

**Pioneer** *sound.vision.soul*

**DVD Recorders**

**DVR-310-S**  
**DVR-510H-S**



DVR-310-S

The Home Entertainment Revolution Has Begun  
Pioneering the Future of DVD Recording Technology



DVR-510H-S

# DVR-310-S

DVD Recorder



•Simultaneous Playback and Recording\* •Chase Play\* •Easy Timer Recording •Advanced Disc Navigator •Disc History \*DVD-RW Ver. 1.1/2X discs (VR mode) only

G-code is at least a trademark of Gemstar Development Corporation. G-code is registered in at least the following countries: Australia, China, Hong Kong, Japan, New Zealand, South Korea, Taiwan and Singapore.

## Recordable and Rewritable DVD Technologies, plus Hard Disk Drive. A Smart Combination for Massive Benefits.

*With compact size, ease of use and wide compatibility, DVD has become the primary media for audio/visual entertainment at home. Now Pioneer—a leading manufacturer of DVD players—has opened a new phase with recordable and rewritable DVD technologies. And their benefits can be further enhanced with a hard disk drive (HDD), which features a large capacity, high speed and astounding flexibility.*

*This year, Pioneer offers two slim DVD recorders—the DVR-510H-S with built-in HDD, and the DVR-310-S. Enjoy easy, flexible, high-precision recordings on highly-durable media—a revolution in digital home entertainment.*

### Pioneer's choice: DVD-R and DVD-RW. Setting the standard in DVD Video recording.

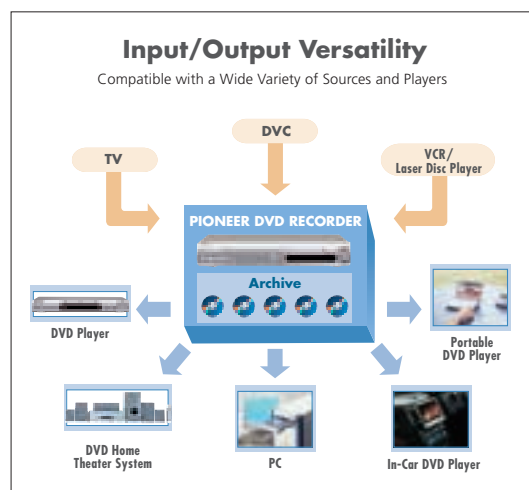
The Pioneer DVD recorders allow recording on DVD-RW and DVD-R discs. DVD-RW is a rewritable medium, allowing about 1,000 rewrites, while DVD-R is a write-once medium. Both formats have been established as global standards by the DVD Forum, and an increasing number of PC manufacturers worldwide are offering products equipped with DVD-R/RW drives.

Compatibility with the two formats allows you to choose from two recording modes—VR Mode (DVD-RW) and Video Mode (DVD-R/RW)—to suit various recording needs.

### "VR Mode" with High Flexibility

"VR Mode" applies MPEG compression technology for real-time recording of high-quality images using DVD-RW discs. A variety of post edit functions are available. Recordability of "copy-once" programs is also a distinct feature of VR mode\*.

\*On CPRM-compatible DVD-RW Ver1.1 discs only.



### "Video Mode" with High Compatibility

"Video Mode", which applies to the recordings made by the DVR-510H-S and DVR-310-S using DVD-R and DVD-RW disc, allows playback on most DVD players.



Players with this indication are capable of playing DVD-RW discs recorded in VR (Video Recording) mode on a DVD recorder.

# DVR-510H-S

DVD Recorder with Built-in Hard Disk Drive



- 80GB Large Capacity HDD with Maximum 102 Hours Recording
- Maximum x24 High-Speed Copy from HDD to a DVD disc
- Disc Back-up
- Simultaneous Playback and Recording
- Chase Play
- Easy Timer Recording
- Advanced Disc Navigator
- Disc History

## Record, Edit and Archive—HDD is a Generous, Quick and Flexible Medium for a New Style of Audio/Visual Entertainment

The DVR-510H-S comes with a built-in hard disk drive (HDD). With its large capacity, high-speed processing capability and astounding flexibility, HDD allows the following distinctive functions.

### Record Programs into the Large-Capacity HDD

The capacity of DVR-510H-S's HDD is 80GB, which allows up to 102 hours of recording time. You can virtually record as many TV programs or video footage as you want. It's especially convenient when you have to leave home—for an extended overseas trip, for example—but don't want to miss any of your favorite TV programs.



