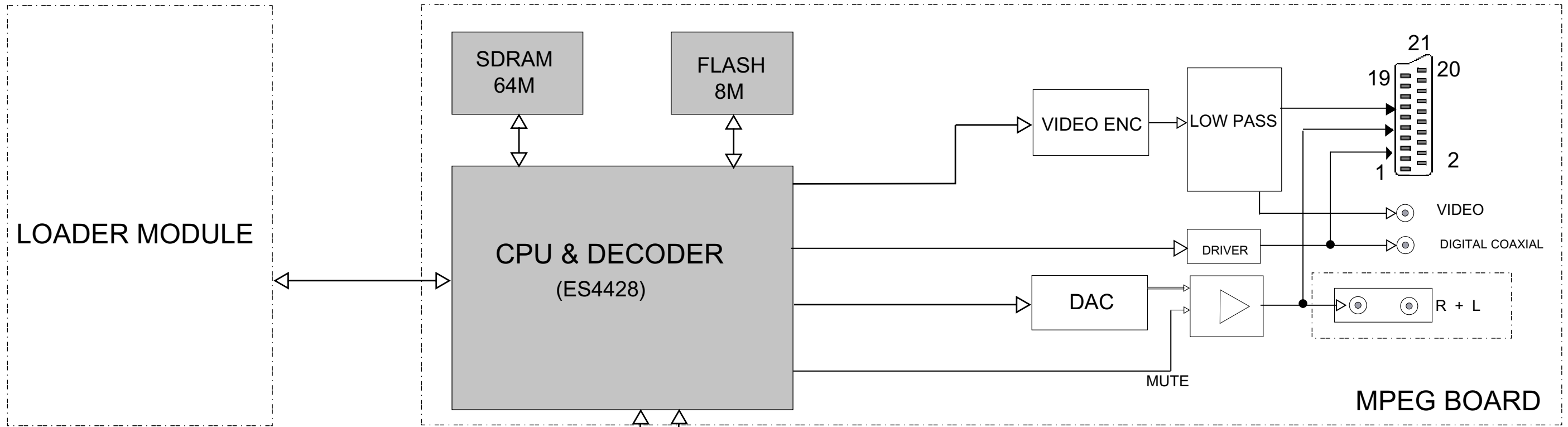


Figure 5-6 No RC and FTD display

6. Block and Wiring Diagram.

Block Diagram DVD640

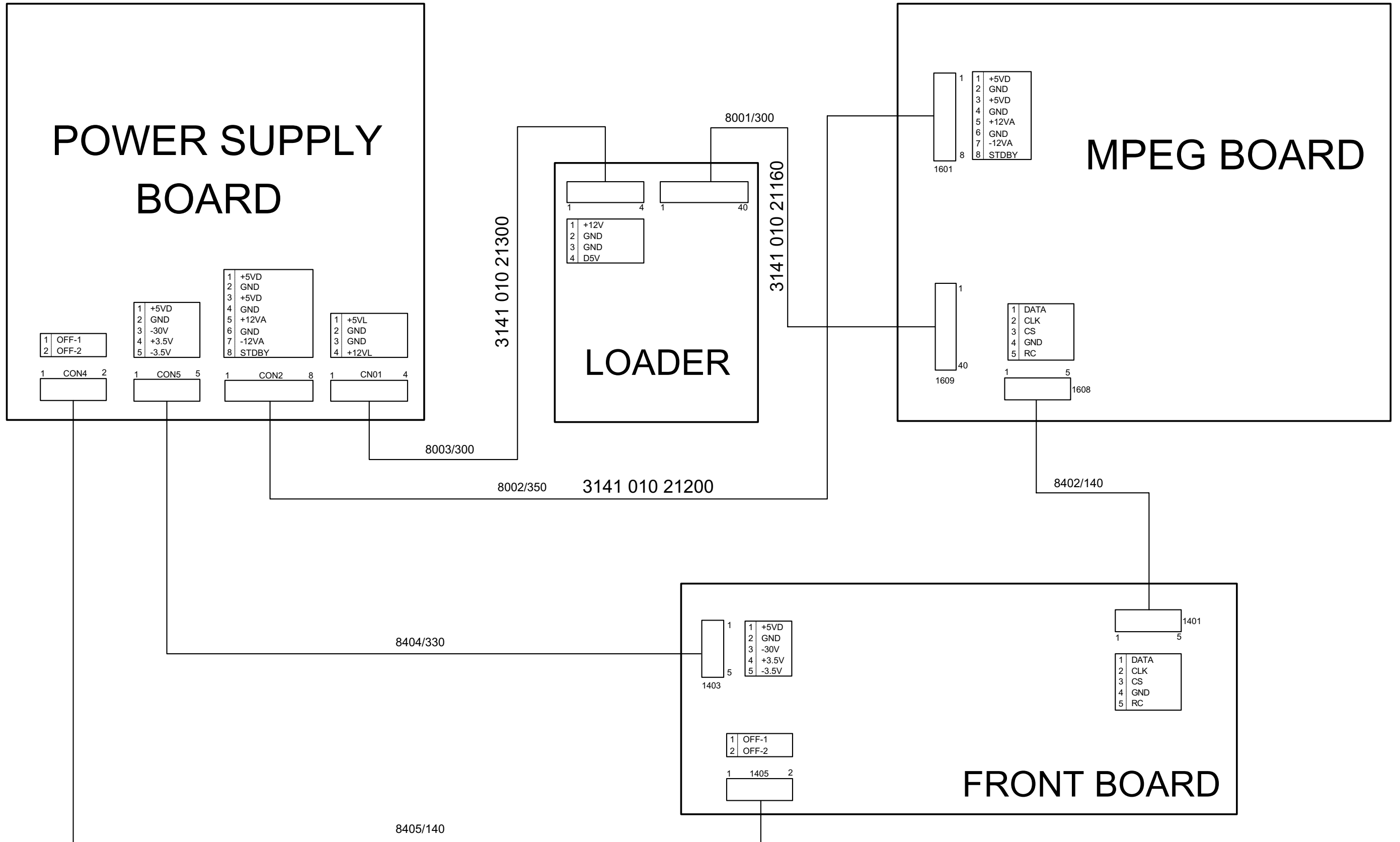


SCART INTERFACE

Pin	Assignment	Description
1	AOR	Audio Out Right
2	AIR	Audio In Right
3	AOL	Audio Out Left + Right
4	AGND	Audio Ground
5	BGND	RGB Blue Ground
6	AIL	Audio In Left + Mono 1
7	B	RGB Blue
8	SWTCH	Audio/RGB switch/16:9
9	GGND	RGB Green Ground
10	CLKOUT	Clock Out
11	G	RGB Green
12	DATA	Data Out
13	RGND	RGB Red Ground
14	DATAGND	Data Out
15	R	RGB Red/Chrominance
16	BLNK	Blanking Signal
17	VGND	Composite Video Ground
18	BLNKGND	Blanking Signal Ground
19	VOUT	Composite Video Out
20	VIN	Composite Video In/Luminance
21	SHIELD	Ground/Shield (connected to chassis)

