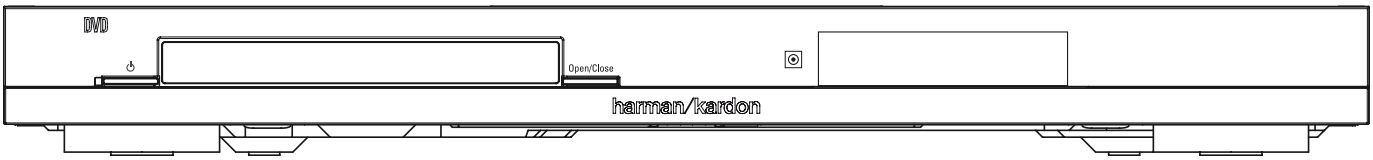
harman/kardon Service Manual

DVD 16/230
DVD 18/230

DVD players

Only sold with AVR 139 and AVR 141 as AVR/DVD combos 13916, 13918, 14116, 14118..



CONTENTS

ESD PRECAUTIONS	2
SERVICING PRECAUTIONS	3
OWNER'S MANUAL FRONT PAGE	5
OM TABLE OF CONTENTS	6
REMOTE CONTROL FUNCTIONS	7
AVR/DVD SYSTEM CONNECTIONS	11
FEATURES	12
FRONT PANEL CONTROLS	13
REAR PANEL CONNECTIONS	14
SETUP AND CONNECTIONS	15
TROUBLESHOOTING GUIDE	16
TECHNICAL SPECIFICATIONS	17
SOFTWARE CHECK + UPGRADE	18
TROUBLESHOOTING CHARTS	19
EXPLODED VIEW	24
DVD 16 SERVICE PARTS	25
DVD 18 SERVICE PARTS	26
PCB DRAWINGS	27
WIRING DIAGRAM	31
SCHEMATIC DIAGRAMS	32-39

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ESD PRECAUTIONS

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity . Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity .

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly , drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly .
3. Use only a grounded-tip soldering iron to solder or unsolder ESD devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.
6. Do not remove a replacement ESD device from its protective package until immediately before you are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).
7. Immediately before removing the protective material from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will by installed.

CAUTION : BE SURE NO POWER IS APPLIED TO THE CHASSIS OR CIRCUIT, AND OBSERVE ALL OTHER SAFETY PRECAUTIONS.

8. Minimize bodily motions when handing unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

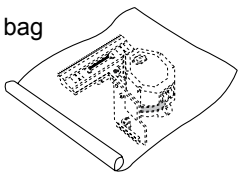
SERVICING PRECAUTIONS

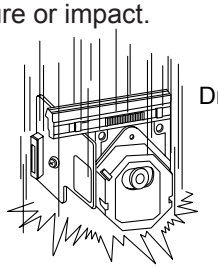
NOTES REGARDING HANDLING OF THE PICK-UP

1. Notes for transport and storage

1) The pick-up should always be left in its conductive bag until immediately prior to use.
2) The pick-up should never be subjected to external pressure or impact.

Storage in conductive bag

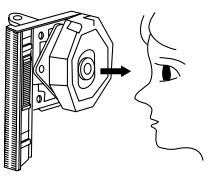




Drop impact

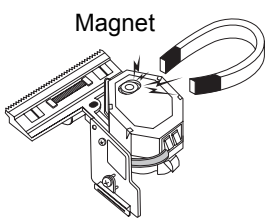
2. Repair notes

1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
2) The pick-up should always be handled correctly and carefully , taking care to avoid external pressure and impact. If it is subjected to strong pressure or impact, the result may be an operational malfunction and/or damage to the printed-circuit board.
3) Each and every pick-up is already individually adjusted to a high degree of precision, and for that reason the adjustment point and installation
screws should absolutely never be touched.
4) Laser beams may damage the eyes!
Absolutely never permit laser beams to enter the eyes!
Also NEVER switch ON the power to the laser output part (lens, etc.) of the pick-up if it is damaged.

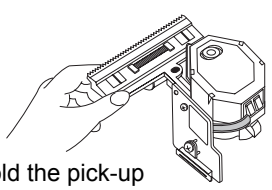


NEVER look directly at the laser beam, and don't let contact fingers or other exposed skin.

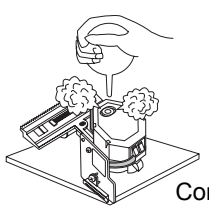
5) Cleaning the lens surface
If there is dust on the lens surface, the dust should be cleaned away by using an air bush (such as used for camera lens). The lens is held by a delicate spring. When cleaning the lens surface, therefore, a cot - ton swab should be used, taking care not to distort this.



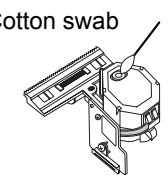
Magnet



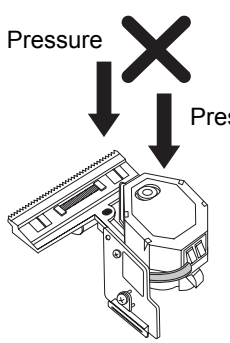
How to hold the pick-up



Conductive Sheet



Cotton swab



Pressure

Pressure

6) Never attempt to disassemble the pick-up.
Spring by excess pressure. If the lens is extremely dirty , apply isopropyl alcohol to the cotton swab. (Do not use any other liquid cleaners, because they will damage the lens.) Take care not to use too much of this alcohol on the swab, and do not allow the alcohol to get inside the pick-up.

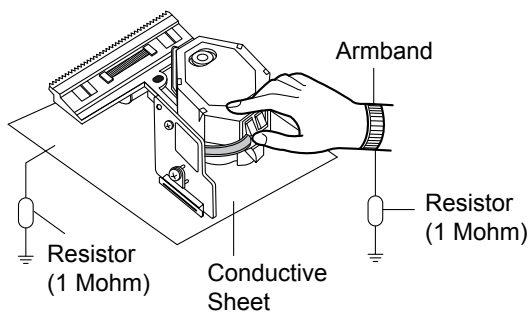
NOTES REGARDING COMPACT DISC PLAYER REPAIRS

1. Preparations

1) Compact disc players incorporate a great many ICs as well as the pick-up (laser diode). These components are sensitive to, and easily affected by, static electricity. If such static electricity is high voltage, components can be damaged, and for that reason components should be handled with care.
2) The pick-up is composed of many optical components and other high-precision components. Care must be taken, therefore, to avoid repair or storage where the temperature of humidity is high, where strong magnetism is present, or where there is excessive dust.

2. Notes for repair

1) Before replacing a component part, first disconnect the power supply lead wire from the unit
2) All equipment, measuring instruments and tools must be grounded.
3) The workbench should be covered with a conductive sheet and grounded.
   When removing the laser pick-up from its conductive bag, do not place the pick-up on the bag. (This is because there is the possibility of damage by static electricity .)
4) To prevent AC leakage, the metal part of the soldering iron should be grounded.
5) Workers should be grounded by an armband (1M Ω)
6) Care should be taken not to permit the laser pick-up to come in contact with clothing, in order to prevent static electricity changes in the clothing to escape from the armband.
7) The laser beam from the pick-up should NEVER be directly facing the eyes or bare skin.



ENGLISH

AVR/DVD System

AVR Audio/Video Receiver
DVD Digital Versatile Disc Player

This owner's manual covers any combination of AVR 139, AVR 141, DVD 16 and DVD 18.

OWNER'S MANUAL

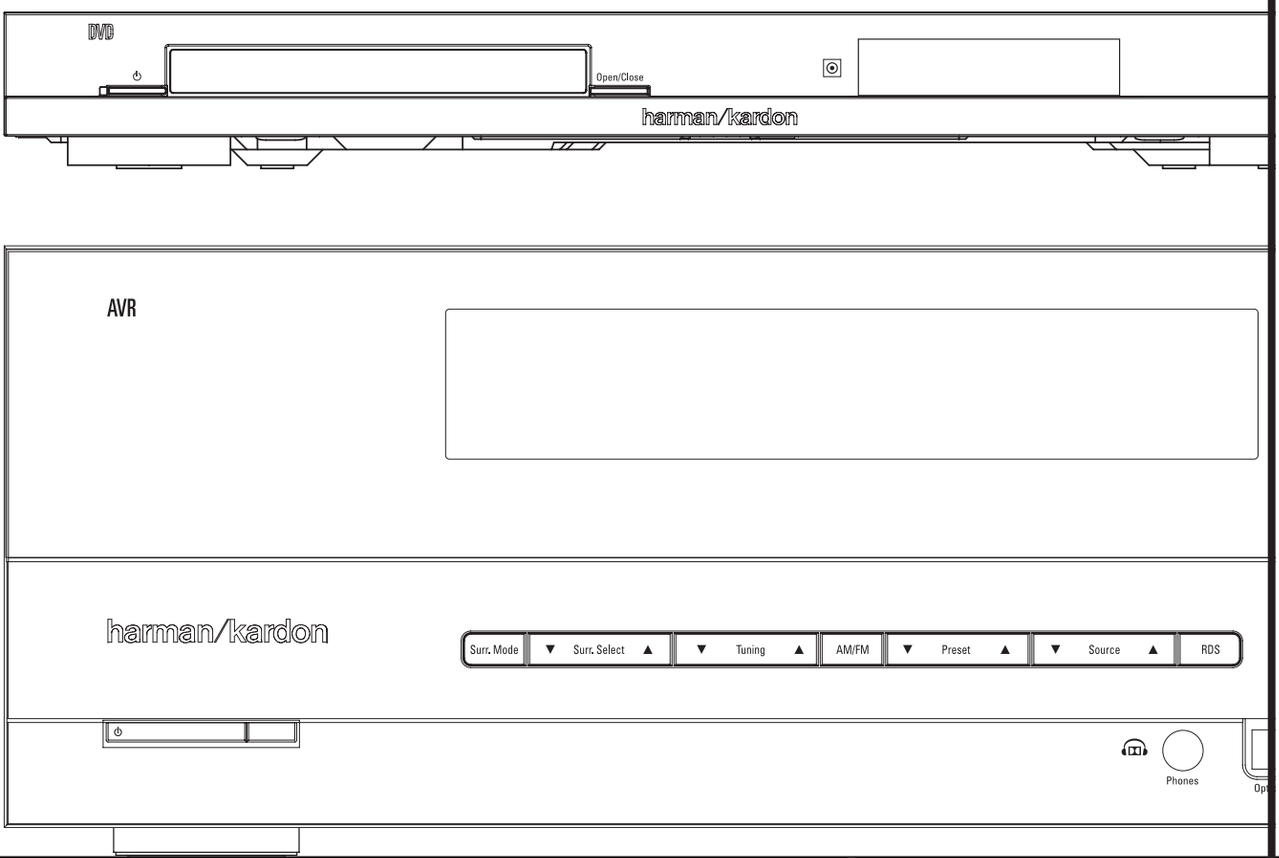


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Table of Contents

3 Safety Information
3 Unpacking
4 Remote Control Functions
AVR
8 Front Panel Controls
10 Rear Panel Connections
12 Installation and Connections
12 Audio Equipment Connections
12 Video Equipment Connections
13 HDMI Connections
14 System Configuration
14 First Turn On
14 Settings to be Made With Each Input Used
14 Input Setup
14 Speaker Setup
15 Surround Setup
15 Configuring the Surround Off (Stereo) Modes
15 Stereo-Direct (Bypass) Mode
16 Stereo Digital Mode
16 Delay Settings/LipSync
16 Night Mode Settings
16 Output Level Adjustment
18 Operation
18 Basic Operation
18 Turning the AVR On and Off
18 Using the Sleep Timer
18 Source Selection
18 Controls and Use of Headphones
18 Surround Mode Selection
19 Digital Audio Playback
20 Selecting a Digital Source
20 Digital Status
20 Surround Mode Types
21 Night Mode
21 Tape Recording
21 Output Level Trim Adjustment
21 6-Channel Direct Input
21 Display Brightness
22 Memory Backup
22 Tuner Operation
22 RDS Operation
24 Troubleshooting Guide
24 Processor Reset
25 Technical Specifications AVR
DVD
26 Terminology
27 Features, Packing List
28 Front Panel Controls
29 Rear Panel Connections
30 Setup and Connections
30 Digital Audio Connections
31 Playback Basics
31 Basic Play
31 Disc Playback Features
31 About DivX Movie Files
32 DVD Player Set-up
32 System Defaults
32 Set Up Menu
34 Player Menu
34 Using the On-Screen Status Display
35 CD Playback
36 MP3 and JPEG Playback
38 Troubleshooting Guide
39 Technical Specifications DVD

Typographical Conventions

To help you use this manual with the remote control, front-panel controls and rear-panel connections, certain conventions have been used.

Example – (bold type) indicates a specific remote control or front-panel button, or rear-panel connection jack

EXAMPLE – (OCR type) indicates a message that is visible on the front-panel information display

1 – (number in a square) indicates a specific front-panel control

1 – (number in a circle) indicates a rear-panel connection

1 – (number in an oval) indicates a button or indicator on the remote.

Instructions for users on removal and disposal of used batteries. Specification of included battery types.

These symbols shown on the product, the packaging or in the manual or separate information sheet mean that the product itself, as well as the batteries included or built into the product, should never be thrown away with general household waste. Take them to applicable collection points, where proper treatment, recycling and recovery takes place, in accordance with national or local legislation, or European Directives 2002/96/EC and 2006/66/EC.

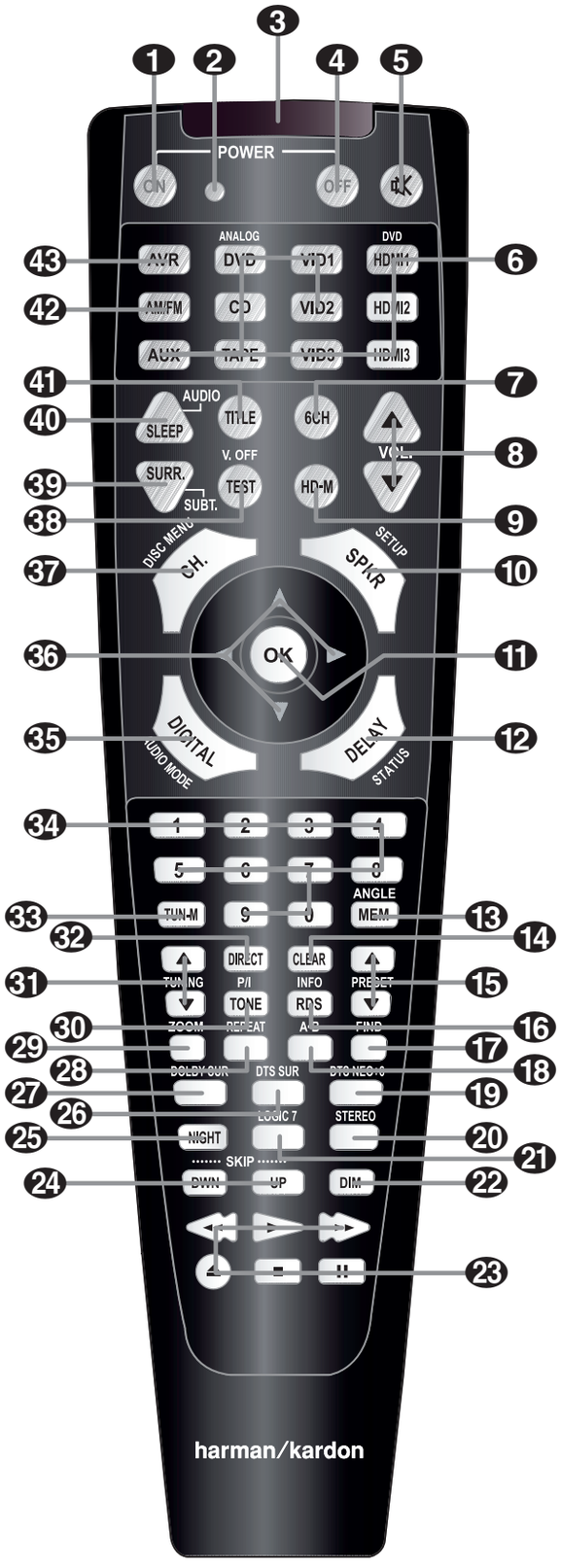
Correct handling of the product and batteries to be disposed helps saving resources and prevents possible negative effects on the environment or human health.