### Frame-Accurate Editing

Before copying HDD-recorded programs to DVD-RW discs, you can edit the footage so that only your favorite scenes are recorded. Unwanted scenes can be deleted with frame-by-frame accuracy.\*

\*Start and end of each deleted scene may be slightly shifted when a program in Video mode is copied at high speed.



### High-Speed Copying to DVDs

If you want to keep any of your HDD-recorded programs for archiving or distribution to your friends, you can copy them to DVD-R or DVD-RW discs at incredible speed—maximum 24 times\* the normal speed—without lowering the picture quality. This means you can copy one hour of content in just about 2.5 minutes. It's convenient when you want to make multiple copies of a video—of your trip or wedding reception, for instance—for distribution to your friends.

The DVR-510H-S allows high-speed copying\*\* from DVD to HDD as well.

\*When an EP-mode-recorded program is copied at high speed to a DVD-R (Ver. 2.0/4x) disc, which allow recording at up to x4 speed.

\*\*Only available for original titles recorded in VR mode.

#### Copy Speed (in case of a 1-hour content)

Rec Mode (Max. Recording Time on DVD)	Copy Speed			
	to DVD-R (4x discs)	Time	to DVD-RW (2x discs)	Time
FINE (1 hour)	x4	15 mins.	x2	30mins.
SP (2 hours)	x8	7.5 mins.	x4	15 mins.
LP (4 hours)	x16	4mins.	x8	7.5 mins.
EP (6 hours)	x24	2.5 mins.	x12	5 mins.

\* With "1x" DVD-R/DVD-RW discs, the copy speed is x1 (FINE), x2 (SP), x4 (LP) and x8 (EP).

\*\* With "2x" DVD-R discs, the copy speed is x2 (FINE), x4 (SP), x8 (LP) and x12 (EP).

\*\*\* The above figures are approximations.

### One-Touch Copy

The DVR-510H-S allows one-touch copying of a HDD-recorded program to a DVD-R/DVD-RW disc. Just push a button during playback of the program you want to copy. The DVR-510H-S automatically starts high-speed copying of the program precisely from its beginning to end—without wasting any disc space.



### Disc Back-up

The DVR-510H-S lets you make a back-up copy of a Video-mode-recorded DVD-R/DVD-RW disc\*. All the program contents and other information stored in a disc can be copied to another without any loss of picture quality\*\*. Recording or playback of another program with HDD is possible even while Disc Back-up is in process.

\*Finalized discs only

\*\*Backup of a DVD-R disc is only possible with another DVD-R disc.

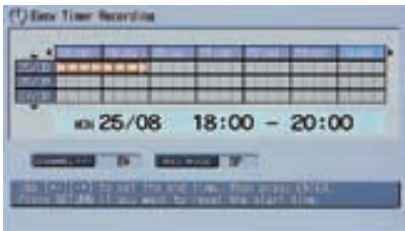
# Easy Recording and Editing

## Easy Timer Recording



With the DVR-510H-S and DVR-310-S, timer-setting operations can be easy and error-free thanks to the Easy Timer Recording function. It lets you set start and end of recording times just by moving the cursor back and forth on the time-grid graphics with the remote control, which saves the trouble of having to enter a number for each digit. Channel and recording mode can be set just as easily on the same screen.

The Pioneer DVD recorders allow timer recording of up to 32 programs and may be preset up to one month in advance.



## Easy Recording Operation



The DVR-510H-S and DVR-310-S feature instant one-touch recording, which frees you from having to locate the blank space on the disc. Just load a disc, and the Pioneer DVD recorders automatically searches for recorded content and available space for additional recording. Of course, you can enjoy the same convenience when recording on HDD.



## Disc History

The Disc History screen shows you available recording space for the last 30 loaded discs, along with disc names, names of the first three programs and the number of programs recorded on each disc. You can easily check the remaining recording time and the type of programs recorded on each disc.


The Disc History information is automatically updated every time you load a recordable disc.



## DV Connection via i.LINK (IEEE 1394) Terminal

DV-to-DVD dubbing is easier than ever. The Pioneer DVD Recorders come with i.LINK (IEEE 1394) input/output terminal, which allows direct connection with a DV camcorder.



Note: "i.LINK" and the  are trademarks of Sony Corporation.

## G-Code Recording

You can complete setting the recording timer just by entering program-specific code numbers, which are listed on TV-guide pages of newspapers or magazines.