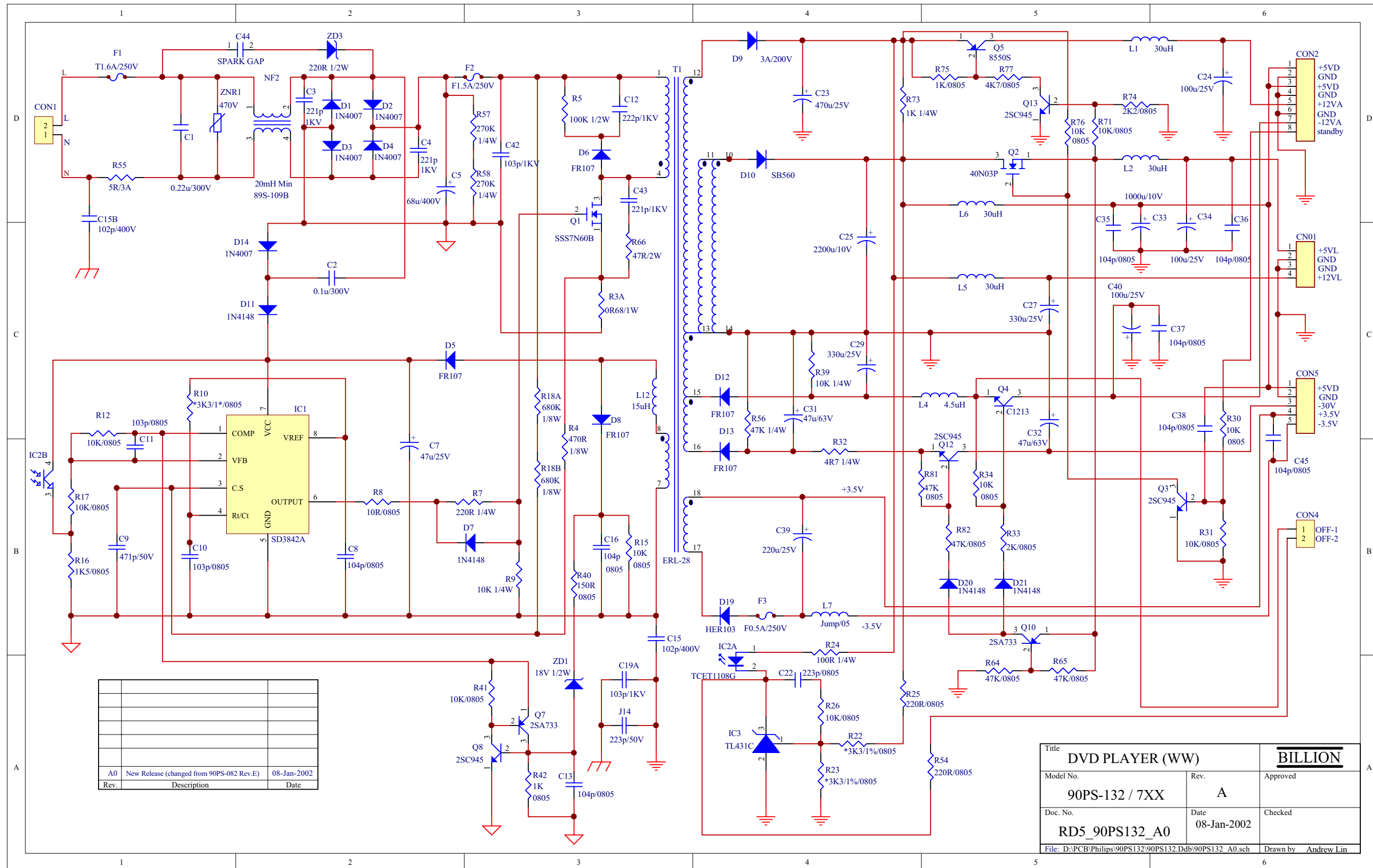
Wiring Diagram DVD763SA EU

Wiring Diagram DVD640/001/021/051



7. Electrical Diagrams

Power Supply Unit

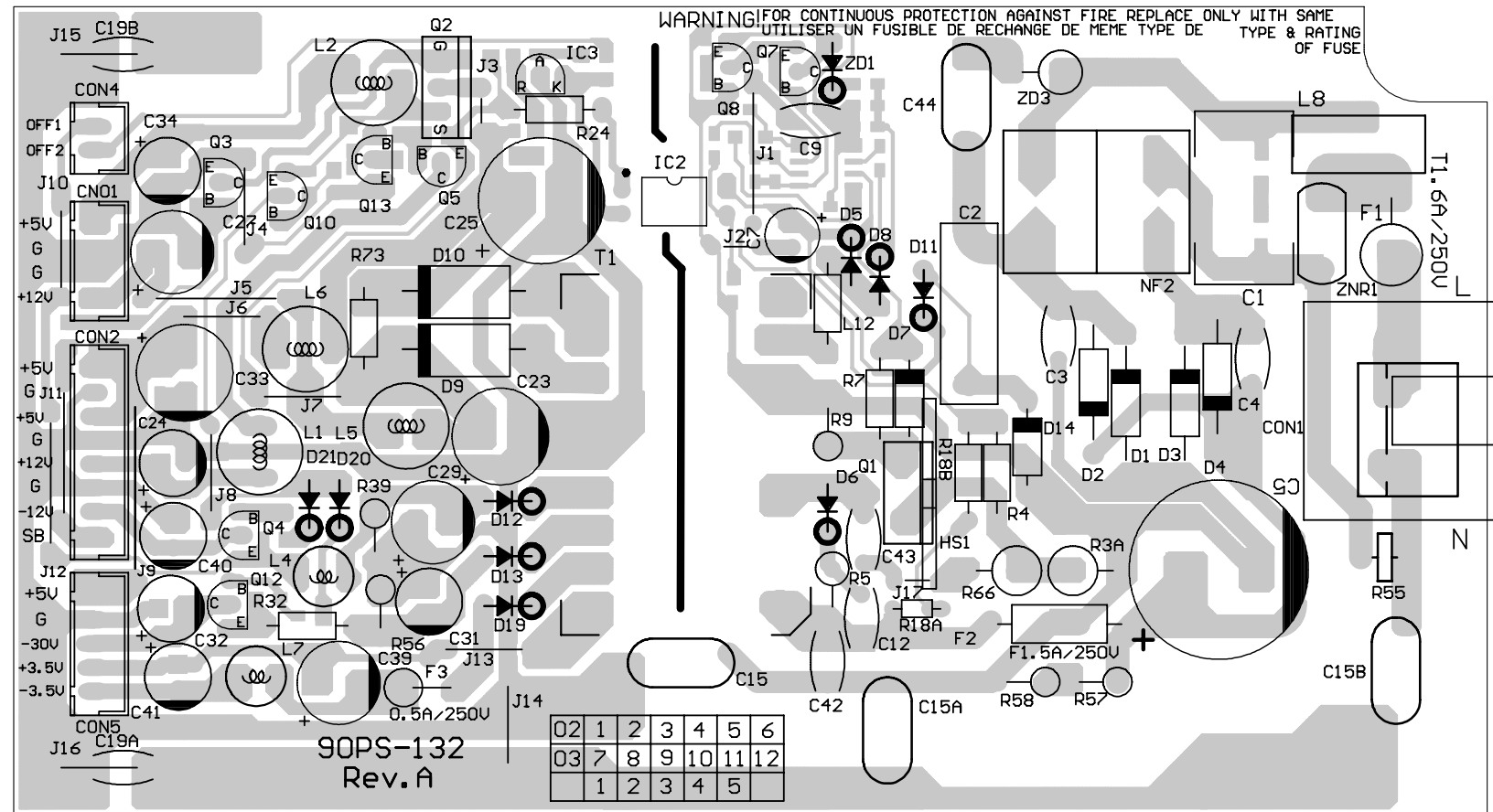


Rev.	Description	Date
A0	New Release (changed from 90PS-082 Rev.E)	08-Jan-2002

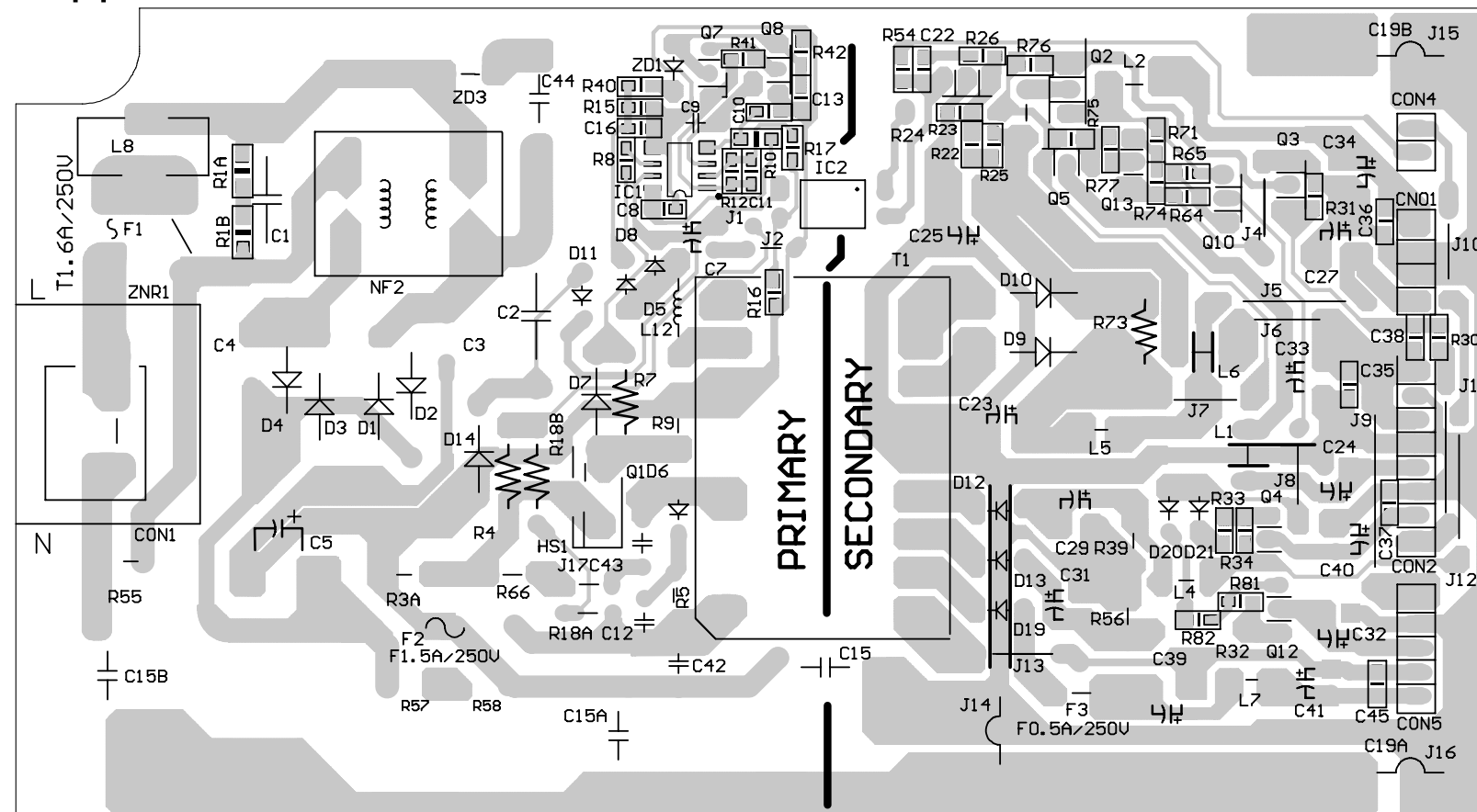
Title DVD PLAYER (WW)		BILLION	
Model No. 90PS-132 / 7XX	Rev. A	Approved	
Doc. No. RD5_90PS132_A0	Date 08-Jan-2002	Checked	
File: D:\PCB\Philips\90PS132\90PS132.Ddb\90PS132_A0.sch		Drawn by Andrew Lin	