The batteries included with your equipment may be Alkaline, Carbon Zink/ Manganese or Lithium (button cells) type. All types should be disposed of according to the above instructions.

To remove the batteries from your equipment or remote control, reverse the procedure described for inserting batteries in the Owners Manual.

For products with a built-in battery that lasts for the lifetime of the product, removal may not be possible for the user. In this case, recycling or recovery centers handle the dismantling of the product and the removal of the battery. If, for any reason, it becomes necessary to replace such a battery, this procedure must be performed by authorized service centers.

Remote Control Functions for Receiver and DVD Player System



1. Power On Button
2. Not active
3. IR Transmitter Window
4. Power Off Button
5. Mute
6. Input Selectors
7. 6-Channel Direct Input
8. Volume Up/Down
9. HD Mode Selector
10. Speaker Select/Setup
11. OK Button
12. Delay/Status Button
13. Memory/Angle Button
14. Clear Button
15. Preset Up/Down
16. RDS Select
17. Find Button
18. A-B
19. DTS Neo:6 Mode Selector
20. Stereo Mode Selector
21. Logic 7 Selector
22. Dim Button
23. Transport Buttons
24. Skip Up/Down Buttons (DWN)/(UP)
25. Night Mode
26. DTS Digital Mode Selector
27. Dolby Mode Selector
28. Repeat
29. Zoom Button
30. Tone Mode/Progressive Scan/Interlaced Button
31. Tuning Up/Down
32. Direct Button
33. Tuner Mode Button
34. Numeric Keys
35. Digital Select/Audio Mode
36. Navigation Buttons
37. Channel Select /Disc Menu Button
38. V.OFF/Test Button
39. Surround Mode Selector/Subtitle Button
40. Sleep/Program Up/Audio Select Button
41. Title
42. AM/FM Tuner Select
43. AVR Selector

Remote Control Functions, common for AVR and DVD

IMPORTANT NOTE: The combined AVR and DVD remote has some buttons that perform different functions. If you press the **AVR Button** 43, one set of functions is active, identical to the functions for buttons CD, Tape, Video 1/2/3. If you press the **DVD/ HDMI1 Button** 6, some of the buttons change their function as indicated above the button itself, and explained below. Refer to the function table for an overview of functions in both modes. NOTE that pressing the **HDMI1** and **DVD** Buttons 6 activate the alternative commands as seen in the Function List on page 7.

1 **Power On Button**: Press this button to turn on the power to the AVR or the DVD selected by pressing either the **AVR** or the **DVD/HDMI1 Button** 43 or 6.

2 **This indicator is not active**.

3 **IR Transmitter Window**: Point this window towards the AVR when pressing buttons on the remote to make certain that infrared commands are properly received.

4 **Power Off Button**: Press this button to place the AVR or a selected device unit in the Standby mode. If held for more than 3 seconds, both the AVR and the DVD switch to Standby.

5 **Mute**: Press this button to momentarily silence the AVR or TV set being controlled, depending on which device has been selected.

6 **Input Selectors**: Pressing one of these buttons will perform three actions at the same time. First, if the AVR is not turned on, this will power up the unit. Next, it will select the source shown on the button as the input to the AVR. Finally, the DVD/HDMI1 Button will switch the double-function remote buttons to their DVD functions. After pressing the DVD/HDMI1 Button, you must press the **AVR Selector button** 43 again to operate all the AVR's functions with the remote. Note that pressing the DVD Button switches on BOTH the AVR and the DVD, whereas pressing the AVR Button just switches on the AVR.

7 **6-Channel Direct Input**: Press this button to select the component connected to the **6-Channel Direct Input** 24 as the audio. Note that when you wish to use the Six Channel Direct Input in conjunction with a video source, you must first select the video source by pressing one of the **Input Selectors** 6. Then press this button to choose the **6-Channel Direct Input** 24 as the audio source.

8 **Volume Up/Down**: Press these buttons to raise or lower the system volume.

9 **HD Mode Selector (DVD)**: When the DVD player is connected to a video display using the **HDMI Output** 11, the display sends information to the DVD indicating the highest video resolution it is capable of handling, and the DVD automatically sets the video output to match it. Pressing this button allows you to manually change the output resolution, with your selection indicated by the **Video Output Indicators** O.

The HD-M button does allow you to force the DVD player to output video at a resolution that your TV does not support. If this happens, your TV screen may go blank or may display "Unsupported Format". If this occurs:

1. Wait 10 seconds.
2. Press the HD-M button, then the Left Navigation button, then the OK button.

If the video does not recover, repeat steps 1 and 2 again.

10 **Speaker Select/Setup**: Press this button to begin the process of configuring the AVR's Bass Management System for use with the type of speakers used in your system. Once the button has been pressed, use the ▲▼ buttons 36 to select the channel you wish to set up. Press the **OK** button 11 and then select the speaker type (see page 14 for more information.)

For DVD: Press this button to use the DVD's on-screen menu system to adjust the player's configuration settings. Note that the **Info Button** 7 must be pressed to access the DVD's Information menu to obtain detailed disc information, and to configure the playback mode of the disc.

11 **OK Button**: This button is used to enter settings into the AVR's memory. It is also used in the setup procedures for delay time, speaker configuration and channel output level adjustment.

12 **Delay/Status Button**: Press this button to begin the process for setting delay times and lip sync delay. (See page 16 for more information).

For DVD: Press while a disc is playing to view banner display. Use the ARROW buttons to move through the different features in the Banner Display. When a symbol is highlighted, press OK on the remote to select it.

13 **Memory/Angle Button**: Press this button to enter a radio station into the AVR's preset memory. Two underline indicators will flash at the right side of the **Main Information Display** 16, you then have five seconds to enter a preset memory location using the **Numeric Keys** 34. (See page 22 for more information.)

For DVD: Press to access various camera angles on a DVD (If the DVD contains multiple camera angles) or to rotate JPEG images.

14 **Clear Button**: Press this button to clear incorrect entries when using the remote to directly enter a radio station's frequency.

15 **Preset Up/Down**: When the tuner is in use, press these buttons to scroll through the stations programmed into the AVR's memory. When CD or DVD is selected using the **Input Selector button** 6, these buttons may function as Slow Fwd/Rev (DVD) or "+10" (CD).

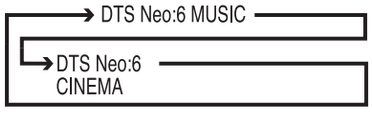
16 **RDS Select/Info (DVD) Button**: Press this button to display the various messages that are part of the RDS data system of the AVR's tuner. (See page 22 for more information on RDS).

For DVD: Press for detailed informations on the disc playing (Video/Audio Bit rate, Movie aspect ratio and others), and for current player settings made. Note that the unit doesn't react on any transport button as long as the info menu is displayed. Press again to remove information from screen.

17 **Find (DVD)**: Press this button to search for a specific location on the disc.

18 **A-B (DVD)**: Press to select section A-B and to play repeatedly.

19 **DTS Neo:6 Mode Selector**: Pressing this selector button cycles the AVR through the various DTS Neo:6 modes, which extract a five-channel surround field from two-channel program material (from PCM source or analog input signal). The first press selects the last DTS Neo:6 surround mode that was in use, and each subsequent press selects the next mode in the following order:



Remote Control Functions, common for AVR and DVD

⓴ **Stereo Mode Selector**: Press this button to select a stereo playback mode. When the button is pressed so that DSP SURR OFF appears in the **Main Information Display** 16, the AVR will operate in a bypass mode with true fully analog, two-channel left/right stereo mode with no surround processing or bass management as opposed to other modes where digital processing is used. When the button is pressed so that SURROUND OFF appears in the **Main Information Display** 16, you may enjoy a two-channel presentation of the sound along with the benefits of bass management. When the button is pressed so that 5 CH STEREO appears, the stereo signal is routed to all five speakers, if installed.(See page 15 for more information on stereo playback modes).

㉑ **Logic 7 Selector**: Press this button to select one of the available Logic 7 surround modes. (See page 19 for the available Logic 7 options).

㉒ **Dim Button**: Press this button to activate the Dimmer function, which reduces the brightness of the front panel display, or turn it off entirely. The first press of the button shows the default state, which is full brightness by indicating VFD FULL in the **Main Information Display** 16. Press the button again within five seconds to reduce the brightness by 50%, as indicated by VFD HALF. Press the button again within five seconds and the main display will go completely dark. Note that this setting is temporary; the display will always return to full brightness when the AVR is turned on. In addition,both the **Power Indicator** 3 and the blue accent lighting inside the volume control will always remain at full brightness regardless of the setting. This is to remind you that the AVR is still turned on.

㉓ **Transport Buttons**: These buttons operate the DVD player.

㉔ **Skip Up/Down Buttons (DVD)**:

(**DWN**): Press to go to beginning of current track. Press again quickly to go to beginning of previous track. After pressing the **PAUSE** button, each press of this button will move the image in reverse frame by frame.

(**UP**): Press to go to beginning of next track. After pressing the **PAUSE** button, each press of this button will move the image forwards frame by frame.

㉕ **Night Mode**: Press this button to activate the Night mode. This mode is available only with Dolby Digital encoded digital sources, and it preserves dialog (center channel) intelligibilty at low volume levels (See page 16 for more information).

㉖ **DTS Digital Mode Selector**: When a DTS source is in use the AVR will select the appropriate mode automatically and no other mode will be available. Pressing this button will display the mode currently selected by the AVR´s decoder, depending on the surround material played and the speaker setting.

㉗ **Dolby Mode Selector**: This button is used to select one of the available Dolby Surround processing modes. Each press of this button will select one of the Dolby Pro Logic II modes, Dolby 3 Stereo or Dolby Digital. Note that the Dolby Digital mode is only available with a digital input selected and the other modes only as long as a Dolby Digital source is not playing.

㉘ **Repeat (DVD)**: Each press of this button changes the playback mode to repeat a chapter or track or the entire disc. A repeat icon will appear in the upper right corner of the screen indicating the current repeat mode. If the Player Information Screen is active, the changes will be displayed on screen.

㉙ **Zoom Button**: When a DVD is playing, press this button to zoom the picture so that it is enlarged. There are 4 steps to the zoom function, each progressively larger. Press through each of the zoom stages to return to a normal picture.

㉚ **Tone Mode/Progressive Scan/Interlaced Button**: Pressing this button enables or disables the Bass and Treble tone controls. When the button is pressed so that the words TONE IN appear in the **Main Information Display** 16, the settings of the **Bass** and **Treble** controls will affect the output signals. When the button is pressed so that the words TONE OUT appear in the **Main Information Display** 16, the output signal will be "flat," without any bass or treble alteration.

For DVD: Press this button to change the resolution of the Component Video Output between standard definition and progressive definition (PAL interlaced and PAL progressive; NTSC interlaced and NTSC progressive).
The new setting will become effective after quitting the Setup menu.

㉛ **Tuning Up/Down**: When the tuner is in use, these buttons will tune up or down through the selected frequency band. If the **Tuner Mode** button ㉝ has been pressed or the **Band** button 9 on the front panel was held pressed so that AUTO appears in the **Main Information Display** 16, pressing either of the buttons will cause the tuner to seek the next station with acceptable signal strength for quality reception. When the MANUAL appears in the **Main Information Display** 16, pressing these buttons will tune stations in single-step increments. (See page 22 for more information).

㉜ **Direct Button**: Press this button when the tuner is in use to start the sequence for direct entry of a station's frequency. After pressing the button simply press the proper **Numeric Keys** ㉞ to select a station (See page 22 for more information on the tuner).

㉝ **Tuner Mode**: Press this button when the tuner is in use to select between automatic tuning and manual tuning. When the button is pressed so MANUAL appears in the **Main Information Display** 16, pressing the **Tuning** buttons ㉛ 8 will move the frequency up or down in single-step increments. When the FM band is in use and AUTO appears in the **Main Information Display** 16, pressing this button will change to monaural reception making even week stations audible. (See page 22 for more information.)

㉞ **Numeric Keys**: These buttons serve as a ten-button numeric keypad to enter tuner preset positions. For DVD play you may enter track numbers directly, followed by OK to go to the track.

㉟ **Digital Select/Audio Mode**: Press this button to assign one of the digital inputs 5 17 10 22 to a source. (See page 12 for more information on using digital inputs.) **Audio Mode**: When operating the DVD, press this button to switch between Audio Modes.

㊱ **Navigation Buttons**: These buttons are used to increase or decrease output levels when configuring the unit, to select speaker configuration or to select the digital inputs.

㊲ **Channel Select /Disc Menu Button**: This button is used to start the process of setting the AVR's output levels with an external source. Once this button is pressed, use the ▲▼ buttons ㊱ to select the channel being adjusted, then press the **OK** button ⓫, followed by the ▲▼ buttons again, to change the level setting. (See page 21 for more information.)

DVD Disc Menu: Displays the actual DVD Disc Menu on the TV screen in play mode. When playing discs with JPEG images, pressing this button will access the thumbnails.

㊳ **V.OFF/Test Button**: Press to turn off video output for improved performance from audio-only discs. Press again to restore video output.

Tone: Press this button to begin the sequence used to calibrate the AVR's output levels. (See page 16 for more information on calibrating the AVR).

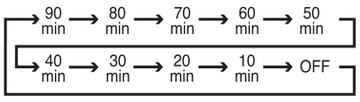
Remote Control Functions, common for AVR and DVD

㊴ Surround Mode Selector/Subtitle Button: Press this button repeatedly to select an available surround mode.

When a DVD is playing, press to select a subtitle language or to turn subtitles off.

Note: Due to the variations in how DVD discs are authored, the subtitle languages selected with the Subtitle Button may not accurately reflect the actual languages available on the disc. It is recommended that subtitles be selected using the disc's menu.

㊵ Sleep/Program Up>/Audio Select Button: Press this button to place the unit in the Sleep mode. After the time shown in the display, the AVR will automatically go into the Standby mode. Each press of the button changes the time until turn-off in the following order:



Hold the button pressed for two seconds to turn off the Sleep mode setting.

Note that this button is also used to change channels on your TV, VCR and SAT receiver when selected.

DVD: Press to access various audio languages on a DVD (If the DVD contains multiple audio streams).

㊶ Title: When a disc is playing, press to make the DVD-player go back to the first section of the disc. If you are playing a DVD-Audio disc, pressing this button returns you to the Disc Menu with most DVD-A discs.