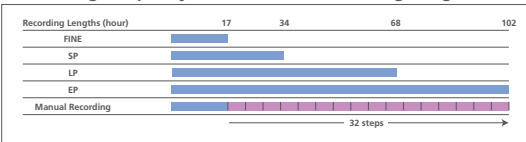
# Flexibility for Enhanced Convenience

## Manual Recording



With the Pioneer DVD recorders, you can flexibly change the recording time according to the length of program, remaining space on the disc and/or the picture quality you desire. In addition to the four preset modes—FINE, SP, LP and EP—, the Pioneer DVD recorders allow as many as 32 recording lengths ranging from 1 to 6 hours for DVD-R/DVD-RW discs, and 17 to 102 hours in case you record on HDD.

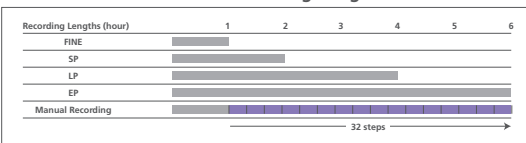
HDD's Large Capacity with Variable Recording Lengths



\*The above figures are approximations.

\*\* Maximum recording length per program is six hours.

DVD-R/DVD-RW Variable Recording Lengths



\*The above recording lengths are approximations.

## Editing Titles and Chapters by Playlist



Using the Advanced Disc Navigator menu and Chapter edit menu, you can edit by title, change title names, erase or join chapters, and do other basic functions with utmost ease. The DVR-510H-S and DVR-310-S allow non-destructive editing. This means when you are editing recorded footage (for example, cutting, splicing and punching in), you are in fact editing the playlist, not replacing or deleting any recording. The original still exists: you can redo any editing as many times as you like.



## Undoing Finalization



The Pioneer DVD recorders allow you to "undo" the finalization, so that you can record additional programs on a DVD-RW disc without initializing the disc again and without wasting the remaining space of each disc.



— Slim Body and Compact Media for Massive Benefits —

## Quick, Flexible Playback

### Advanced Disc Navigator



One of the main advantages of HDD and DVD is quick, easy playback of a desired program with no need for fast-forwarding or rewinding. The DVR-510H-S and DVR-310-S enhance this convenience with the Advanced Disc Navigator, which shows you a list of program titles recorded on HDD or on the loaded disc. And when you select one with the cursor, an animated thumbnail picture is displayed on the screen with audio, making it easy to recognize the program contents.

\*Not available with finalized discs.



### Simultaneous Playback and Recording/ "Chase Play" Function



The DVR-510H-S and DVR-310-S are the industry's first DVD recorders that enable simultaneous playback and recording with DVD-RW discs\*. They let you watch any program recorded on a disc while that same disc is recording another program. Moreover, "Chase Play" makes it possible to play back and watch a currently recorded program from the beginning without halting the recording.

The DVR-510H-S also lets you record a program on HDD while playing back another from a DVD-R/DVD-RW disc, or vice versa.

\*DVD-RW Ver. 1.1/2X discs (VR mode) only.

#### Simultaneous Playback/Recording and Chase Play Functions (DVR-510H-S)

Type		HDD		DVD-R/RW	
		Rec	Play	Rec	Play
Simultaneous Recording & Playback (different source)	Pattern-1	●	■		
	Pattern-2	●	■		
	Pattern-3		■	●	
	Pattern-4*		■	●	
Chase Play (same source)	Pattern-1	●	■		
	Pattern-2*		■	●	

\*Only when using DVD-RW Ver. 1.1/2X (1-2X recording speed) media and "VR Mode". While recording on the disc, playback during scan operations may not be smooth. Supported on both DVR-310-S and DVR-510H-S.

### PhotoViewer (JPEG Playback)

The Pioneer DVD recorders come with the PhotoViewer function that allows playback of JPEG files—digital still images on Fujicolor CDs and Kodak Picture CDs. Photos you have taken with a digital camera—such as family shots and travel photos—can be displayed enlarged on a TV screen, letting you have a good time with your family and friends.

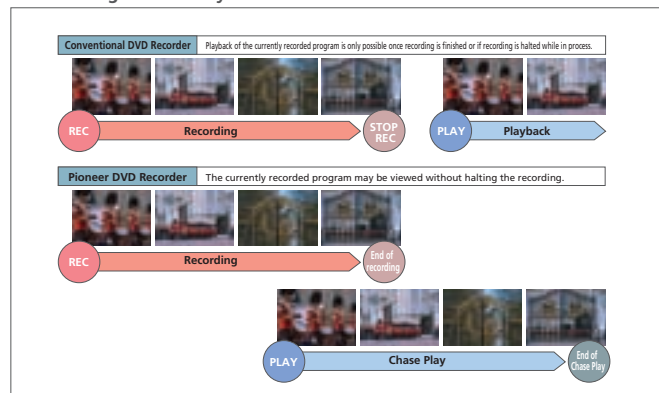


### Smart Jog on the Front Panel

In conjunction with a function key, a single jog allows an array of functions, including channel up-down, recording mode setup, chapter/track skip, fast forward and reverse, slow and frame advance and reverse.