Layout PSU

Component Side

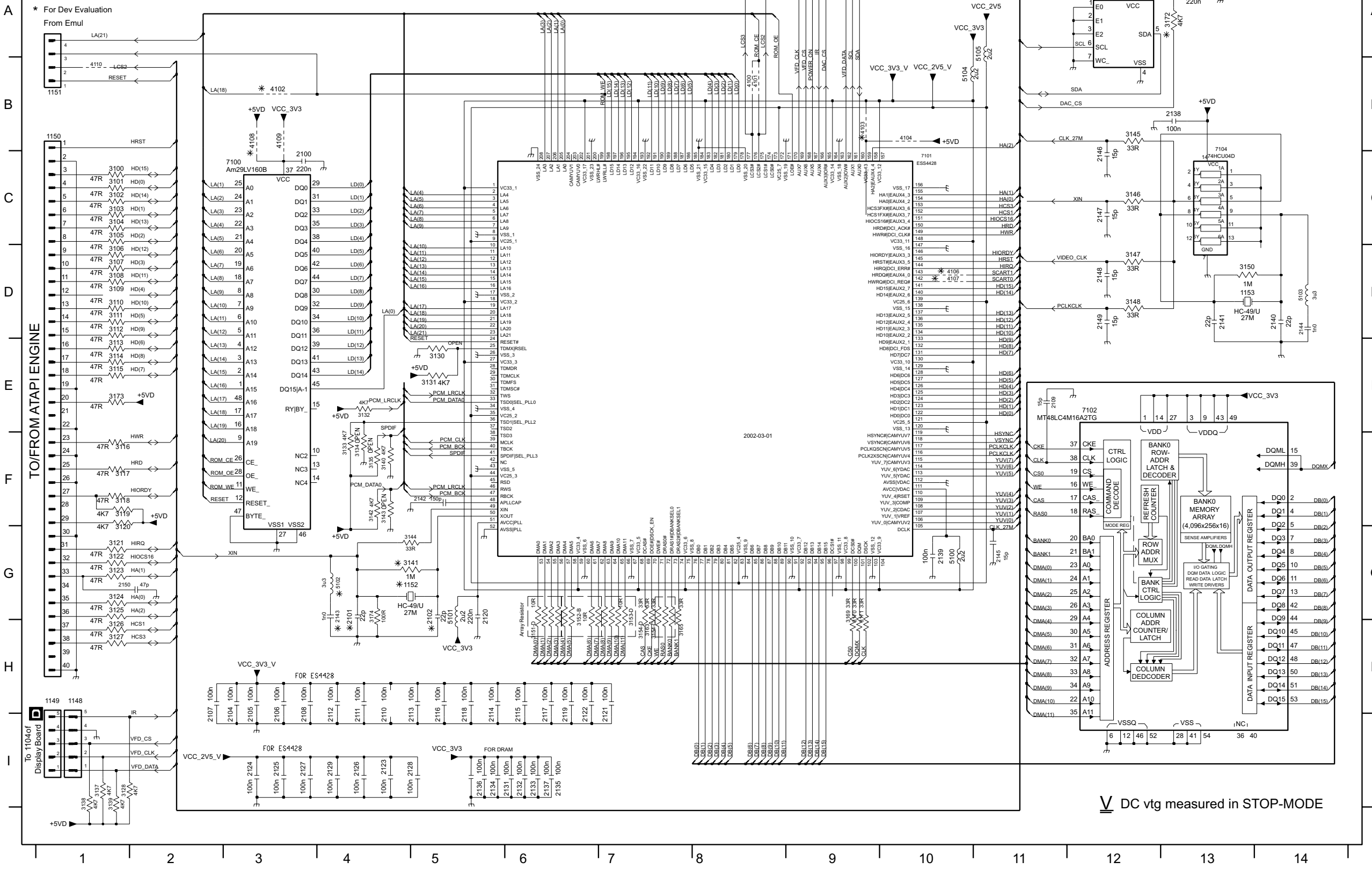


Copper Side



MPEG Board: Processor

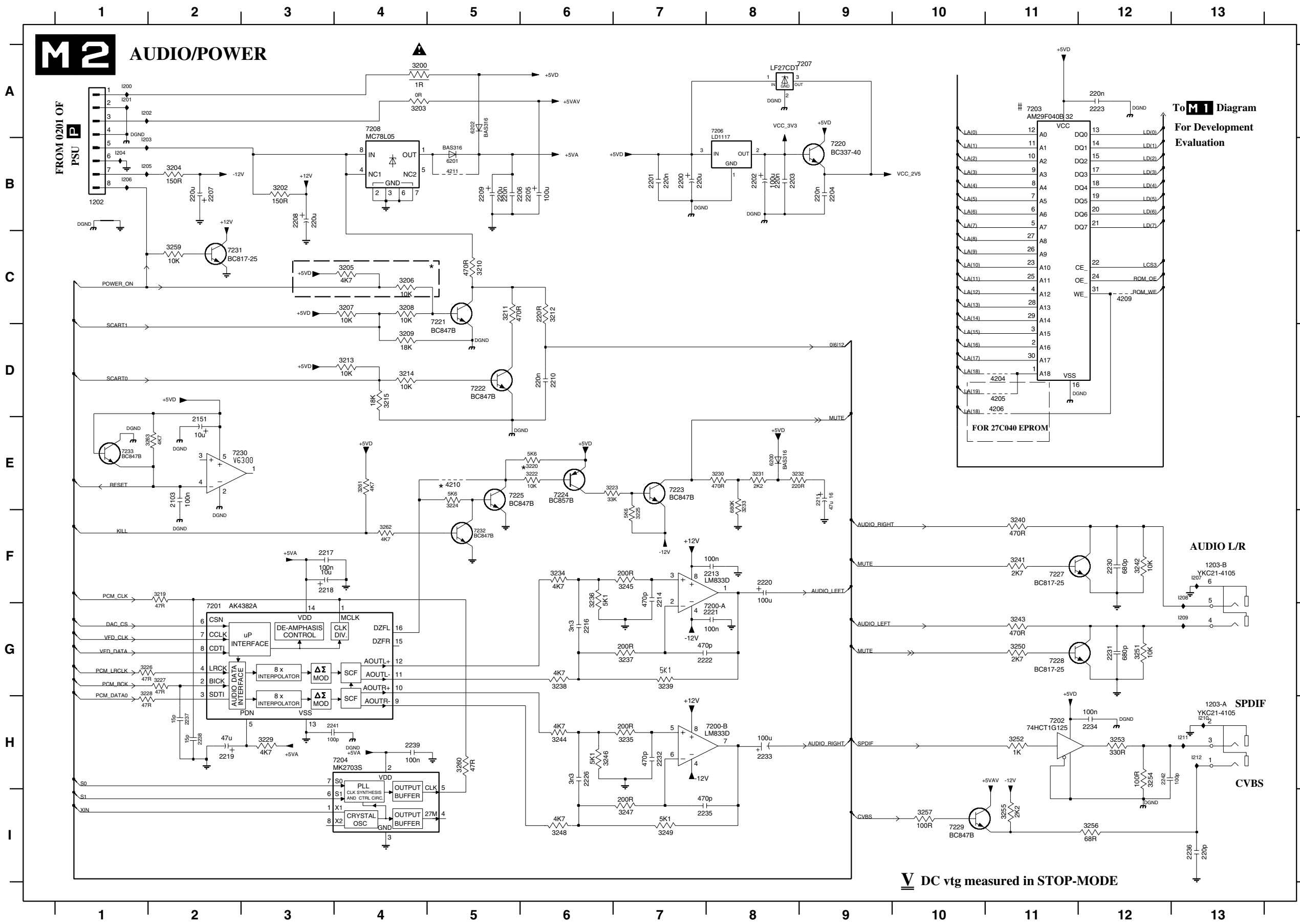
M1 MPEG PROCESSOR



1148 H1	4100 B8
1149 H1	4101 B8
1150 B1	4102 B3
1151 B1	4103 B9
1152 G5	4104 B10
1153 D13	4106 D10
2100 C3	4107 D10
2101 G4	4108 B3
2102 G5	4109 B3
2104 I3	4110 B1
2105 I3	5100 G10
2106 I3	5101 G5
2107 I2	5102 G4
2108 I3	5103 D14
2109 E11	5104 B10
2110 I4	5105 A11
2111 I4	7100 C3
2112 I4	7101 C10
2113 I4	7102 E12
2114 I5	7103 A12
2115 I6	7104 C13
2116 I5	
2117 I6	
2118 I5	
2119 I6	
2120 G5	
2121 I7	
2122 I6	
2123 I4	
2124 I3	
2125 I3	
2126 I4	
2127 I3	
2128 I4	
2129 I4	
2130 A13	
2131 I6	
2132 I6	
2133 I6	
2134 I5	
2135 I6	
2136 I5	
2137 I6	
2138 B13	
2139 G10	
2140 D14	
2141 D13	
2142 F5	
2143 G4	
2144 D14	
2145 G11	
2146 C12	
2147 C12	
2148 D12	
2149 D12	
2150 G1	
3100 C1	
3101 C1	
3102 C1	
3103 C1	
3104 C1	
3105 C1	
3106 D1	
3107 D1	
3108 D1	
3109 D1	
3110 D1	
3111 D1	
3112 D1	
3113 E1	
3114 E1	
3115 E1	
3116 F1	
3117 F1	
3118 F1	
3119 F1	
3120 G1	
3121 G1	
3122 G1	
3123 G1	
3124 G1	
3125 G1	
3126 H1	
3127 H1	
3128 H1	
3129 H1	
3130 E5	
3131 E5	
3132 E4	
3133 F4	
3134 F4	
3135 F4	
3137 I1	
3138 I1	
3139 I1	
3140 F4	
3141 G5	
3142 F4	
3143 F4	
3144 G4	
3145 B12	
3147 D12	
3148 D12	
3150 D13	
3151-D H6	
3152-B G6	
3153-D G7	
3154-C H7	
3154-D H7	
3163 H7	
3165 H7	
3169 G9	
3170 G9	
3171 G9	
3172 A13	
3173 E1	
3174 G4	