㊷ AM/FM Tuner Select: Press this button to select the AVR's tuner as the listening choice. Pressing this button when the tuner is in use will select between the AM and FM bands.

㊸ AVR Selector: Pressing this button will switch the remote so that it will operate the AVR's functions. If the AVR is in the Standby mode, it will also turn the AVR on.

Function List

Button Name	HK AVR Remote Command AVR/TAPE/CD/AUX/VID1/VID2/VID3/HDMI2/HDMI3	HK DVD Remote Command DVD/HDMI1
Power ON	Power On	Power On
Power OFF	Power Off (press and release)	Power Off (press and release)
	Power Off (press and hold)	Power Off (press and hold)
Mute	Mute	Mute(AVR)
AVR	AVR Power On	AVR(AVR)
DVD	DVD	DVD(AVR)
VID1	VID 1	VID 1(AVR)
HDMI1	HDMI 1	HDMI 1(AVR)
AM/FM	AM/FM	AM/FM(AVR)
CD	CD	CD(AVR)
VID2	VID 2	VID 2(AVR)
HDMI2	HDMI 2	HDMI 2(AVR)
AUX	AUX	AUX(AVR)
TAPE	TAPE	TAPE(AVR)
VID3	VID 3	VID 3(AVR)
HDMI3	HDMI 3	HDMI 3(AVR)
SLEEP / AUDIO	Sleep	Audio
TITLE		Title
6CH	6CH	6CH(AVR)
VOL Up	Vol Up	Vol Up(AVR)
SURR. / SUBT.	Surround Mode	Subtitle
TEST / V.OFF	Test Tone	Video Off
HD-M		HD Mode
VOL Down	Vol Down	Vol Down(AVR)
CH. / DISC MENU	Channel Select	Disc Menu
SPKR / SETUP	Speaker Select	Setup
Level+/Up	Level+/Up	Up
Left M	Left	Left
OK	SET	Enter
Right N	Right	Right
Level-/Down	Level-/Down	Down
DIGITAL / AUDIO MODE	Digital Select	Audio Mode
DELAY / STATUS	Delay	Status
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
TUN-M	Tuner Mode	
9	9	9
0	0	0
MEM / ANGLE	Memory	Angle
TUNING Up	Tuning Up	
DIRECT	Direct Tuning	
CLEAR	Clear	Clear
PRESET Up	Preset Up	Slow Up
TUNING Down	Tuning Down	
TONE / P/I	Tone Mode	P/I
RDS / INFO	RDS	Info
PRESET Down	Preset Down	Slow Down
ZOOM		Zoom
REPEAT		Repeat Play
A-B		A-B Repeat Play
FIND		Search
DOLBY SUR	Dolby Surround	Dolby Surround(AVR)
DTS SUR	DTS Surround	DTS Surround(AVR)
DTS NEO:6	DTS NEO:6	DTS NEO:6(AVR)
NIGHT	Night Mode	Night(AVR)
LOGIC 7	Logic7	Logic7(AVR)
STEREO	Stereo	Stereo(AVR)
SKIP DOWN	Skip Down(DVD)	Skip Down
SKIP UP	Skip Up(DVD)	Skip Up
DIM	Dimmer	Dimmer
Rew(◀◀)	Rew(DVD)	Rew
Play(►)	Play(DVD)	Play
FF(▶▶)	FF(DVD)	FF
Open/Close	Open/Close(DVD)	Open/Close
Stop	Stop(DVD)	Stop
Pause	Pause(DVD)	Pause

Rear Panel Connections

⓬ **Video Monitor Output**: Connect these jacks to the composite input of a TV monitor or video projector to view the output of any video source selected by the receiver's video switcher.

⓭ **HDMI Inputs**: Connect the HDMI output of video sources such as a DVD player, set-top box or HDTV tuner to either of these jacks.

⓮ **HDMI Output**: Connect this jack to the HDMI input on a compatible HDMI-equipped video display.

⓯ **Monitor Component Video Outputs**: Connect these outputs to the component video inputs of a video projector or monitor. When a source connected to one of the two **Component Video Inputs** ❾⓰ is selected the signal will be sent to these jacks.

⓰ **Video 2 Component Video Inputs**: Connect the Y/Pr/Pb component video outputs of a DVD player to these jacks.

Note: All component inputs/outputs can be used for RGB signals too, in the same way as described for the Y/Pr/Pb signals, then connected to the jacks with the corresponding color.

RGB connection is not possible if the source outputs a separate sync signal (see page 13).

⓱ **AC Power Cord**: Connect the AC plug to an unswitched AC wall output.

⓲ **DVD Video Inputs**: Connect these jacks to the composite output jacks on a DVD player or other video source.

⓳ **Video 1 Video Outputs**: Connect these jacks to the **RECORD/INPUT** composite jack on a VCR.

⓴ **Video 2 Audio Inputs**: Connect these jacks to the **PLAY/OUT** audio jacks on a VCR or other video source.

㉑ **Video 2 Video Inputs**: Connect these jacks to the **PLAY/OUT** composite jacks on a second VCR or other video source.

㉒ **Optical Digital Inputs**: Connect the optical digital output from a DVD player, HDTV receiver, LD player, MD player or CD player to these jacks. The signal may be either a Dolby Digital signal, a DTS signal or a standard PCM digital source.

㉓ **Video 1 Video Inputs**: Connect these jacks to the **PLAY/OUT** composite jacks on a TV or other video source.

㉔ **6-Channel Direct Inputs**: These jacks are used for connection to source devices such as DVD-Audio or SACD players with discrete analog outputs.

㉕ **Digital Audio Output**: Connect this jack to the matching digital input connector on a digital recorder.

㉖㉗㉙ **Front/Center Speaker Outputs**: Connect these outputs to the matching + or – terminals on your front/center speakers. When making speaker connections, always make certain to maintain correct polarity by connecting the red (+) terminals on the AVR to the red (+) terminals on the speaker and the black (–) terminals on the AVR to the black (–) terminals on the speakers. (See page 14 for more information on speaker polarity.)

㉘㉚ **Surround Speaker Outputs**: Connect these outputs to the matching + or – terminals on your left and right surround speakers. When making speaker connections always make certain to maintain correct polarity by connecting the red (+) terminals on the AVR to the red (+) terminals on the speakers and the black (–) terminals on the AVR to the black (–) terminals on the speakers. See page 14 for more information on speaker polarity.

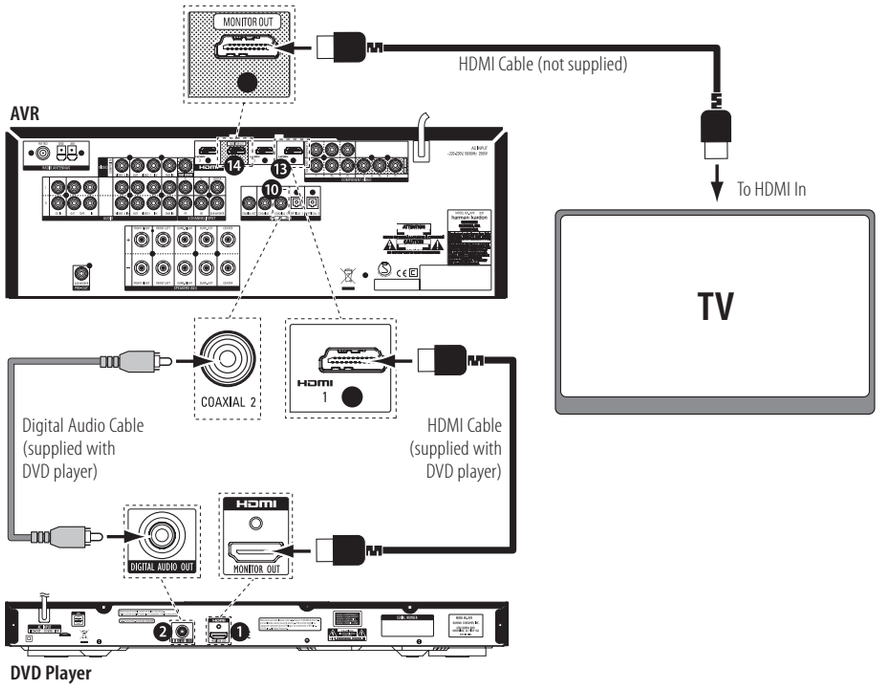
AVR/DVD System Connections

AVR/DVD System Connection Instructions:

Connect your system like this, using the HDMI cable and the digital audio cable included with the DVD player:

1. Connect the DVD player's HDMI output ❶ to the receiver's HDMI 1 input ⓭. NOTE: Do not use any other input for this connection.
2. Connect the DVD player's Digital Audio Out ❷ to the receiver's Coaxial 2 digital audio input ⓾. NOTE: Do not use any other input for this connection.
3. Connect the receiver's HDMI Monitor Out ⓮ to your TV's HDMI input connector.

IMPORTANT: You MUST connect the DVD Player's Coaxial Digital Output to the AVR Receiver's Coaxial Digital Input 2 to hear Dolby Digital and DTS surround sound through your new AVR/DVD system.



Features

High quality video

- High Definition Multimedia Interface (HDMI) for a single wire, digital connection to your HD-Ready screen.
- Advanced sophisticated 10-bit MPEG-2 video decoding circuits.
- Pure PAL with NTSC disc due to true NTSC/PAL conversion.
- Dual-layer compatibility for extended play DVD.
- Playback of JPEG image files

High quality digital audio

- By connecting a DTS or a Dolby Digital decoder, you can enjoy high quality 5.1 digital surround sound from DTS or Dolby Digital discs.
- With linear PCM audio at 16-24 bits and
- 44-96 kHz (also on digital output, see table page 30), audio quality exceeding that of CD becomes possible.
- Coaxial digital audio output.

Many convenient features

- On-Screen Menu for disc information or player information.
- Subtitles may be displayed in one of numerous languages*.
- The multi-angle function allows you to choose the viewing angle of scenes which were shot from a number of different angles (Limited to DVD's recorded with multiple camera angles.)
- Multiple options for dialog language and soundtrack selection (limited to DVD's recorded with multiple dialog languages or soundtracks).
- 4-step Zoom during play and pause.
- Backlit, ergonomically designed remote control.

** The number of languages recorded depends on the software.*

Compatible with CD as well as DVD

The DVD player will play any conventional Audio CD or recordable (CD-R) or erasable CD (CD-RW), MP3 or any DVD/Video disc with the region code 0 or 2.

Disc formats supported by this player

The unit can play the following disc formats (8 cm and 12 cm size):

- DVD
- DVD-R
- DVD-RW
- DVD+R
- DVD+RW
- CD
- CD-R
- CD-RW

NOTE: Due to differences in the format of certain discs, it is possible that some discs may include a mix of features that are not compatible with the DVD player. Similarly, although the DVD player is capable of a wide range of features, not all discs include every capability of the DVD system. For example, although the DVD player is compatible with multi-angle discs, that feature is only possible when the disc is specially encoded for multipleangle play. In addition, the DVD player is capable of playing back both Dolby Digital and DTS soundtracks, but the number and types of tracks available will vary from disc to disc. To make certain that a specific feature or soundtrack option is available, please check the options noted on the disc jacket.

- Playback capability for CD-R, CD-RW, JPEG, MP3, DivX, DVD-R, DVD+R, DVD-RW and DVD+RW discs may vary due to variations in the quality of the disc and the recorder used to create the disc.
- The DVD player is compatible with most discs recorded with files encoded using MP3 as well as JPEG still images. However, note that variations in the encoder or codec used and the bit rate of the encoding may affect the DVD player's ability to play back a specific disc. As a result, we cannot guarantee complete compatibility with all encoders and versions of the codecs. For best results, we recommend that MP3 files be encoded at bit rates ranging between 32kbps and 320kbps. JPEG files should contain no more than 5 megapixels, and the file size should be no larger than 5Mb.

The DVD player will NOT play the following:

- DVD discs with a Region Code other than 2
- DVD-ROM data discs
- DVD-RAM discs
- DVD-Audio discs
- SACD discs
- CD-I discs
- CD-G discs
- SVCD discs
- Kodak Photo CD™ discs (Kodak Picture CD discs, available to consumers, may be viewed using the DVD).
- Discs intended for use in video game consoles
- Discs recorded in the "VR" mode or at any speed other than "SP"
- High-definition optical discs such as WMVHD, HD-DVD and Blu-ray

Packing List

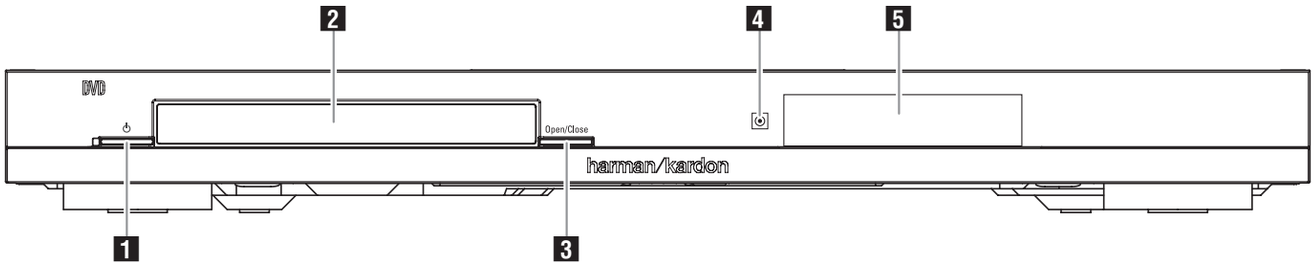
1 Harman Kardon DVD Player

1 Coaxial digital audio cable

1 HDMI cable

NOTE: This player is designed and manufactured for compatibility with Region Management Information that is encoded on most DVD discs. This player is designed only for playback of discs with Region Code 2, or for discs that do not contain Region Code infor mation. If there is any other Region Code on a disc, that disc will not play on the DVD player.

Front Panel Controls



1 Power Button
2 Disc Drawer
3 Open/Close Button
4 IR Remote Receiver
5 Information Display

1 **Power Button**: Press the button once to turn the DVD player on, press it again to put the player in the Standby mode.

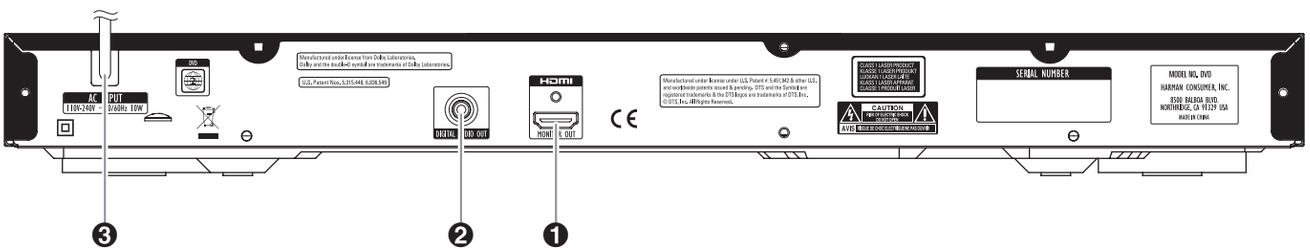
2 **Disc Drawer**: Insert a compatible disc into the drawer. The DVD player will accept 5-inch (12cm) and 3-inch (8cm) discs.

3 **Open/Close Button**: Press this button to open and close the disc drawer. Before pressing this button, make sure no objects are blocking the disc drawer.

4 **IR Remote Receiver**: This receives infrared signals from the remote control. Aim the remote at this area and do not block or cover it.

5 **Information Display**: This 7-character alphanumeric display delivers messages and status indications to help you operate the DVD player.

Rear Panel Connections



1. HDMI Output
2. Coaxial Digital Output
3. AC Power Cord

1. **HDMI Output**: Connect this output to an HDMI input on the receiver or video display for the highest-quality uncompressed digital audio and video available. Even if your receiver is not capable of processing audio in the HDMI format, you may still experience the superb reproduction of HDMI video.

The AVR Receiver in your AVR/DVD system can switch between three HDMI inputs and send the video signal to your screen from its HDMI Output. No surround sound decoding takes place in the Receiver from HDMI inputs, so no surround sound will be heard if only HDMI is connected. You MUST connect the DVD Player's Coaxial Digital Output to the AVR Receiver's Coaxial Digital Input 2 to hear Dolby Digital and DTS surround sound through your new AVR/DVD system.

If your video display has a DVI input, you may use an optional HDMI-to-DVI cable or adapter for the connection to the display.

In all cases, the video display must be HDCP-compliant in order to use the HDMI output.

For best results, we do not recommend HDMI connections in excess of 3m (10 ft).

2. **Coaxial Digital Output**: Connect this jack to the coaxial digital input of an A/V receiver or surround processor for Dolby Digital, DTS or PCM audio playback.

The AVR Receiver in your AVR/DVD system has two coaxial digital inputs. Be sure to connect the DVD player's Coaxial Digital Output to the Receiver's Coaxial Digital Input 2. You MUST connect the DVD Player's Coaxial Digital Output to the AVR Receiver's Coaxial Digital Input 2 to hear Dolby Digital and DTS surround sound through your new AVR/DVD system.

Note: The coaxial digital output should only be connected to a digital input. Even though it is the same RCA-type connector as standard analog audio connections, DO NOT connect it to a conventional analog input jack.

3. **AC Power Cord**: Connect this plug to an AC outlet. If the outlet is controlled by a switch, make certain that it is in the ON position.

Note: You'll find more details about all Audio/Video connections under Setup and Connections on the following pages.

Setup and Connections

Before connecting your DVD player, please:

- Ensure that the power switch of this unit and other equipment to be connected is set to off before commencing connection.
- Do not block ventilation holes of any of the equipment and arrange them so that air can circulate freely.
- Read through the instructions before connecting other equipment.
- Ensure that you observe the color coding when connecting audio and video cables.

With a single cable connection between components, HDMI is able to deliver uncompressed high-definition digital video and digital audio programming. Please note that the AVR Receiver in this system does not process audio through HDMI. Therefore, a separate digital audio connection must be established between the DVD player and AVR.

Note: If your video display has a DVI input, you may use an optional HDMI-to-DVI cable or adapter for the connection to the display. In all cases, the video display must be HDCP-compliant in order to use the HDMI output.

If you're connecting to a different audio/video receiver that processes audio through HDMI, connect the DVD player's HDMI output to one of the receiver's HDMI inputs. No other connections are required between the DVD player and receiver.

If you're connecting to a different audio/video receiver that does not process audio through HDMI, connect the DVD player's HDMI output to one of the receiver's HDMI inputs (for video only), and connect the DVD player's Coaxial Digital Audio Output to one of the receiver's coaxial audio inputs. Refer to the receiver's owner's manual for instructions about setting up its audio and video inputs.

Digital Audio Connections

Audio output from the DVD player's coaxial digital audio output connector

Disc	Sound recording format	Coaxial digital audio output
DVD	Dolby Digital	Dolby Digital bitstream (2-5.1ch) or PCM (2ch, 48kHz, 16-bit)
	Linear PCM (48/96kHz, 16/20/24-bit)	Linear PCM (2ch) (48/96kHz, 16/20/24-bit)
	DTS	Bitstream or no output*
	MPEG (2.0)	MPEG bitstream (2ch) or linear PCM (2ch, 48kHz)
CD	Linear PCM	Linear PCM (44.1kHz sampling)
	MP3 MPEG-1 Audio Layer 3)	Linear PCM (44.1–48kHz, depending on source, if digital output format selected as "Bitstream"). (48kHz if digital output format selected as "PCM")

* Digital Format must be selected as "ORIGINAL" or "PCM" respectively in Menu

For your reference:

- Dolby Digital is a digital audio compression technique developed by the Dolby Laboratories Licensing Corporation, supporting 5.1-channel surround sound, as well as stereo (2-channel) sound, this technique enables a large quantity of sound data to be efficiently recorded on a disc.
- Linear PCM is a signal recording format used in CDs. While CDs are recorded in 44.1kHz/16 bit, DVDs are recorded in 48kHz/16 bit up to 96kHz/24 bit.
- The DVD player is designed to digitally output 96kHz-PCM audio with a 96kHz sampling rate. However, some 96kHz DVD's may include copy protection codes that do not permit digital output. In this case, use the "Down Sample" setup menu to switch the sampling rate to 48kHz.

Caution for the coaxial digital audio outputs:

- When connecting an amplifier (with coaxial digital input) which does not contain a Dolby Digital or DTS decoder, be sure to select "PCM" as initial setting in the "Digital Out" setup menu. Otherwise, any attempt to play a DVD may cause such a high level of noise that it may be harmful to your ears and damage your speakers.
- CD's can be played as they would normally be played.

Note:

- Some first generation DTS decoders which do not support DVD-DTS interface may not work properly with the DVD player.
- Dolby Digital, DTS and PCM signals are passed through the **HDMI Output** ❶ but are not processed in the AVR Receiver in your AVR/DVD system. Connect the Coaxial Digital Audio Output separately in addition to the HDMI connection to get sound from your system Receiver.

Dolby Digital and DTS

Both Dolby Digital and DTS are audio formats used to record 5.1-channel audio signals onto a film's digital soundtrack. Both of these formats provide six separate channels: left, right, center, left rear, right rear, and common subwoofer.

Remember, that Dolby Digital or DTS will only play 5.1-channel sound if you've connected the coaxial output of the DVD player to a DTS or Dolby Digital receiver or decoder and if the disc was recorded in the Dolby Digital or DTS format.

Troubleshooting Guide

SYMPTOM	CAUSE	SOLUTION
Unit does not turn on	• No AC Power	• Check AC power plug and make certain any switched outlet is turned on.
Disc does not play	• Disc loaded improperly	• Load disc label-side up; align the disc with the guides and place it in its proper position.
	• Incorrect disc type	• Check to see that disc is CD, CD-R, CD-RW, MP3, JPEG, DVD-R, DVD-RW, DVD+R, DVD+RW (standard conforming), or DVD-Video; other types will not play.
	• Invalid Region Code	• Use Region 2 or Open Region (0) disc only.
	• Rating is above parental preset	• Enter password to override or change rating settings.
No picture	• Intermittent connections	• Check all video connections.
	• Wrong input	• Check input selection of TV or receiver.
	• **HDMI Output** ⓫ is connected to a video display that is not HDCP-compliant.	• The **HDMI Output** ⓫ may not be used with video displays that are not HDCP-compliant. Unplug the cable and select another audio and video connection (see page 30).
No sound	• Intermittent connections	• Check all audio connections.
	• Incorrect digital audio selection	• Check digital audio settings.
	• DVD disc is in fast or slow mode	• There is no audio playback on DVD discs during fast or slow modes.
Picture is distorted or jumps during fast forward or reverse play	• MPEG-2 decoding	• It is a normal artifact of DVD playback for pictures to jump or show some distortion during rapid play.
Some remote buttons do not operate during DVD play; "PROHIBITED" symbol appears (see below)	• Function not permitted at this time	• With most discs, some functions are not permitted at certain times (e.g., Track Skip) or at all (e.g., direct audio track selection).
The OSD menu is in a foreign language	• Incorrect OSD language	• Change the display language selection.
"PROHIBITED" appears	• Requested function not available at this time	• Certain functions may be disabled by the DVD itself during passages of a disc.
Picture is displayed in the wrong aspect ratio	• Incorrect match of aspect ratio settingsto disc	• Change aspect ratio settings.
Remote control inoperative	• Weak batteries	• Change all batteries.
	• Sensor is blocked	• Clear path to sensor or use optional outboard remote sensor.
Disc will not copy to VCR	• Copy protection	• Many DVDs are encoded with copy protection to prevent copying to VCR.
Password not accepted.	• Incorrect password being used or password has been forgotten.	• Stop play of disc. Press and hold the **Clear Button** ⓮ until the display blinks. This resets the password and all settings to their defaults.

Technical Specifications for DVD Player

Applicable Disc:	Disc formats: 5 inch (12 cm) or 3 inch (8 cm) DVD Video, Standard conforming DVD+RW, DVD+R, DVD-R, DVD-RW, DivX, CD, CD-R, MP3, JPEG or CD-RW discs, Regio code: DVD Movie disc with Code 2 or 0 only. DVD-Layers: Single Side/Single Layer, Single Side/Dual Layer, Dual Side/Single Layer, Dual Side/Dual Layer Audio formats: Linear PCM, MPEG, Dolby Digital or DTS Audio discs. Still-image format: JPEG
Video Signal System:	PAL/NTSC
HDMI™ Output:	Video: 576p, 720p, 1080i, 1080p HDMI Version 1.3-compliant
Wow & Flutter:	Below Measurable Limits
AC Power:	100 - 240V/50 ~ 60Hz
Power Consumption:	1 Watt (Standby)/13 Watts (Max)
Dimensions (WxHxD):	440mm x 206mm x 49mm
Weight:	1.65 kg

Depth measurement includes knobs and connectors.
Height measurement includes feet and chassis.
Features, specifications and appearance are subject to change without notice.

HARMAN

Harman Consumer, Inc.
8500 Baloba Blvd., Northridge, CA 91329 USA

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Software check and upgrade

Preparation to upgrade software

1. Start the CD burning software;
2. Then copy the Bin file (HM_EU16bin) into it;
3. Burn the data onto the blank CD.

A. Procedure for software upgrade

-Upgrade software via Disc

1. Power on the set and insert the prepared Upgrade CDR.
2. The set will start reading and response with the following display on TV screen:

3. Press <YES> button to confirm, then screen will display as below, and the tray will automatically open, then take the upgrade CD out.

4. Please wait for a moment, the tray will close and set restarts automatically when upgrading completed.

B. Read out the software versions to confirm upgrading

1. Power on the set and open the tray door.
2. Press press <7><7><7><7> button on the reomote control.
3. Then need choose "VERSION" item, the version informations will display as following:

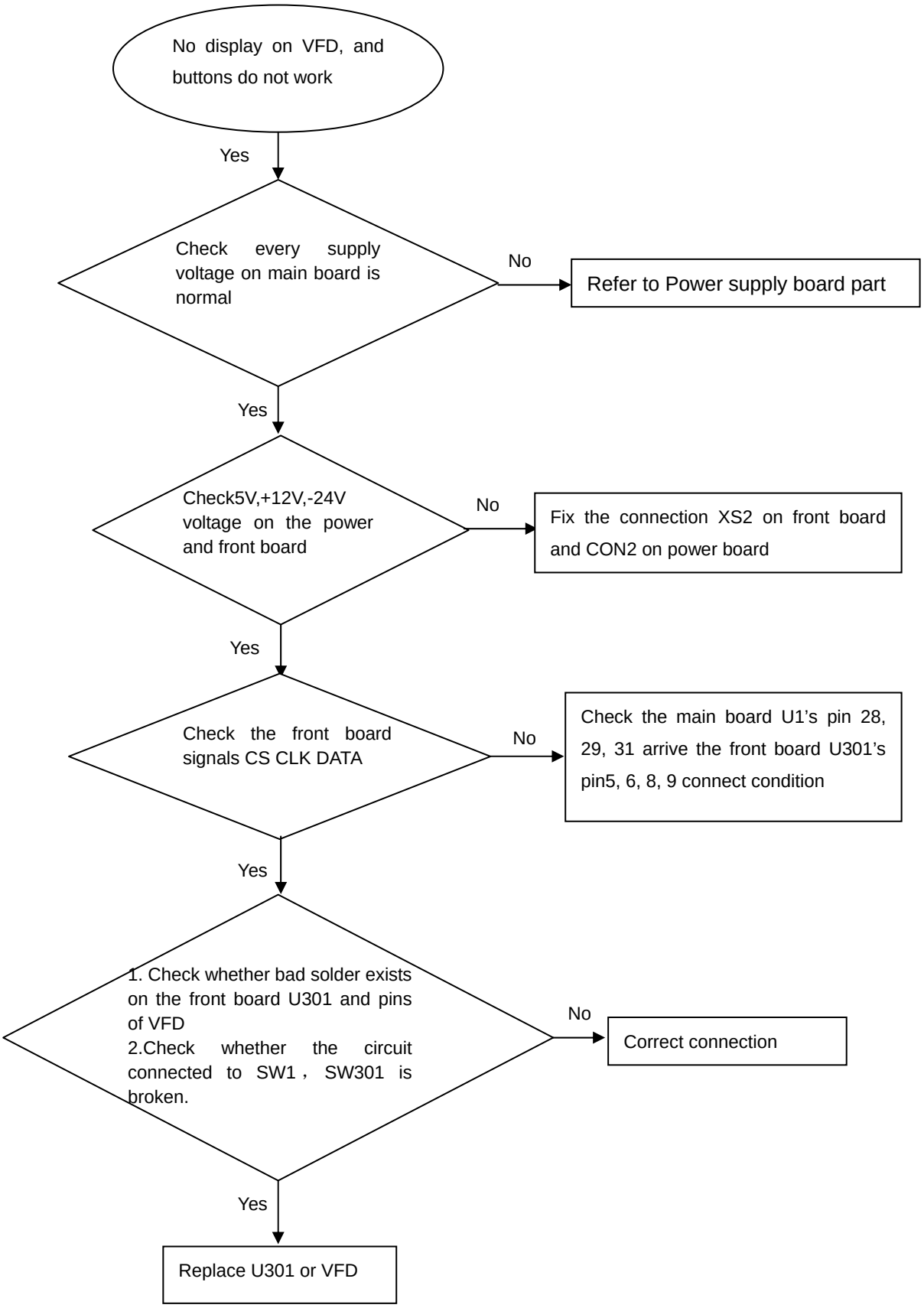
SC:135: XXXXX
F/W ID: XXXXX
CHIP ID: XXXXX
ERGION: X