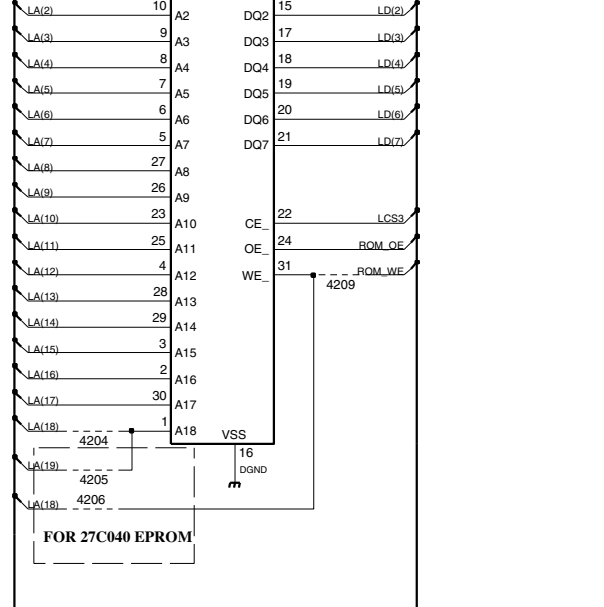
DC vtg measured in STOP-MODE

MPEG Board: Audio/Power



M2 AUDIO/POWER

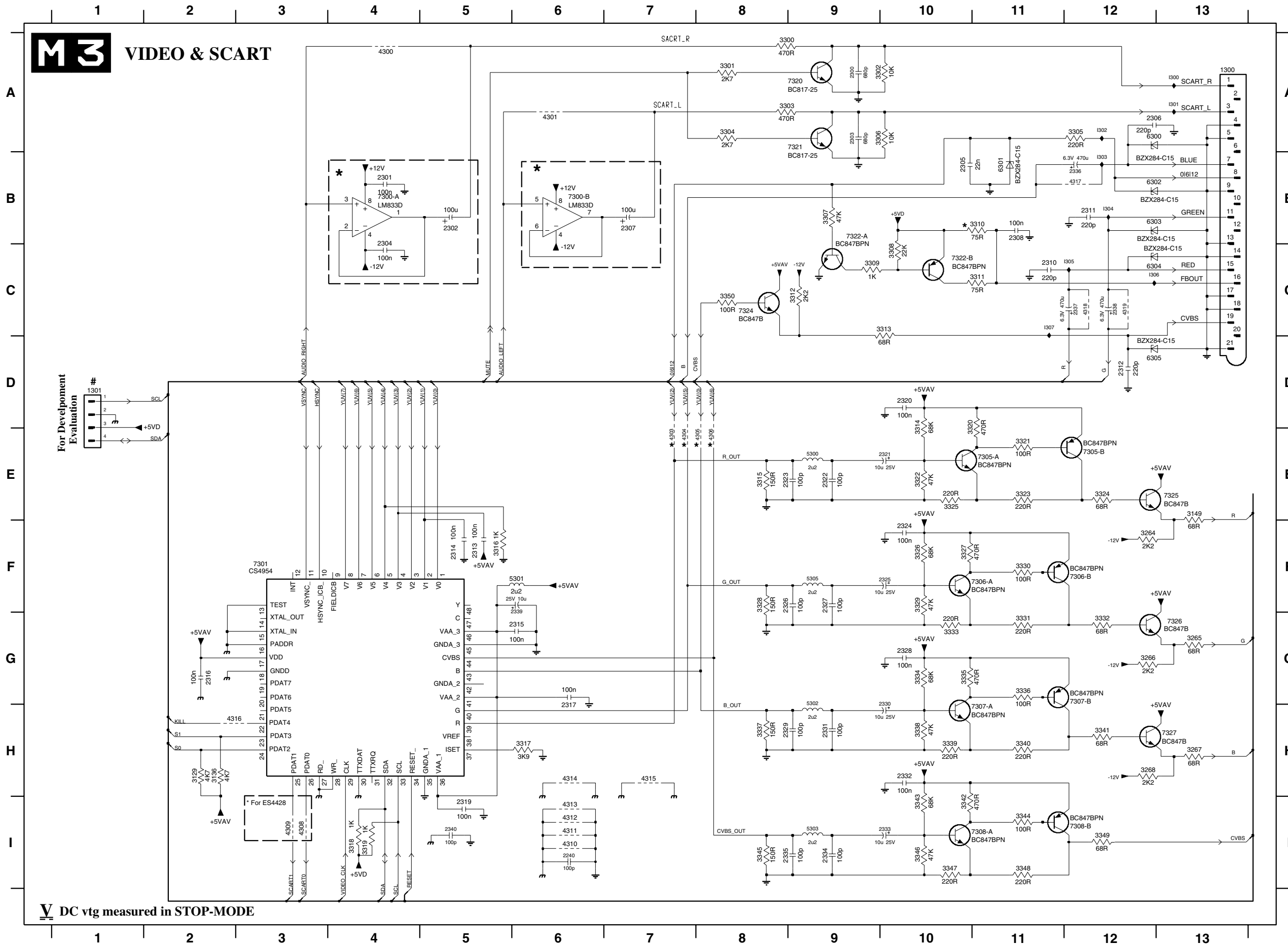
To M1 Diagram For Development Evaluation



V DC vtg measured in STOP-MODE

- 1202 B1
- 1203-A H13
- 1203-B F13
- 2103 E2
- 2151 D2
- 2200 B7
- 2201 B7
- 2202 B8
- 2203 B8
- 2204 B9
- 2205 B6
- 2206 B5
- 2207 B2
- 2208 B3
- 2209 B5
- 2210 D6
- 2211 E9
- 2213 F8
- 2214 F7
- 2216 G6
- 2217 F3
- 2218 F3
- 2219 H2
- 2220 F8
- 2221 G8
- 2222 G7
- 2223 A12
- 2226 H6
- 2230 F12
- 2231 G12
- 2232 H7
- 2233 H8
- 2234 H12
- 2235 I7
- 2236 I13
- 2237 H2
- 2238 H2
- 2239 H4
- 2241 H3
- 2242 H12
- 3200 A4
- 3202 B3
- 3203 A4
- 3204 B2
- 3205 C4
- 3206 C4
- 3207 C4
- 3208 C4
- 3209 D4
- 3210 C5
- 3211 C5
- 3212 C6
- 3213 D4
- 3214 D4
- 3215 D4
- 3219 F2
- 3220 E6
- 3222 E6
- 3223 E6
- 3224 E5
- 3225 F7
- 3226 G1
- 3227 G2
- 3228 G1
- 3229 H3
- 3230 E8
- 3231 E8
- 3232 E8
- 3233 E8
- 3234 F6
- 3235 H7
- 3236 F6
- 3237 G7
- 3238 G6
- 3239 G7
- 3240 F11
- 3241 F11
- 3242 F12
- 3243 G11
- 3244 H6
- 3245 F7
- 3246 H6
- 3247 I7
- 3248 I6
- 3249 I7
- 3250 G11
- 3251 G12
- 3252 H11
- 3253 H12
- 3254 H12
- 3255 I11
- 3256 I12
- 3257 I10
- 3259 C2
- 3260 H5
- 3261 E4
- 3262 F4
- 3263 E2
- 4204 D11
- 4205 D11
- 4206 D11
- 4209 C12
- 4210 E5
- 4211 B5
- 6200 E8
- 6201 B5
- 6202 A5
- 7200-A G7
- 7200-B H7
- 7201 G2
- 7202 H11
- 7203 A11
- 7204 H3
- 7206 A8
- 7207 A9
- 7208 A4
- 7220 B9
- 7221 D5
- 7222 D5
- 7223 E7
- 7224 E6
- 7225 E5
- 7227 F11
- 7228 G11
- 7229 I10
- 7230 E2
- 7231 C2
- 7232 F5
- 7233 E1
- 7234 A1
- 7235 E1
- 7236 B1
- 7237 F13
- 7238 F13
- 7239 G13
- 7240 H13
- 7241 H13
- 7242 H13
- 7243 H13
- 7244 H13