BIN FILE: HM_EU16.BIN
VERSION: HM_EU16 VXX

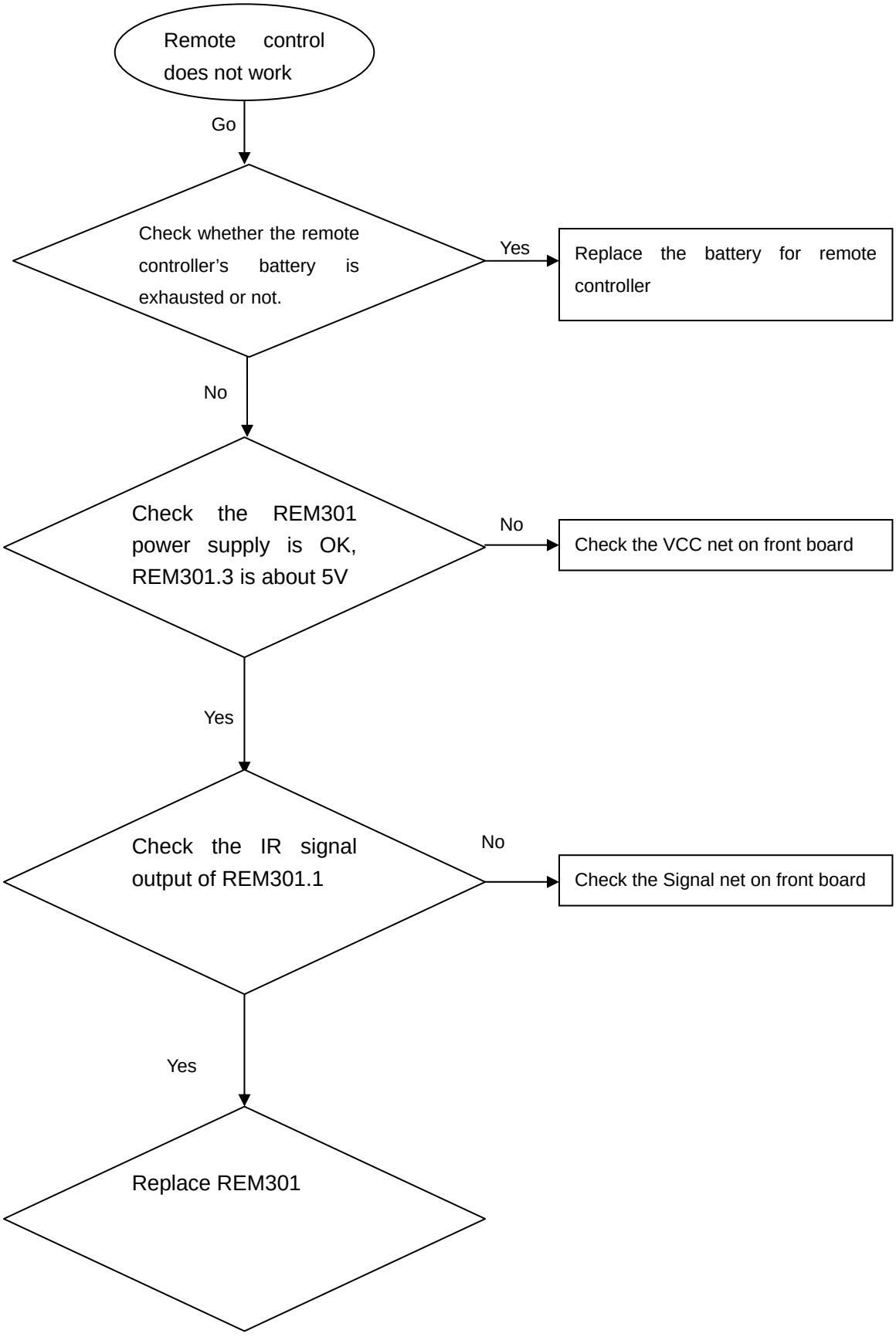
Caution: The set must not be power off during upgrading, otherwise the Main board will be damaged entirely.