MPEG Board: Video & SCART

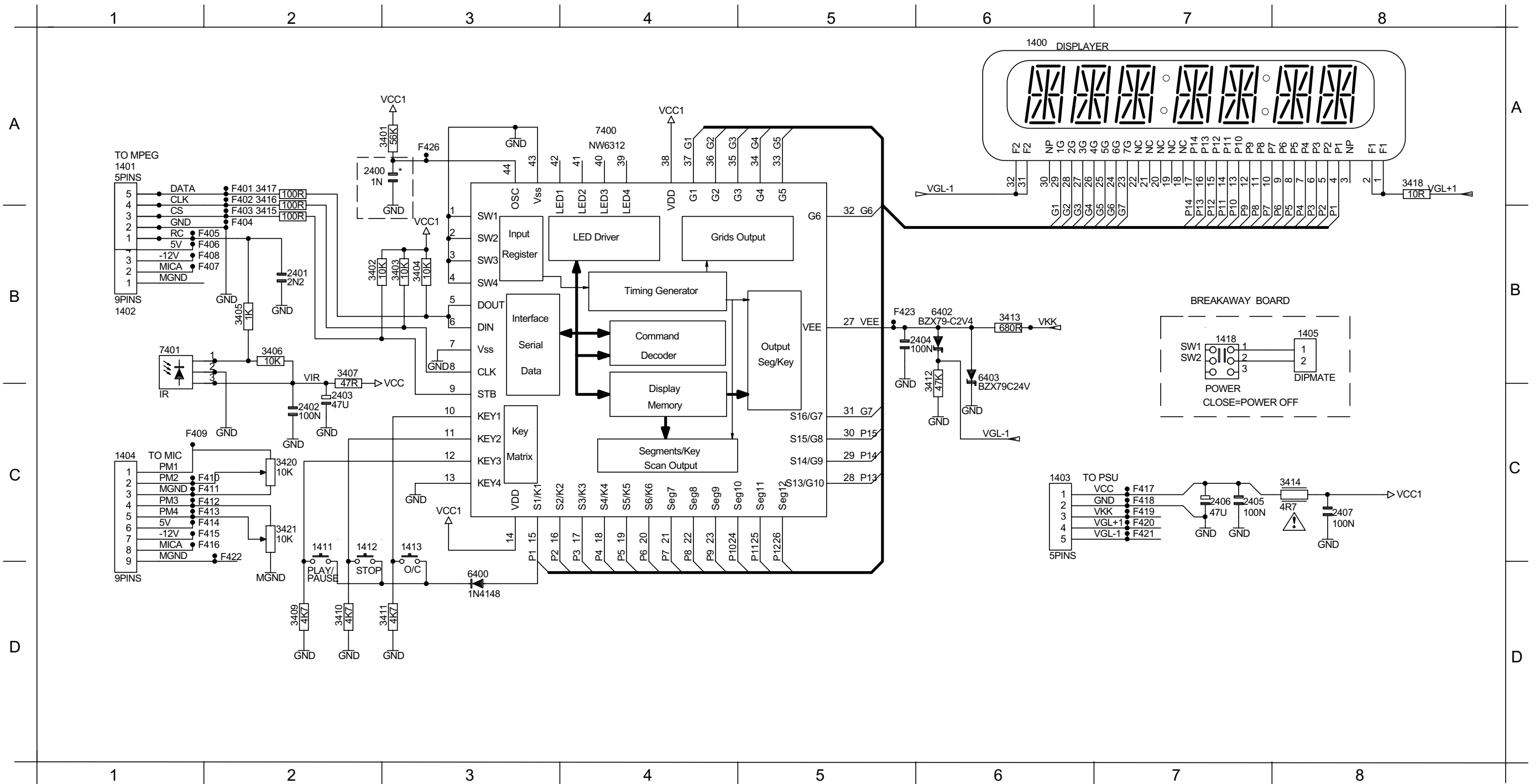


1300 A13	4317 B12
1301 D1	4318 C12
2240 I6	4319 C12
2300 A9	5300 E9
2301 B4	5301 F6
2302 B5	5302 H9
2303 A9	5303 I9
2304 C4	5305 F9
2305 B10	6300 A12
2306 A12	6301 B11
2307 B7	6302 B12
2308 B11	6303 B12
2310 C11	6304 C12
2311 B12	6305 D12
2312 D12	7300-A B4
2313 F5	7300-B B6
2314 F5	7301 F3
2315 G6	7305-A E11
2316 G2	7305-B E12
2317 G6	7306-A F10
2319 I5	7306-B F12
2320 D10	7307-A H10
2321 E10	7307-B G12
2322 E9	7308-A I10
2323 E8	7308-B I12
2324 F10	7320 A8
2325 F10	7321 A8
2326 F8	7322-A B9
2327 F9	7322-B C10
2328 G10	7324 C8
2329 H8	7325 E13
2330 H10	7326 G13
2331 H9	7327 H13
2332 H10	I300 A13
2333 I10	I301 A13
2334 I9	I302 A12
2335 I8	I303 B12
2336 B12	I304 B12
2337 C12	I305 C12
2338 C12	I306 C12
2339 F6	I307 C11
2340 I5	
3129 H2	
3136 H2	
3149 E13	
3264 F12	
3265 G13	
3266 G12	
3267 H13	
3268 H12	
3300 A8	
3301 A8	
3302 A10	
3303 A8	
3304 A8	
3305 A12	
3306 A10	
3307 B9	
3308 C10	
3309 C9	
3310 B11	
3311 C11	
3312 C9	
3313 C10	
3314 D10	
3315 E8	
3316 F5	
3317 H6	
3318 I4	
3319 I4	
3320 D11	
3321 E11	
3322 E10	
3323 E11	
3324 E12	
3325 E10	
3326 F10	
3327 F10	
3328 F8	
3329 F10	
3330 F11	
3331 G11	
3332 G12	
3333 G10	
3334 G10	
3335 G10	
3336 G11	
3337 H8	
3338 H10	
3339 H10	
3340 H11	
3341 H12	
3342 I10	
3343 I10	
3344 I11	
3345 I8	
3346 I10	
3347 I10	
3348 I11	
3349 I12	
3350 C8	
4300 A4	
4301 A6	
4303 E7	
4304 E7	
4305 E8	
4306 E8	
4308 I3	
4309 I3	
4310 I6	
4311 I6	
4312 I6	
4313 I6	
4314 H6	
4315 H7	
4316 H2	

V DC vtg measured in STOP-MODE

Front Board

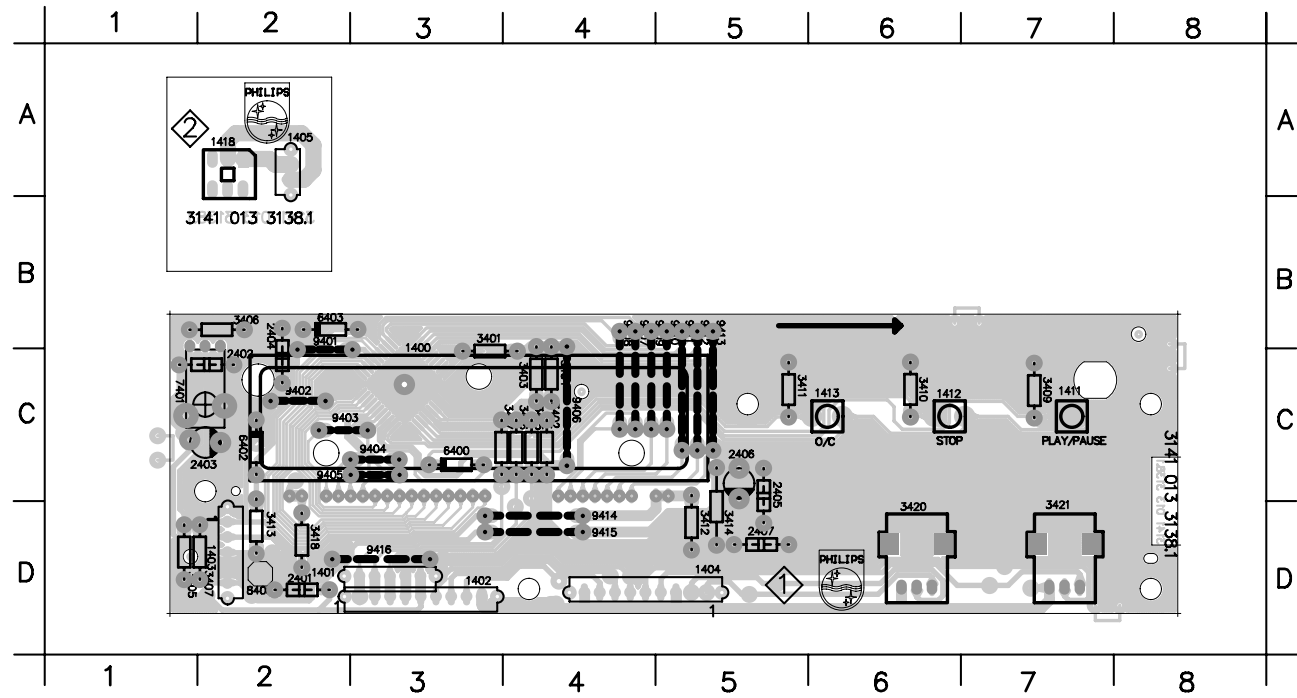
1400	A7	1405	B8	2400	B3	2405	C7	3403	B3	3409	D2	3414	C8	3420	C2	7400	B4	F404	B2	F409	C1	F414	C1	F419	C7	F426	B3
1401	B1	1411	C2	2401	B2	2406	C7	3404	B3	3410	D2	3415	B2	3421	C2	7401	B1	F405	B1	F410	C1	F415	C1	F420	C7		
1402	B1	1412	C2	2402	C2	2407	C8	3405	B2	3411	D3	3416	B2	6400	D3	F401	A2	F406	B1	F411	C1	F416	C1	F421	C7		
1403	C6	1413	C3	2403	C2	3401	A3	3406	B2	3412	B6	3417	B2	6402	B6	F402	A2	F407	B1	F412	C1	F417	C7	F422	C2		
1404	C1	1418	B7	2404	B5	3402	B3	3407	B2	3413	B6	3418	A8	6403	B6	F403	B2	F408	B1	F413	C1	F418	C7	F423	B5		



Layout Front Board

Component side

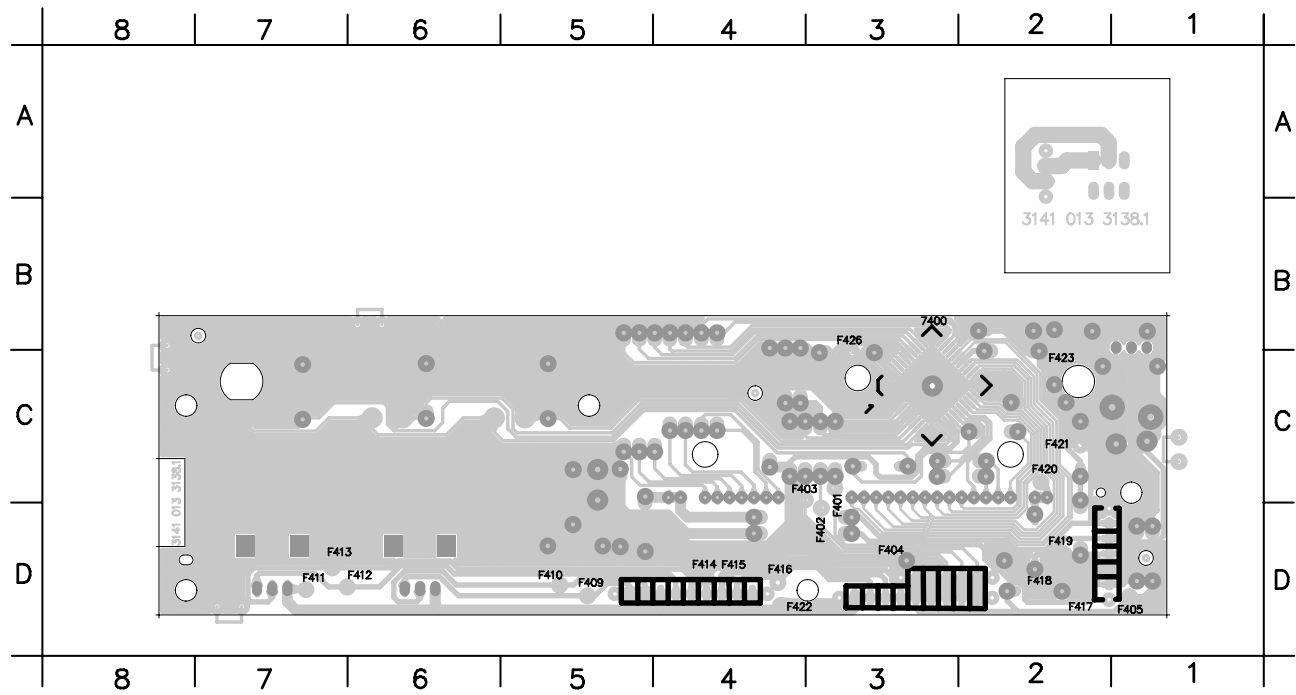
1400	C3	1405	A2	2401	D2	2406	C5	3404	C4	3410	C6	3415	C4	3421	D7	8406	D2	9405	C3	9410	C5
1401	D3	1411	C7	2402	C2	2407	D5	3405	D1	3411	C5	3416	C4	6400	C3	9401	C2	9406	C4	9411	C5
1402	D3	1412	C6	2403	C2	3401	C3	3406	B2	3412	D5	3417	C3	6402	C2	9402	C2	9407	C4	9412	C5
1403	D2	1413	C6	2404	C2	3402	C4	3407	D2	3413	D2	3418	D2	6403	B2	9403	C2	9408	C4	9413	C5
1404	D4	1418	A2	2405	C5	3403	C4	3409	C7	3414	D5	3420	D6	7401	C2	9404	C3	9409	C4	9414	D4



9415 D4
9416 D3

Copper side

1400	C3	1405	A2	2401	D2	2406	C5	3404	C4	3410	C6	3415	C4	3421	D7	8406	D2	9405	C3	9410	C5
1401	D3	1411	C7	2402	C2	2407	D5	3405	D1	3411	C5	3416	C4	6400	C3	9401	C2	9406	C4	9411	C5
1402	D3	1412	C6	2403	C2	3401	C3	3406	B2	3412	D5	3417	C3	6402	C2	9402	C2	9407	C4	9412	C5
1403	D2	1413	C6	2404	C2	3402	C4	3407	D2	3413	D2	3418	D2	6403	B2	9403	C2	9408	C4	9413	C5
1404	D4	1418	A2	2405	C5	3403	C4	3409	C7	3414	D5	3420	D6	7401	C2	9404	C3	9409	C4	9414	D4



9415 D4
9416 D3

8. Alignments

Not applicable.

9. Circuit Descriptions, List of Abbreviations, and IC Data

9.1 Circuit Descriptions

Not applicable.

9.2 List of abbreviations

Not applicable.

9.3 IC Data

9.3.1 uPD16312

BLOCK DIAGRAM

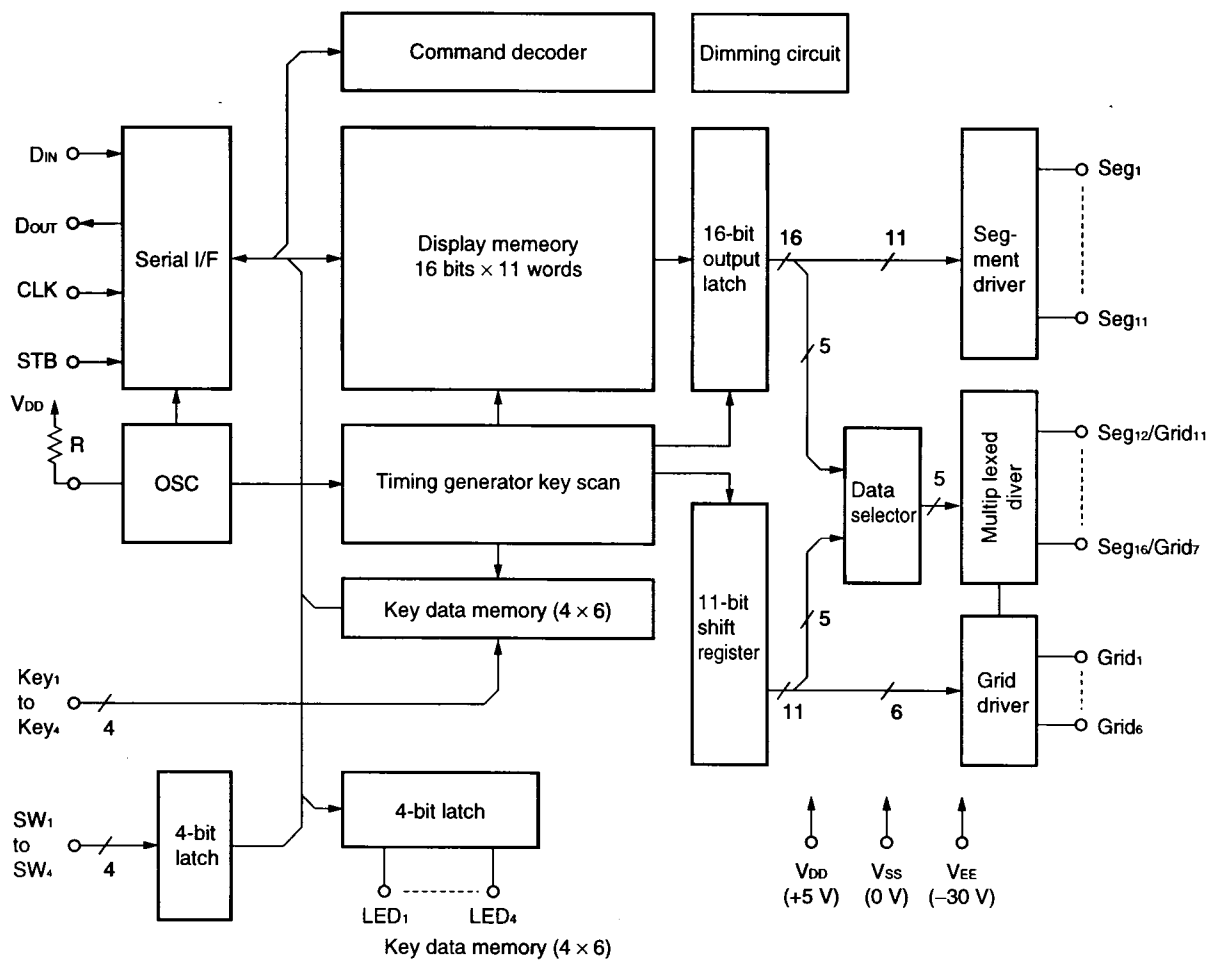
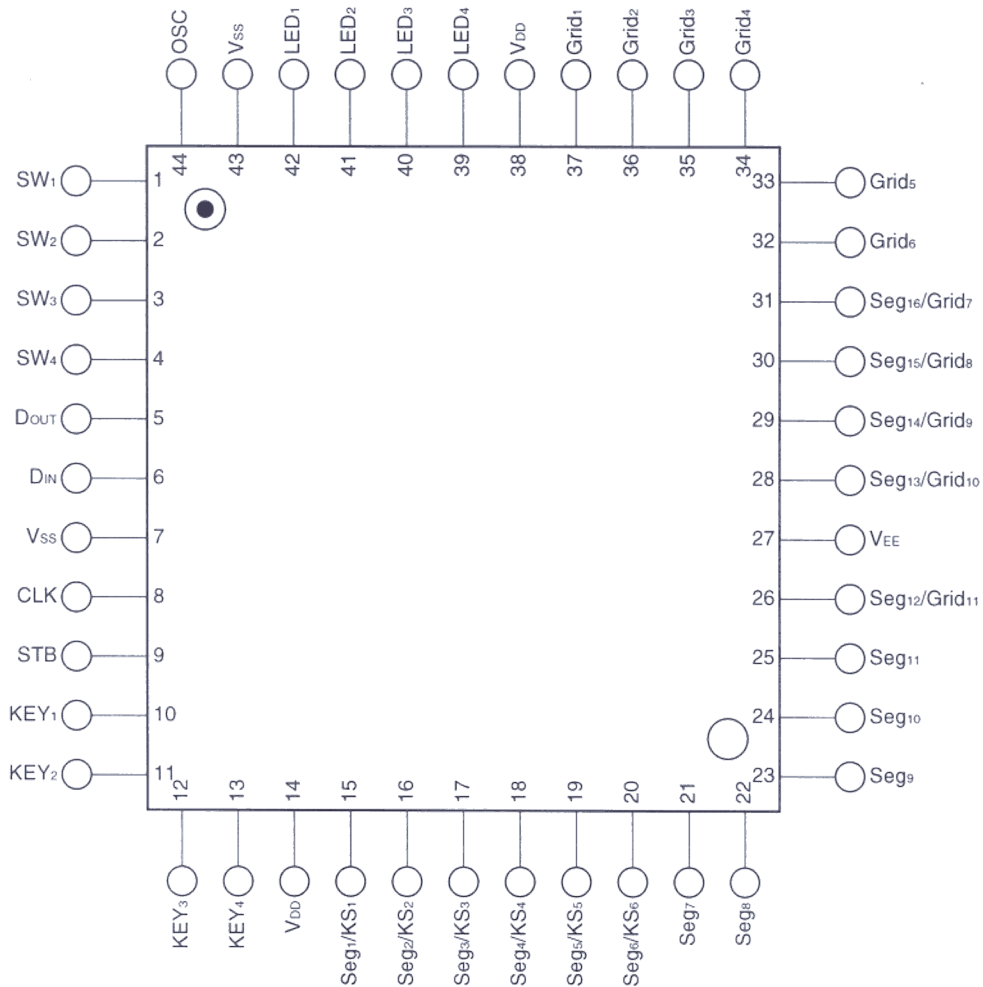