Trouble shooting chart

No display on VFD, and buttons do not work

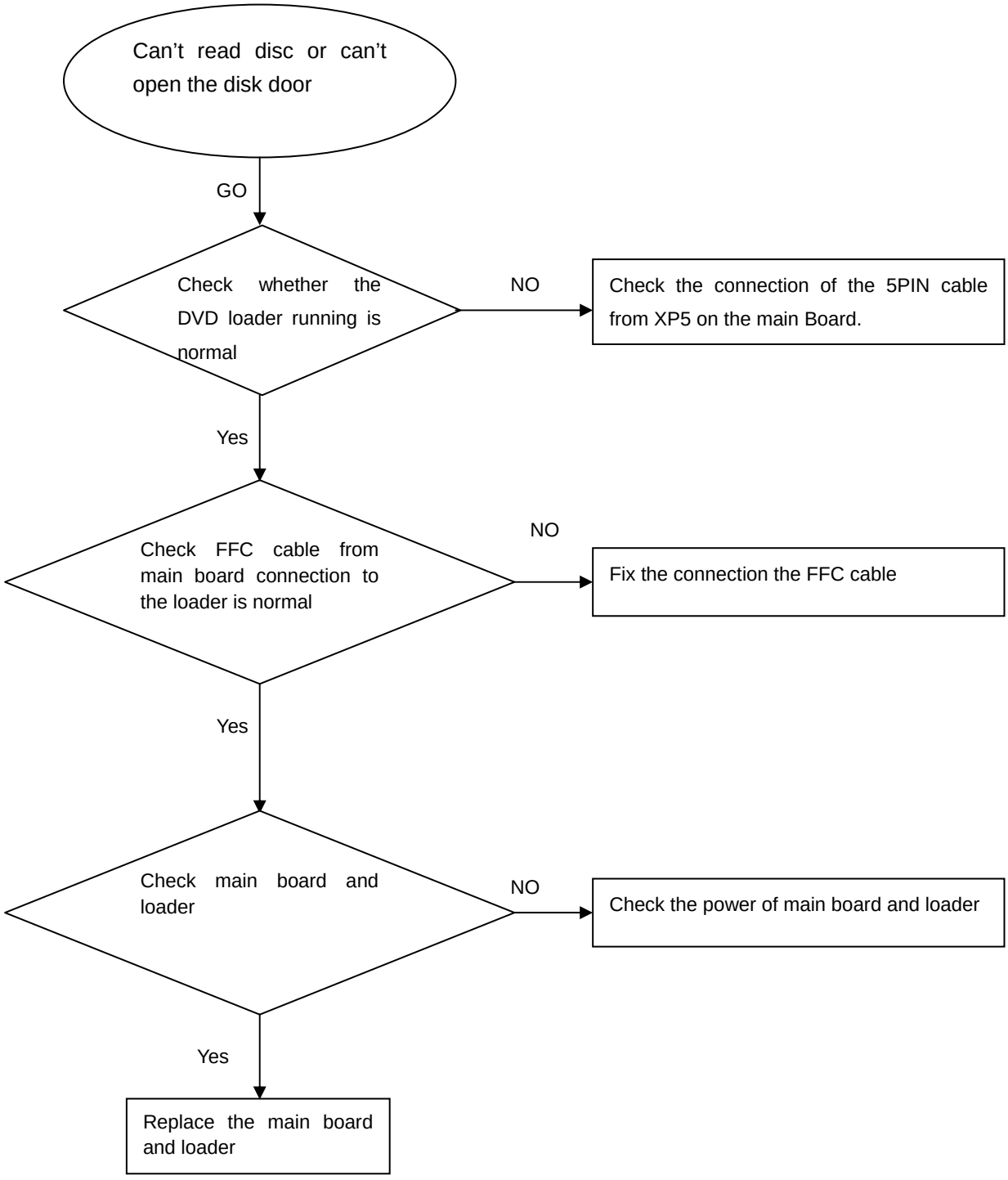


Remote control does not work



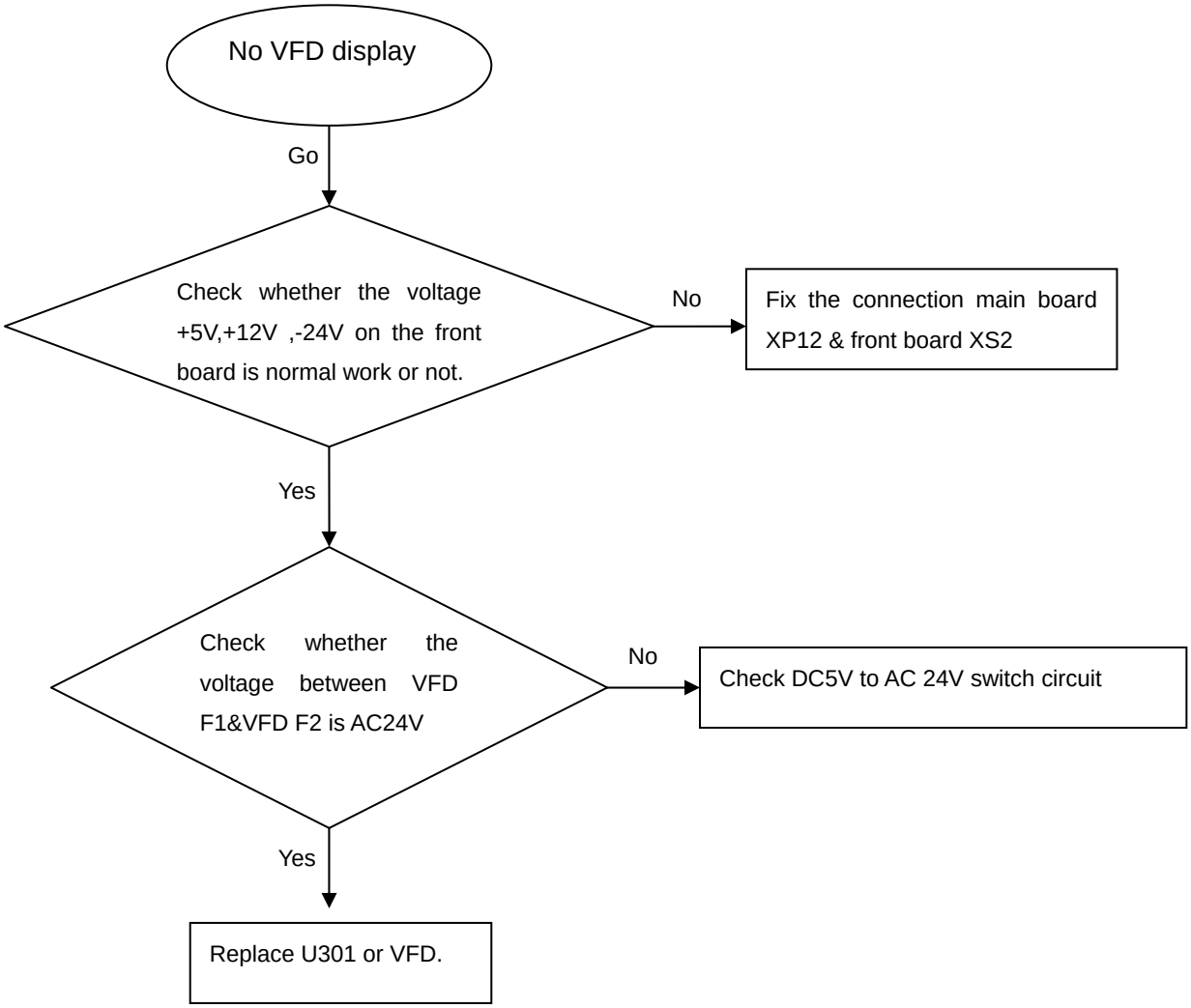
Trouble shooting chart

Can’t read disc or can’t open the disk door



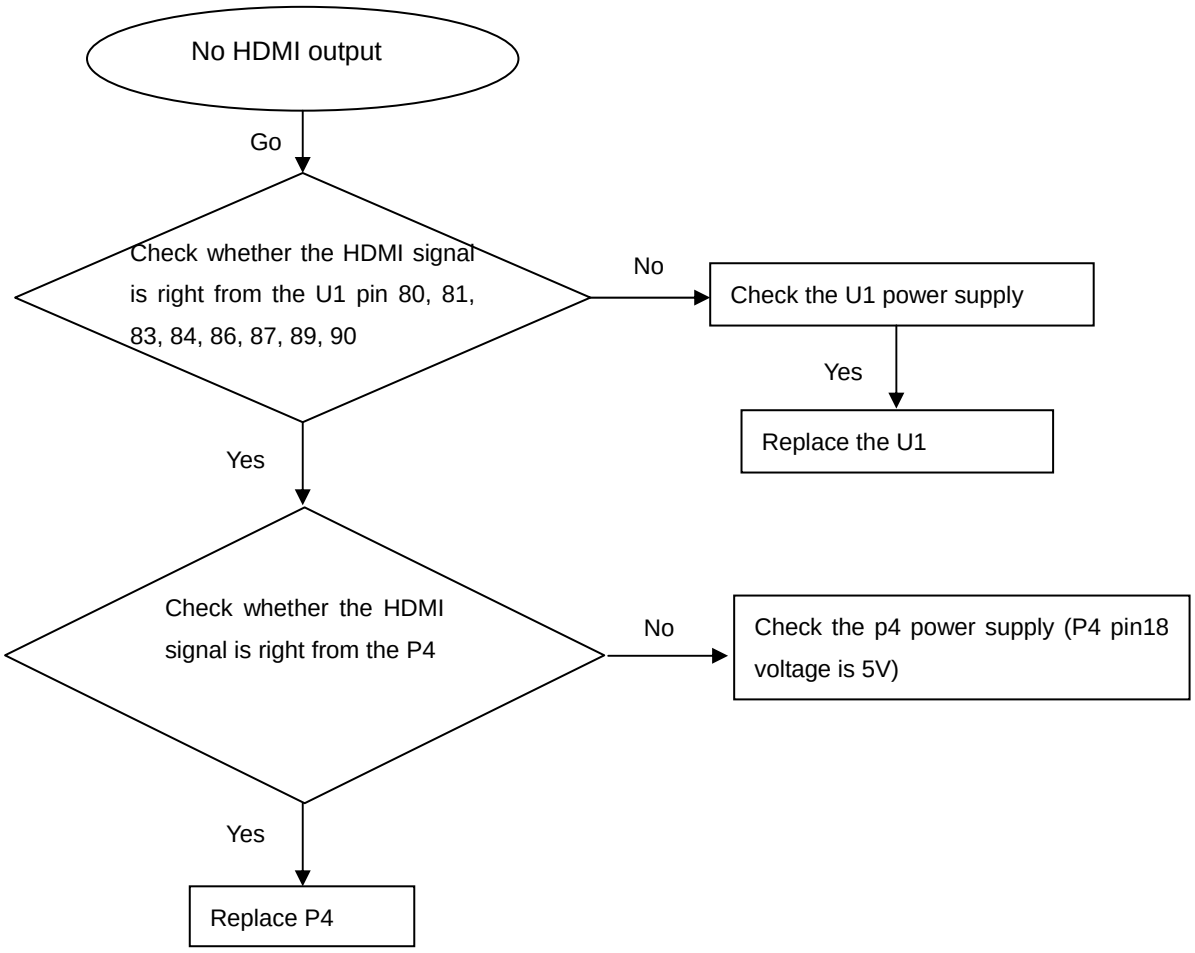
Trouble shooting chart

No VFD display



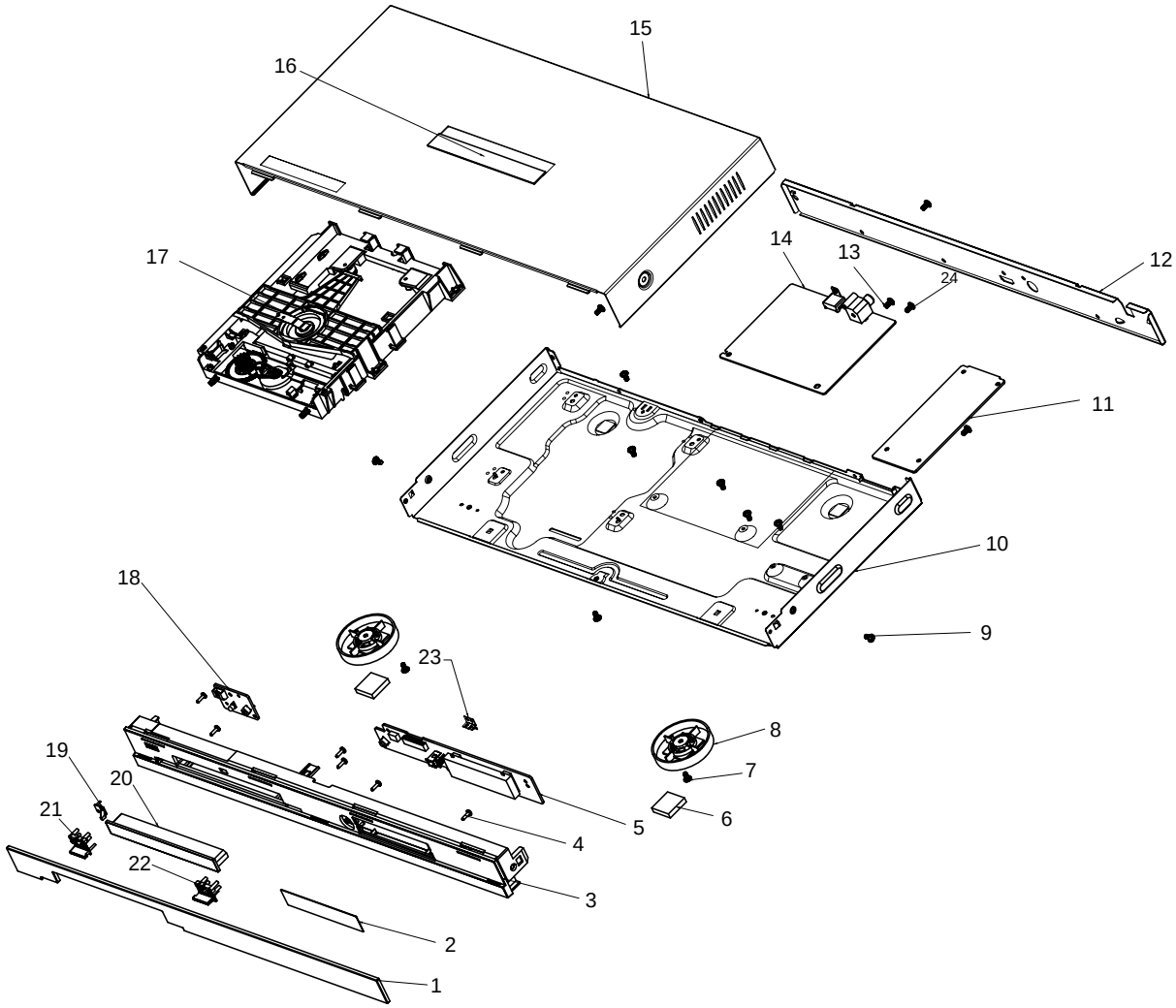
Trouble shooting chart

No HDMI signal output



8-1

Exploded view for DVD16/DVD18:



It is exploded view for DVD16/DVD18, pls refer to the model set for detailed information.
Assy1 includes componets:1.2.3.19.21.22

DVD16 SERVICE PARTS

⚠	Location No.	TCL P/N.	Description	Q'ty
	14	08-D03RXX-U2EX0	ASSY-MAIN BOARD	1
	5	08-DVD016-FEY	ASSY-FRONT CONTROL BOARD	1
⚠	11	08-DVD016-PWY	ASSY-POWER BOARD	1
	18	08-DVD016-SWY	ASSY-SWITCH BOARD	1
	17	08-L31808-S313D	ASSY-LOADER	1
	OPU	05-000CMS-SRFS3	OPU IM S76RFS3	1
	ASSY1	08-DV16F1-XX0B1	ASSY-FRONT PANEL	1
	FLOGO	67-995950-0A0	FRONT PANEL LOGO	1
	LLOGO	67-995960-0A0	LENS DVD LOGO	1
	TLOGO	08-995990-XX0	TOP COVER LOGO	1
	XP5	46-FH015T-05I	CABLE 5PIN 150MM FH-JC20	1
	XP3	46-40270C-24X	FFC 180MM 24PIN	1
	XP4	46-40279T-06P	CABLE 6PIN UL20080#28*4 L=80MM	1
	20	55-DV16D1-0HMB1	CD DOOR	1
⚠	PCORD	51-DC0150-0FAA4	POWER CORD	1
	8	56-996030-0HA	FOOT INDIVIDUAL (L=R)	2
	10	67-VD16R1-0E0	BOTTOM PLATE	1
	12	67-VD16B1-0E0B1	BACK PANEL	1
	6	54-990190-000	PAD FOR TOP FOOT	2
	15	67-VD16T1-0E0B1	TOP COVER	1
	HDMI	46-HDI005-19G01	HDMI GILT CABLE L=0.5M	1
	COAXIAL	41-UH0520-3KK1	COAXIAL CABLE L=0.52M	1

SAFETY PRECAUTION

The parts identified by ⚠ mark are critical for safety. Replace only with part number specified. The mounting position of replacement is to be identical with originals.
The substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

DVD18 SERVICE PARTS

⚠	Location No.	TCL P/N.	Description	Q'ty
	14	08-D03RXX-U2EX0	ASSY-MAIN BOARD	1
	5	08-DVD016-FEY	ASSY-FRONT CONTROL BOARD	1
⚠	11	08-DVD016-PWY	ASSY-POWER BOARD	1
	18	08-DVD016-SWY	ASSY-SWITCH BOARD	1
	17	08-L31808-S313D	ASSY-LOADER	1
	OPU	05-000CMS-SRFS3	OPU IM S76RFS3	1
	ASSY1	08-DV16F1-XX0B2	ASSY-FRONT PANEL	1
	FLOGO	67-995950-0A0-M	FRONT PANEL LOGO	1
	LLOGO	67-996040-0A0-M	LENS DVD LOGO	1
	TLOGO	08-995990-XX0	TOP COVER LOGO	1
	XP5	46-FH015T-05I	CABLE 5PIN 150MM FH-JC20	1
	XP3	46-40270C-24X	FFC 180MM 24PIN	1
	XP4	46-40279T-06P	CABLE 6PIN UL20080#28*4 L=80MM	1
	20	55-DV16D1-0HMB1-M	CD DOOR	1
⚠	PCORD	51-DC0150-0FAA4-M	POWER CORD	1
	8	56-996030-0HA-M	FOOT INDIVIDUAL (L=R)	2
	10	67-VD16R1-0E0-M	BOTTOM PLATE	1
	12	67-VD16B1-0E0B2-M	BACK PANEL	1
	6	54-990190-000	PAD FOR TOP FOOT	2
	15	67-VD16T1-0E0B1-M	TOP COVER	1
	HDMI	46-HDI005-19G01	HDMI GILT CABLE L=0.5M	1
	COAXIAL	41-UH0520-3KK1	COAXIAL CABLE L=0.52M	1

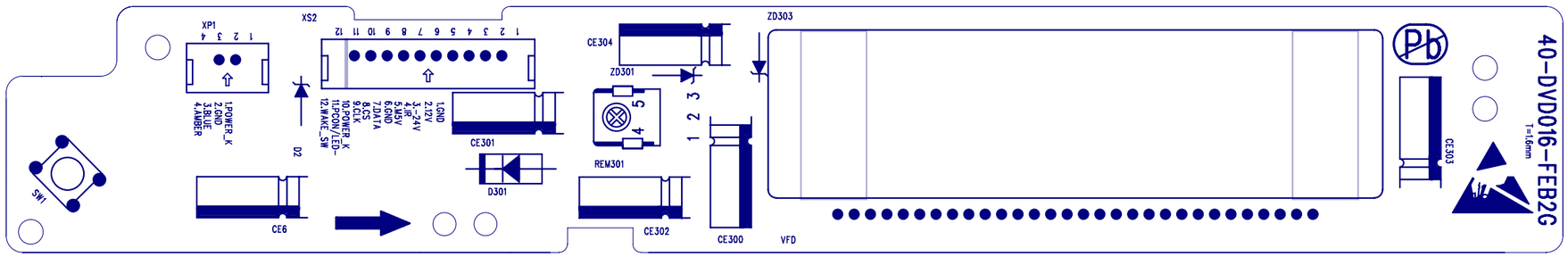
SAFETY PRECAUTION

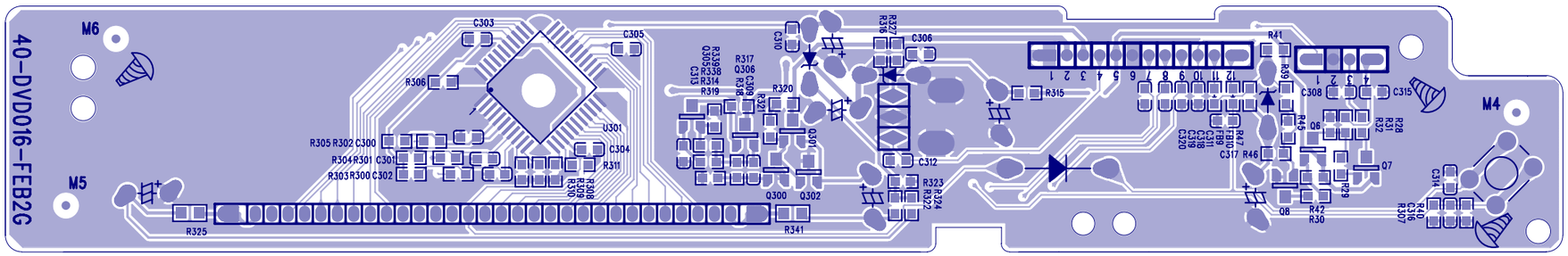
The parts identified by ⚠ mark are critical for safety. Replace only with part number specified. The mounting position of replacement is to be identical with originals.
The substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

7-9

7-9

Front Control Board Print-layout (Top & Bottom side):

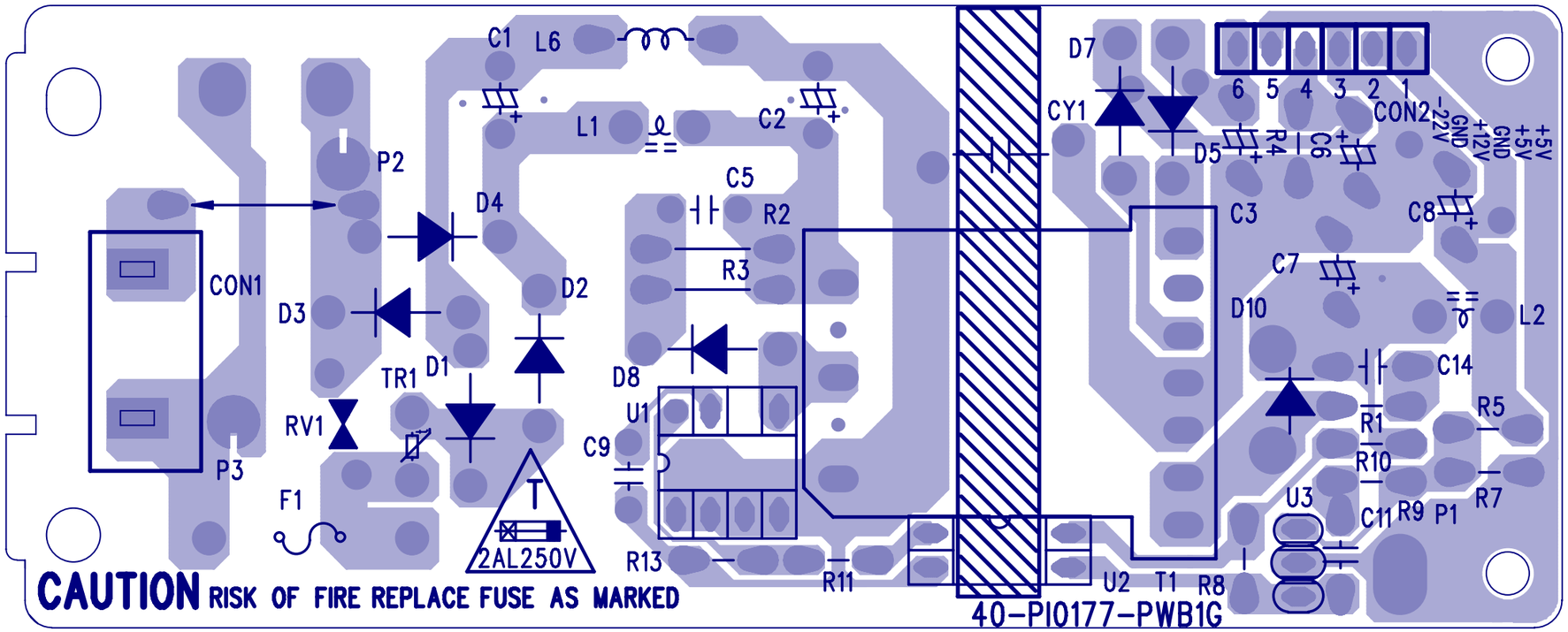




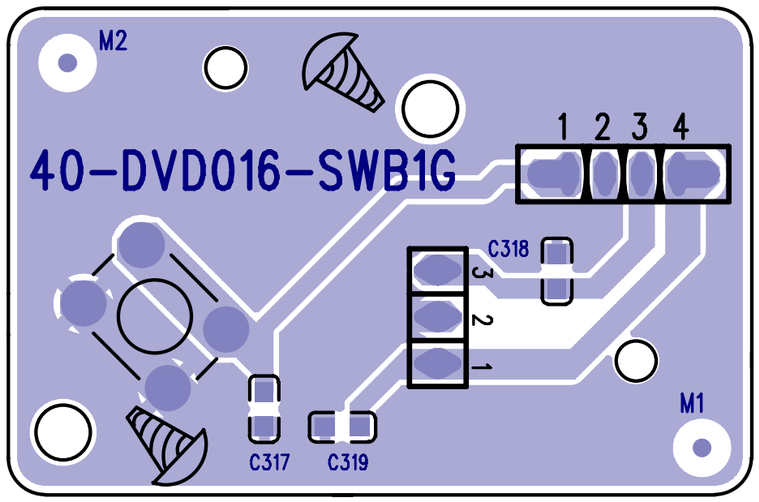
7-10

7-10

Power Board Print-layout (Bottom side):