Figure 9-1 Block Diagram uPD16312

PIN CONFIGURATION (Top View)



Use all power pins.

Figure 9-2 Pinning uPD16312

Pin Function

Symbol	Pin Name	Pin No	Description
DIN	Data input	6	Input serial data at rising edge of shift clock, starting from the low order bit.
DOUT	Data output	5	Output serial data at the falling edge of the shift clock, starting from low order bit. This is N-ch open-drain output pin.
STB	Strobe	9	Initializes serial interface at the rising or falling edge of the μ PD16312. It then waits for reception of a command. Data input after STB has fallen is processed as a command. While command data is processed, current processing is stopped, and the serial interface is initialized. While STB is high, CLK is ignored.
CLK	Clock input	8	Reads serial data at the rising edge, and outputs data at the falling edge.
OSC	Oscillator pin	44	Connect resistor to this pin to determine the oscillation frequency to this pin.
Seg ₁ /KS ₁ to Seg ₆ /KS ₆	High-voltage output	15 to 20	Segment output pins (Dual function as key source)
Seg ₇ to Seg ₁₁	High-voltage output (segment)	21 to 25	Segment output pins
Grid ₁ to Grid ₆	High-voltage output (grid)	37 to 32	Grid output pins
Seg ₁₂ /Grid ₁₁ to Seg ₁₆ /Grid ₇	High-voltage output (segment/grid)	26, 28 to 31	These pins are selectable for segment or grid driving.
LED ₁ to LED ₄	LED output	42 to 39	CMOS output. +20 mA max.
KEY ₁ to KEY ₄	Key data input	10 to 13	Data input to these pins is latched at the end of the display cycle.
SW ₁ to SW ₄	Switch input	1 to 4	These pins constitute a 4-bit general-purpose input port.
V _{DD}	Logic power	14, 38	5 V \pm 10 %
V _{SS}	Logic ground	7, 43	Connect this pin to system GND.
V _{EE}	Pull-down level	27	V _{DD} – 35 V max.

Figure 9-3 Pin Description μ PD16312

10. Spare Parts List

Mechanical /001

Various

	3139 248 82121	PCBAS MPEG DVD624
	3141 018 03130	MCP PCB FRONT DVD616K/931
0200	3141 017 76381	CAB FRONT ASSY DVD640/ 001
0201	3141 014 24720	BRACKET
0205	3141 017 75590	BUTTON POWER DVD616K PNT PRT
0213	3141 017 76391	FRAME ASSY DVD640/051
0219	3141 017 75600	DOOR DVD616K PRT
0224	3141 017 76161	BACK PLATE DVD640/001 PNT PRT
0232	3141 017 75610	COVER TOP DVD616K PNT
0260	3140 113 21880	MAINS CORD RELIEF
0384	3141 017 90220	REMOTE CONTROL DVD- Q30/751
0397	3141 010 21180	CABLE SCART
1001▲	3122 427 23371	PBAS PSU BPAVC 7XX WR CLASS 3
1001▲	3141 018 03220	PBAS PSU 90PS132 WR BILLION EH
1002	3139 247 10721	PCBA MPEG DVD634 PK
1003	3141 018 03140	DVD LOADER MODULE A96H
1004	3141 019 21570	PBAS FRONT DVD640/001 ASSY

5001▲	3141 018 71300	MAIN CORD M7.92VH 1.60M
8001	3141 010 21160	CWAS 40RK/40RK 300 40 28S
8002	3141 010 21290	CWAS 08EH/08EH 350 8 WH 26S
8003	3141 010 21300	CWAS 04EH/04LC 300 22S
8004	3141 011 60630	EMC SPRING II

Mechanical /021

Various

	3139 248 82121	PCBAS MPEG DVD624
	3141 018 03130	MCP PCB FRONT DVD616K/931
0200	3141 017 76381	CAB FRONT ASSY DVD640/ 001
0201	3141 014 24720	BRACKET
0205	3141 017 75590	BUTTON POWER DVD616K PNT PRT
0213	3141 017 76391	FRAME ASSY DVD640/051
0219	3141 017 75600	DOOR DVD616K PRT
0224	3141 017 76161	BACK PLATE DVD640/001 PNT PRT
0232	3141 017 75610	COVER TOP DVD616K PNT
0260	3140 113 21880	MAINS CORD RELIEF
0384	3141 017 90220	REMOTE CONTROL DVD- Q30/751
0397	3141 010 21180	CABLE SCART
1001	3122 427 23371	PBAS PSU BPAVC 7XX WR CLASS 3
1001▲	3141 018 03220	PBAS PSU 90PS132 WR BILLION EH
1002	3139 247 10721	PCBA MPEG DVD634 PK
1003	3141 018 03140	DVD LOADER MODULE A96H
1004	3141 019 21570	PBAS FRONT DVD640/001 ASSY

5001▲	3141 018 71300	MAIN CORD M7.92VH 1.60M
8001	3141 010 21160	CWAS 40RK/40RK 300 40 28S
8002	3141 010 21290	CWAS 08EH/08EH 350 8 WH 26S
8003	3141 010 21300	CWAS 04EH/04LC 300 22S
8004	3141 011 60630	EMC SPRING II

Mechanical /051

Various

	3139 248 82121	PCBAS MPEG DVD624
	3141 018 03130	MCP PCB FRONT DVD616K/931
0200	3141 017 76381	CAB FRONT ASSY DVD640/ 001
0201	3141 014 24720	BRACKET
0205	3141 017 75590	BUTTON POWER DVD616K PNT PRT
0213	3141 017 76391	FRAME ASSY DVD640/051
0219	3141 017 75600	DOOR DVD616K PRT
0224	3141 017 76161	BACK PLATE DVD640/001 PNT PRT
0232	3141 017 75610	COVER TOP DVD616K PNT
0260	3140 113 21880	MAINS CORD RELIEF
0384	3141 017 90220	REMOTE CONTROL DVD- Q30/751
0397	3141 010 21180	CABLE SCART
1001▲	3122 427 23371	PBAS PSU BPAVC 7XX WR CLASS 3
1001▲	3141 018 03220	PBAS PSU 90PS132 WR BILLION EH
1002	3139 247 10721	PCBA MPEG DVD634 PK
1003	3141 018 03140	DVD LOADER MODULE A96H
1004	3141 019 21570	PBAS FRONT DVD640/001 ASSY

5001▲	3141 018 71340	A.C. MAINS CORD PQ8B1V6Y10A-05
8001	3141 010 21160	CWAS 40RK/40RK 300 40 28S
8002	3141 010 21290	CWAS 08EH/08EH 350 8 WH 26S
8003	3141 010 21300	CWAS 04EH/04LC 300 22S
8004	3141 011 60630	EMC SPRING II

MPEG PWB

Various

1149	4822 267 10734	B5B-EH-A
1150	2422 025 17682	CON BM V 40P M 2.54 440094 B
1153	4822 242 81246	27MHz 20P HC49/UT
1202	4822 267 10574	CON BM V 8P 2.50
1203	2422 026 05353	SOC CINCH H 4P F WHYERDBK Y
1300	2422 025 12352	CON BM EURO H 21P F BK GRND-L

-II-

2100	4822 126 13879	220nF 20% 16V
2104	2238 586 59812	0603 50V 100NP80M
2105	2238 586 59812	0603 50V 100NP80M
2106	2238 586 59812	0603 50V 100NP80M
2107	2238 586 59812	0603 50V 100NP80M
2108	2238 586 59812	0603 50V 100NP80M
2109	4822 122 33752	15pF 5% 50V
2110	2238 586 59812	0603 50V 100NP80M
2111	2238 586 59812	0603 50V 100NP80M
2112	2238 586 59812	0603 50V 100NP80M
2113	2238 586 59812	0603 50V 100NP80M
2114	2238 586 59812	0603 50V 100NP80M
2115	2238 586 59812	0603 50V 100NP80M
2116	2238 586 59812	0603 50V 100NP80M
2117	2238 586 59812	0603 50V 100NP80M
2118	2238 586 59812	0603 50V 100NP80M
2119	2238 586 59812	0603 50V 100NP80M
2120	4822 126 13879	220nF 20% 16V
2121	2238 586 59812	0603 50V 100NP80M
2122	2238 586 59812	0603 50V 100NP80M
2123	2238 586 59812	0603 50V 100NP80M
2124	2238 586 59812	0603 50V 100NP80M
2125	2238 586 59812	0603 50V 100NP80M
2126	2238 586 59812	0603 50V 100NP80M
2127	2238 586 59812	0603 50V 100NP80M
2128	2238 586 59812	0603 50V 100NP80M
2129	2238 586 59812	0603 50V 100NP80M

2131	2238 586 59812	0603 50V 100NP80M
2132	2238 586 59812	0603 50V 100NP80M
2133	2238 586 59812	0603 50V 100NP80M
2134	2238 586 59812	0603 50V 100NP80M
2135	2238 586 59812	0603 50V 100NP80M
2136	2238 586 59812	0603 50V 100NP80M
2137	2238 586 59812	0603 50V 100NP80M
2138	2238 586 59812	0603 50V 100NP80M
2139	2238 586 59812	0603 50V 100NP80M
2140	4822 122 33761	22pF 5% 50V
2141	4822 122 33761	22pF 5% 50V
2142	4822 122 33753	150pF 5% 50V
2144	3198 016 31020	0603 50V 1nF
2145	4822 122 33752	15pF 5% 50V
2146	4822 122 33752	15pF 5% 50V
2147	4822 122 33752	15pF 5% 50V
2148	4822 122 33752	15pF 5% 50V
2149	4822 122 33752	15pF 5% 50V
2200	4822 124 40196	220µF 20% 16V
2201	4822 126 13879	220nF 20% 16V
2202	4822 124 23052	100µF 20% 16V
2203	4822 126 13879	220nF 20% 16V
2204	4822 126 13879	220nF 20% 16V
2205	4822 124 23052	100µF 20% 16V
2206	4822 126 13879	220nF 20% 16V
2207	4822 124 40196	220µF 20% 16V
2208	4822 124 40196	220µF 20% 16V
2209	4822 124 40196	220µF 20% 16V
2210	4822 126 13879	220nF 20% 16V
2211	4822 124 80231	47µF 20% 16V
2213	2238 586 59812	0603 50V 100NP80M
2214	4822 126 13881	470pF 5% 50V
2216	5322 126 11579	3.3nF 10% 63V
2217	2238 586 59812	0603 50V 100NP80M
2218	4822 124 11947	10µF 20% 16V
2219	4822 124 80231	47µF 20% 16V
2220	4822 124 23052	100µF 20% 16V
2221	2238 586 59812	0603 50V 100NP80M
2222	4822 126 13881	470pF 5% 50V
2223	4822 126 13879	220nF 20% 16V
2226	5322 126 11579	3.3nF 10% 63V
2230	4822 126 13909	680pF 10% 50V
2231	4822 126 13909	680pF 10% 50V
2232	4822 126 13881	470pF 5% 50V
2233	4822 124 23052	100µF 20% 16V
2234	2238 586 59812	0603 50V 100NP80M
2235	4822 126 13881	470pF 5% 50V
2236	4822 126 13883	220pF 5% 50V
2237	4822 122 33752	15pF 5% 50V
2238	4822 122 33752	15pF 5% 50V
2240	2238 586 59812	0603 50V 100NP80M
2241	2238 586 59812	0603 50V 100NP80M
2300	4822 126 13909	680pF 10% 50V
2303	4822 126 13909	680pF 10% 50V
2305	4822 126 14494	22nF 10% 25V 0603
2306	4822 126 13883	220pF 5% 50V
2308	2238 586 59812	0603 50V 100NP80M
2310	4822 126 13883	220pF 5% 50V
2311	4822 126 13883	220pF 5% 50V
2312	4822 126 13883	220pF 5% 50V
2315	2238 586 59812	0603 50V 100NP80M
2316	2238 586 59812	0603 50V 100NP80M
2317	2238 586 59812	0603 50V 100NP80M
2319	2238 586 59812	0603 50V 100NP80M
2320	2238 586 59812	0603 50V 100NP80M
2321	4822 124 11947	10µF 20% 16V
2322	2020 552 94427	0603 50V 100P 5%
2323	2020 552 94427	0603 50V 100P 5%
2324	2238 586 59812	0603 50V 100NP80M
2325	4822 124 11947	10µF 20% 16V
2326	2020 552 94427	0603 50V 100P 5%
2327	2020 552 94427	0603 50V 100P 5%
2328	2238 586 59812	0603 50V 100NP80M
2329	2020 552 94427	0603 50V 100P 5%
2330	4822 124 11947	10µF 20% 16V
2331	2020 552 94427	0603 50V 100P 5%
2332	2238 586 59812	0603 50V 100NP80M
2333	4822 124 11947	10µF 20% 16V
2334	2020 552 94427	0603 50V 100P 5%
2335	2020 552 94427	0603 50V 100P 5%
2339	4822 124 11947	10µF 20% 16V
2340	2238 586 59812	0603 50V 100NP80M

-III-

3100	4822 051 30479	47Ω 5% 0.062W
3101	4822 051 30479	47Ω 5% 0.062W
3102	4822 051 30479	47Ω 5% 0.062W
3103	4822 051 30479	47Ω 5% 0.062W

2404	2020 561 90365	TUB 50V 100nF 20% A
2405	2020 561 90365	TUB 50V 100nF 20% A
2406	4822 124 23624	47 μ F 20% 16V
2407	2020 561 90365	TUB 50V 100nF 20% A



3401	4822 116 52291	56k 5% 0.5W
3402	4822 050 21003	10k 1% 0.6W
3403	4822 050 21003	10k 1% 0.6W
3404	4822 050 21003	10k 1% 0.6W
3405	4822 050 21002	1k 1% 0.6W
3406	4822 050 21003	10k 1% 0.6W
3407	4822 116 52195	47 Ω 5% 0.5W
3409	4822 116 52283	4k7 5% 0.5W
3410	4822 116 52283	4k7 5% 0.5W
3411	4822 116 52283	4k7 5% 0.5W
3412	4822 116 83884	47k 5% 0.5W
3413	4822 116 52228	680 Ω 5% 0.5W
3414	4822 052 10478	4 Ω 7 5% 0.33W
3415	4822 116 52175	100 Ω 5% 0.5W
3416	4822 116 52175	100 Ω 5% 0.5W
3417	4822 116 52175	100 Ω 5% 0.5W
3418	4822 116 52176	10 Ω 5% 0.5W



6400	4822 130 30621	1N4148
6402	4822 130 31253	BZX79-C2V4
6403	4822 130 34398	BZX79-B24



7400	8241 010 40440	IC PT6312 QFP44
7401	3141 010 50260	IR RECEIVER HK361BT-16
8402	3141 010 21240	CWAS 05EH/05OP 140 5 WH 26S
8404	3141 010 21310	CWAS 05XH/05OP SCR 330 5 WH26S
8404	3141 010 21331	CWAS 05EH/05 OP SCR 330 5 WH26
8405	3141 010 21280	CWAS 02EH/02OP 140 2 WH 26S
8406	3141 010 20250	CWAS 01 SPA/01 OP 110 BK 24F T