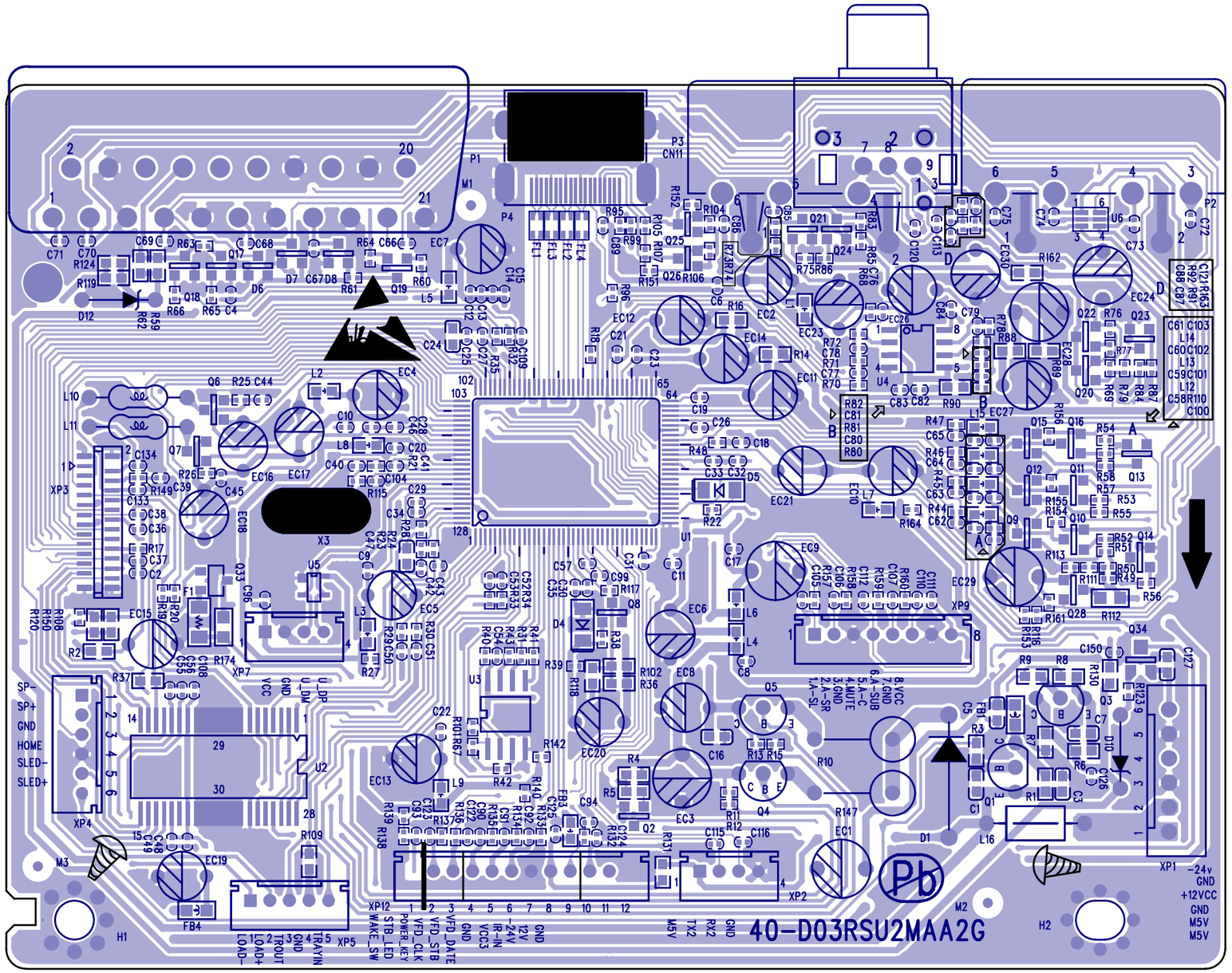
Switch Board Print-layout (Bottom side):



7-11

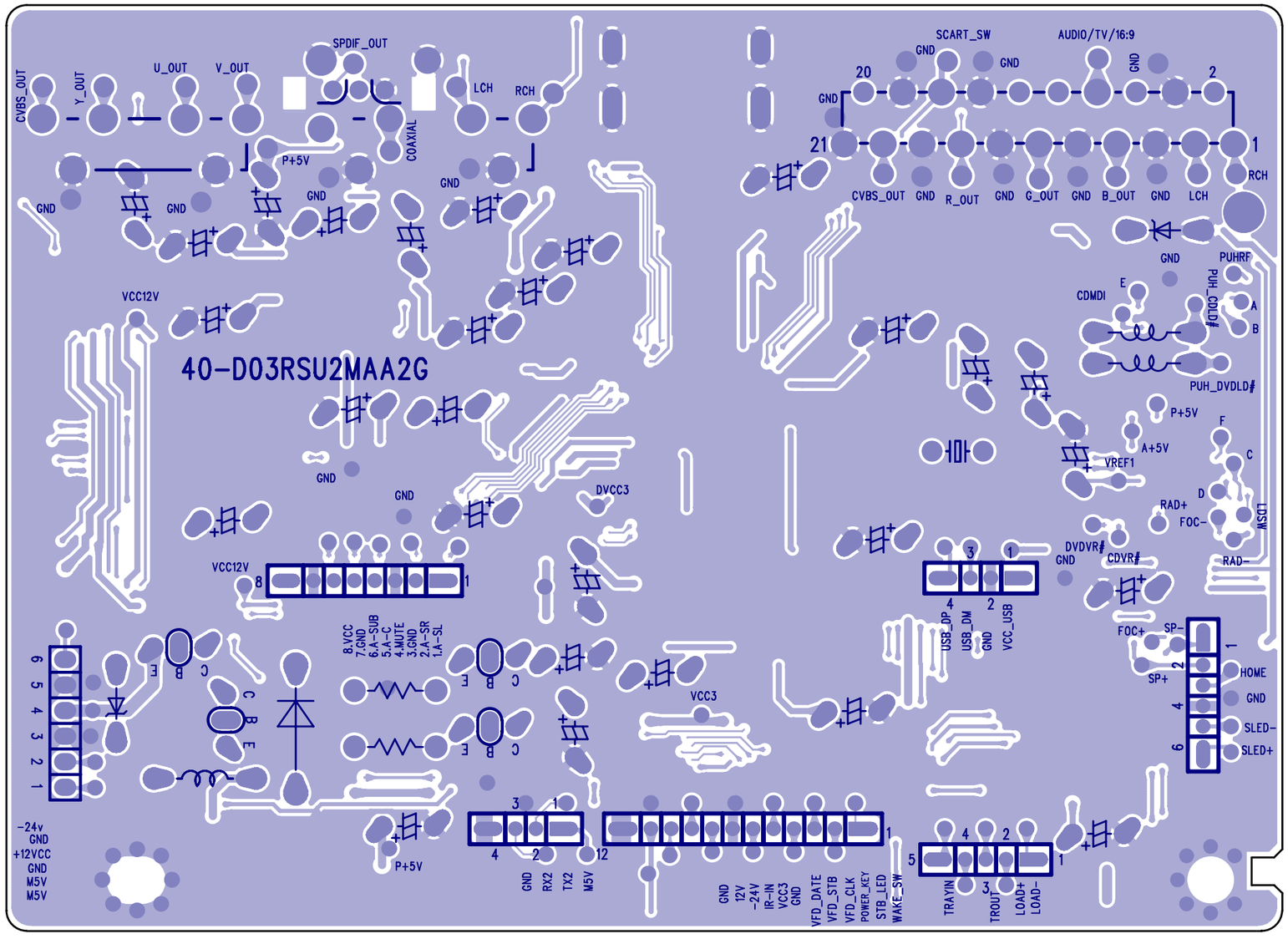
7-11

Main Board Print-layout (Top side):



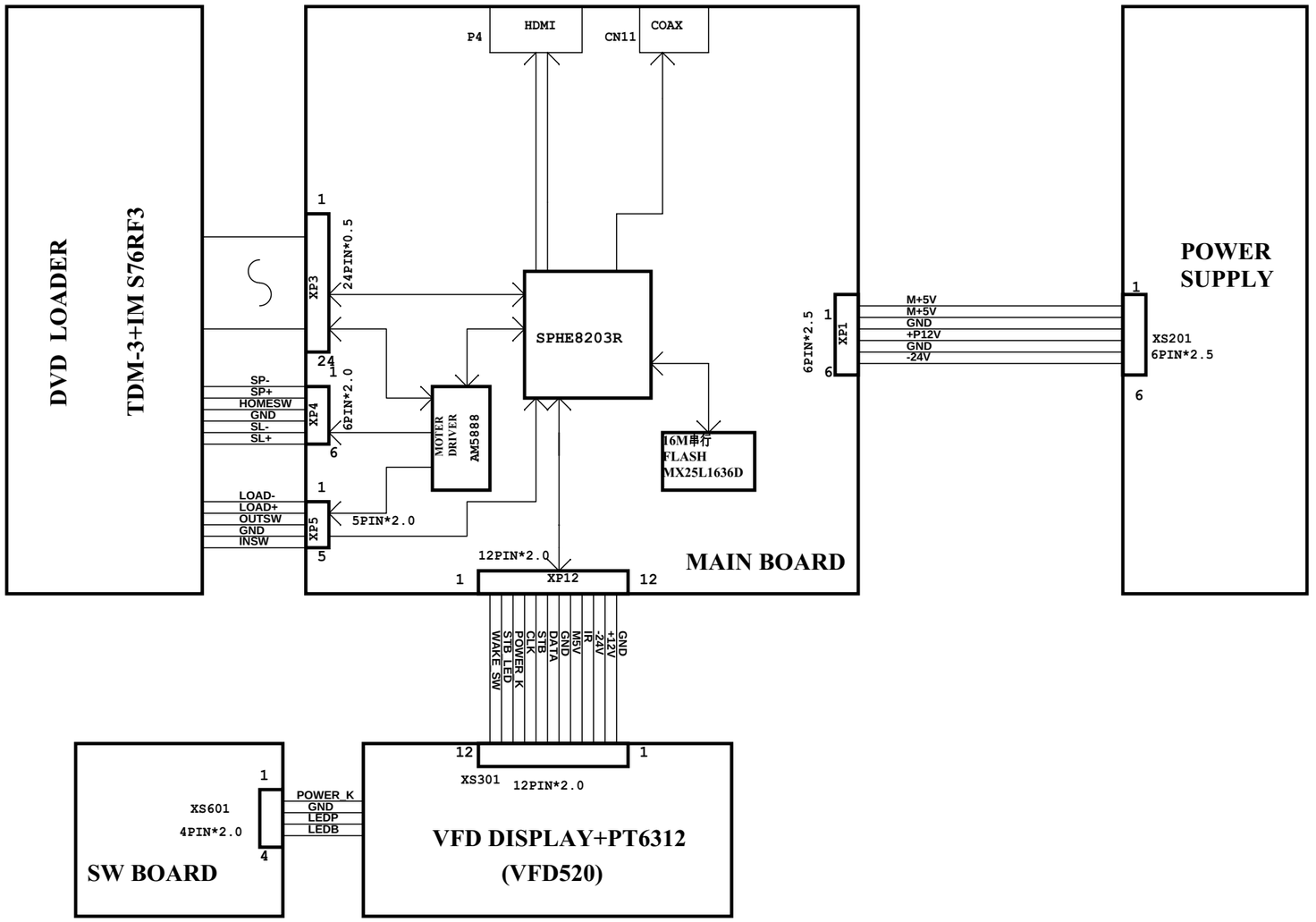
7-12

Main Board Print-layout (Bottom side):



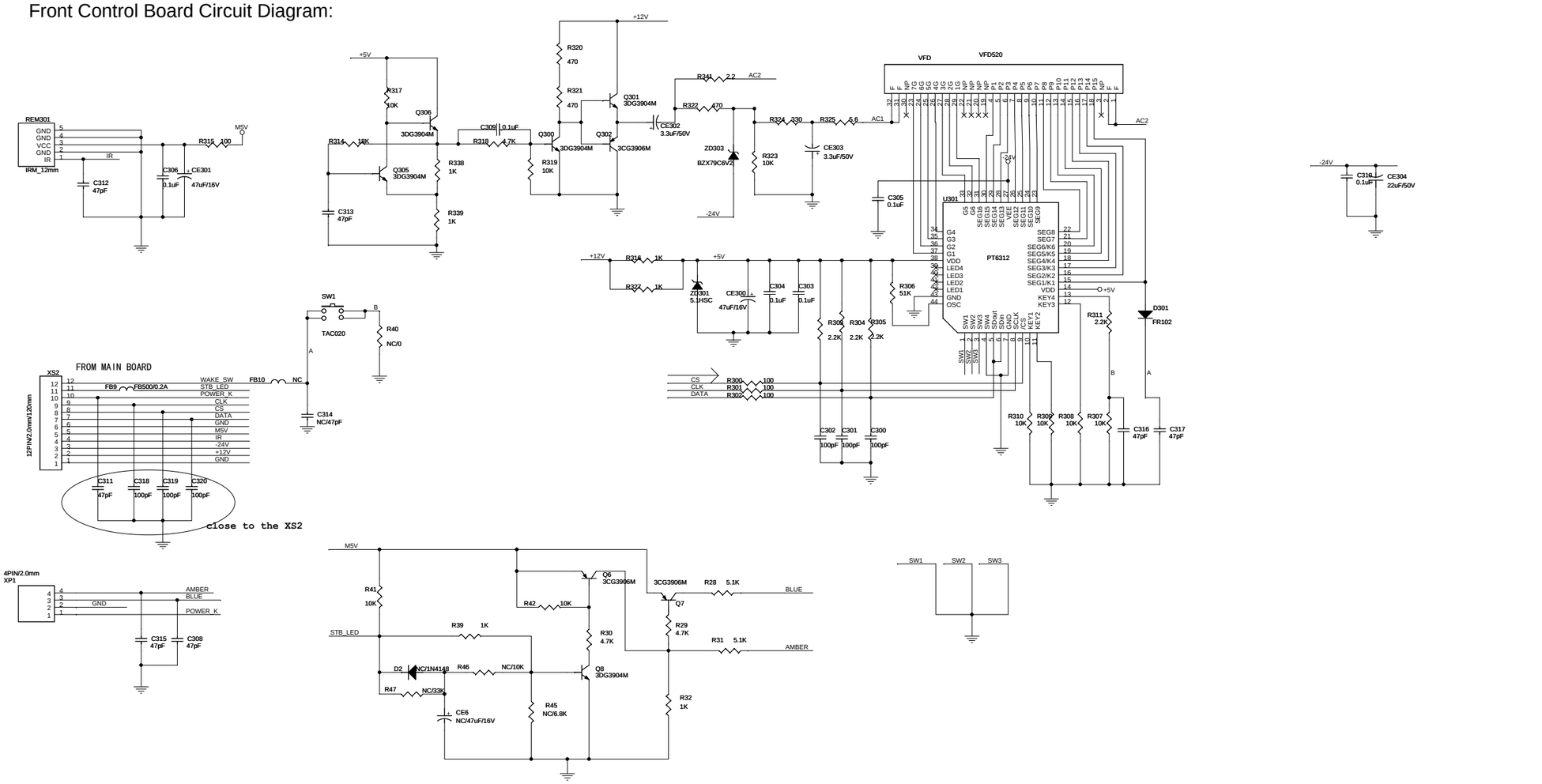
6-1
6-1

DVD16/DVD18 WIRING DIAGRAM



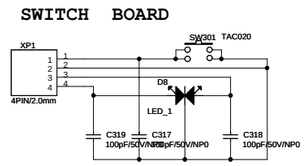
7-1

Front Control Board Circuit Diagram:

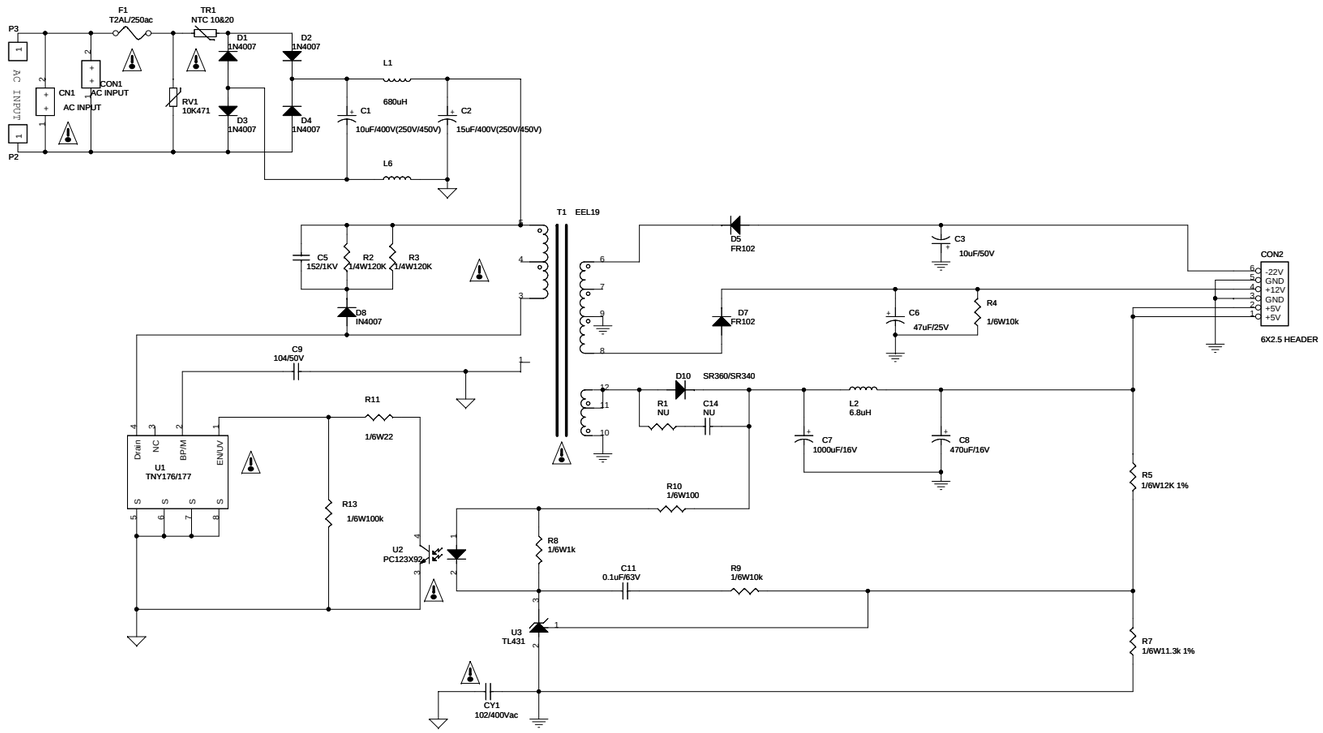


7-2

Switch Board Circuit Diagram:



Power Board Circuit Diagram:



*** CAUTION :**

THE PARTS MARKED WITH ⚠ ARE IMPORTANT PARTS ON THE SAFETY.

PLEASE USE THE PARTS HAVING THE DESIGNATED PARTS NUMBER WITHOUT FAIL.

7-4

Main Board Circuit Diagram: POWER

TO POWER BOARD

XP1 6pin/2.5mm

-24V: -24V(+-10%)
+12V: +12V(+-10%)
+5V: +5V(+-2.5%)

GND
+12VCC
GND

Imax=1000mA

L16 FB AXIAL

M5V

R1 0R/NC

Q1 8550D

FB1 500Z 0603

REA5V

P+5V

C3 0.1uF

C1 1uF

C5 0.1uF

R3 3.3K

VCC3

R4 4.7K

R5 1K

Q2 BT3904

LED/PCON

USB_POWER 6

C127 0.1uF

+12V

D10 27V/0.5W

R123 2.2K

BT3904 Q34

-24V

11mA

R6 0R/NC

Q3 8550D

R8 22K

R9 10K

R7 4.7K

C7 0.1uF

TO FRONT PANEL

VCC3

R142 4.7K

M5V

R131 0R

IR_IN

FB3 NC

C124 0.1uF

C125 0.1uF

C94 100pF

C126 0.1uF

+12V
-24V

R122 10R

XP12 12PIN/2mm

VFD_DATA
VFD_STB
VFD_CLK

R133 1K
R134 1K
R135 1K
R136 1K

POWER_K
STB_LED
WAKE_SW

R137 1K

R138 1K

R140 4.7K

R139 4.7K

C90 100pF

C91 100pF

C122 1uF

C123 1uF

C92 100pF

C93 100pF

5V for peripherals

P+5V

R2 2.2

A+5V

EC1 220uF/16V

C4 0.1uF

C2 0.1uF

GND

RFGND

Power Bead > 2A, RAC@100 MHz
= 70 ohm, RDC(max)= 0.4 ohm

VCC5

M5V L1 FB

C6 0.1uF

EC2 100uF/16V

GND

GND RFGND GND HGND

3.3V for 8203R and peripherals

M5V

D1 RL205

R147 1/1W

TR_B3

Q4 2SS8550D(EBC,1.5A,1W)

VCC3

R11 20K/2%

R12 12K/2%

REG03

EC3 220uF/16V

C8 0.1uF

RF3.3V

Servo

EC4 100uF/16V

C10 0.1uF

close to 8203R

RFGND

USB_VCC

USB

EC5 100uF/16V

C9 0.1uF

DVCC3

Digital

EC6 10uF/16V

C11 0.1uF

VVCC3 4.7uH

Video

EC10 100uF/16V

C18 0.1uF

AD_VCC3

ADC

R14 10

EC11 10uF/16V

C19 0.1uF

PLLVCC3

PLL

C20 0.1uF

AVCC3

Audio

R16 2.2

EC12 100uF/16V

C21 0.1uF

close to 8203R

SPI_VCC3

SPI Flash

EC13 10uF/16V

C22 0.1uF

1.2V for core of 8203r

R10 4.7/2W

TR_B1

Q5 2SS8550D(EBC,1.5A,1W)

2V

R13 3K

EC8 100uF/16V

C16 0.1uF

REG01

R15 4.7K/1%

HAVCC

HDMI

EC7 22uF/16V

C12 0.1uF

C13 0.1uF

C14 0.1uF

C15 0.1uF

VCC1.2

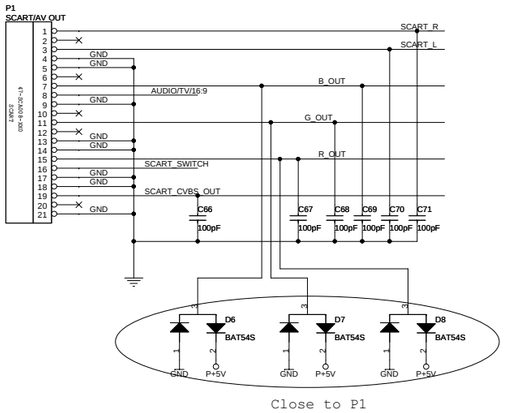
EC9 220uF/16V

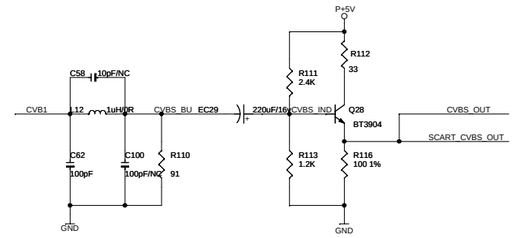
C17 0.1uF

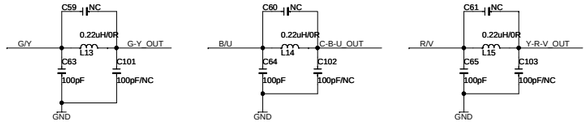
Main Board Circuit Diagram: SPHE8203R

	R24	C43	R23	C42	R19	R20
Sony 313	20K	1000P	91K	680P	100	100
Sanyo HD65	20K	1000P	91K	680P	0	0
Samsung	20K	1000P	68K	1000P	0	0
Mitsumi	20K	1000P	91K	680P	0	0

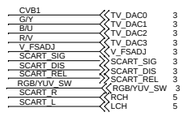
Main Board Circuit Diagram: VIDEO

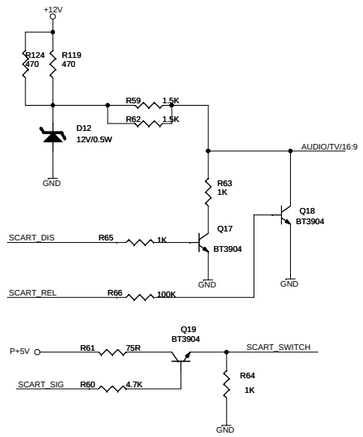


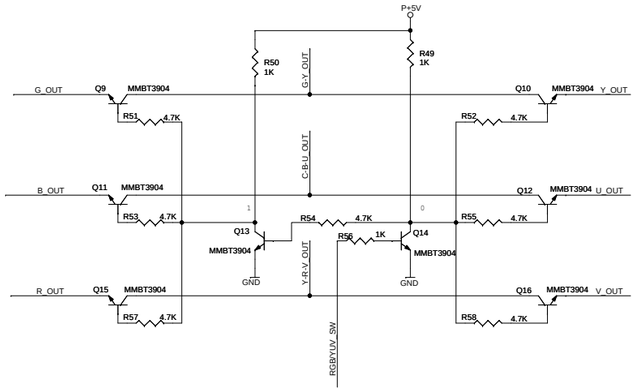


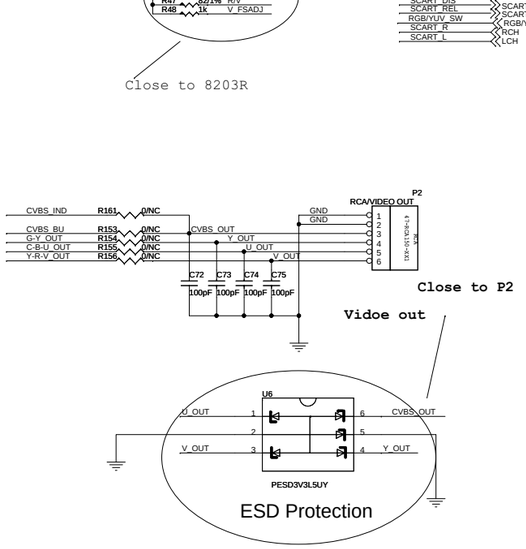


RGB/YUV_SW	OUT
1	R,G,B
0	Y,U,V







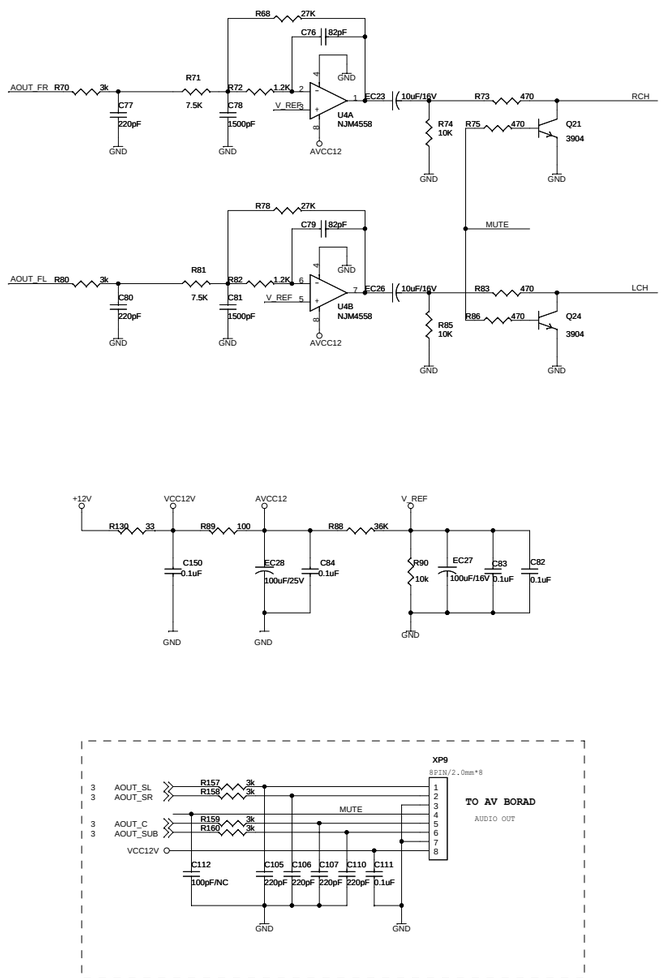


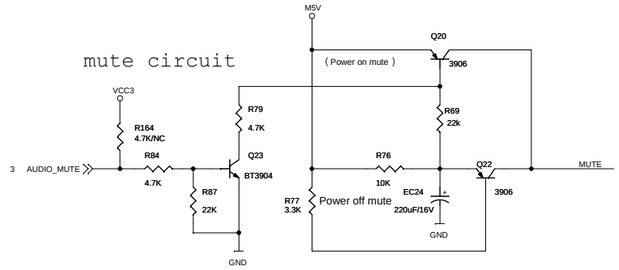
RELEASE_SCART	DISPLAY_MODE
0	Not RELEASE
1	RELEASE

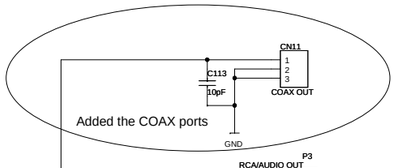
SCART_DISPLAY	DISPLAY_MODE
0	12V(9.5V--12V 4:3)
1	6V(5V--8V 16:9)

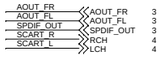
SCART_SIG	SIGNAL_MODE
0	0V(CVBS)
1	3V(RGB)

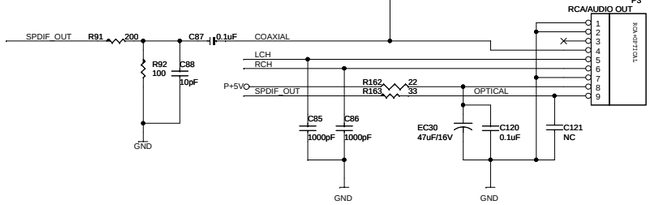
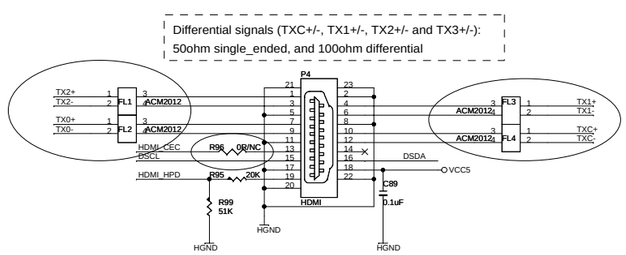
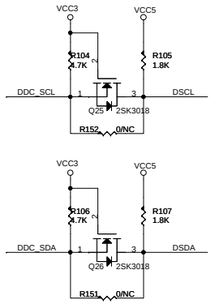
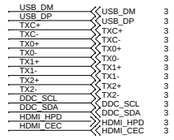
Main Board Circuit Diagram: AUDIO











Main Board Circuit Diagram: HDMI&USB