### Time-Saving "Chase Play" Function





## High-Quality Pictures and Sound

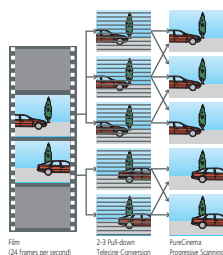
### Industry's First 1-Chip Recorder Engine

The DVR-510H-S and DVR-310-S come with the industry's first 1-chip recorder engine, a revolutionary development from Pioneer in cooperation with a leading device manufacturer, Renesas Technology Corporation. Our state-of-the-art technology has enabled the necessary signal-processing functions—including high-performance encoding and decoding—to be driven by a single chip, whereas 11 separate chips were needed for previous models. This significantly decreases the system noise, enabling high-quality pictures and a multitude of functions.



### 2-3 Pull-down PureCinema Progressive Scan

On DVD, movies are recorded in 24fps format. To play back film-originated sources on TV, therefore, additional frames are inserted for output in the NTSC format (30fps). Pioneer's 2-3 Pull-down PureCinema Progressive Scan Technology features highly accurate insertion and reallocation of frames for progressive scanning. The result: smooth, natural, film-like images free of bothersome artifacts like jagged edges on moving objects.



Note: To enjoy the advantages of PureCinema Progressive Scan Technology, your TV must be compatible with component video formats. The RCA-pin type component video output offers purer colors and finer gradations.

### Block Noise Reduction

Quantization Noise Reduction eliminates the "block noise"—image noise seen as a tiled pattern in fast-moving scenes, which could be generated through MPEG compression. You can enjoy detailed, natural images.

### 10-bit/54MHz DAC for Finely Textured Images

With the Pioneer DVD recorders, video signals undergo the 10-bit/54MHz oversampling processing. This prevents the degradation of video signals and suppresses aliasing noise, allowing you to enjoy images that are most faithful to the original.

### Picture Creation

The Picture Creation lets you control the parameters of luminance and color signals to adjust picture quality of the content when it is recorded. This means you can control the picture quality of an old videotape by optimizing parameters when you dub it to a disc.

### Other Advanced Features for Recording High-Quality Pictures

- Pioneer High-Precision Recording Technologies
- TBC (Time Base Corrector) LSI for jitter-free, high-quality image recording
- 3D Y/C separation circuit (for NTSC only)

### WMA (Windows Media™ Audio) Compatibility

The DVR-510H-S and DVR-310-S are compatible with WMA, the latest in compressed digital audio. It features high-quality sound with significantly compressed source-file size. Enjoy your own compilation of songs with high-fidelity sound enabled by this latest technology.



\*Windows Media, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.

### SRS TruSurround

The Pioneer DVD recorders come with TruSurround, which lets you enjoy the excitement of real surround sound from two front speakers.



\* Pioneer incorporates TruSurround technology under license from SRS Labs, Inc.

## Slim Dimension and Low Power Consumption

The slim DVR-510H-S and DVR-310-S DVD recorders are only 69mm high, thanks to a renovated internal structure. They easily slip into tight spaces, such as on your rack or TV cabinet, leaving more space for yourself. The Pioneer DVD recorders also feature low power consumption. Combined with the compact size of DVD discs, these dual smart benefits bring a new dimension to home entertainment.



## Features and Specifications

Model			DVR-310-S		DVR-510H-S		
HDD/DVD			DVD		HDD	DVD	
Recording mode (Format)			VR mode	Video mode		VR mode	Video mode
Playback Functions	Playback Discs		DVD/DVD-R/DVD-RW/SVCD/VCD/CD/CD-R/CD-RW*1		-	DVD/DVD-R/DVD-RW/SVCD/VCD/CD/CD-R/CD-RW*1	
	WMA*2/MP3*3 (CD-R/RW*5) Playback		●		-	●	
	JPEG*4 (PhotoViewer) Playback		●		-	●	
	Virtual Surround		●		●	●	
	Advanced Disc Navigator		●	● (before finalized)	●	●	● (before finalized)
	CM Skip (Commercial Skip)		●		●	●	
	Simultaneous Playback and Recording/Chase Play		●*6	-	●	●*6	-
Recording Functions	Media	DVD-R	-	●	-	-	●
		DVD-RW	●		-	●	
	Hard Disk Drive (HDD)		-		80GB	-	
	Recording Mode : Max Recording Time		FINE : 1 hour. (approx.) SP : 2 hours. (approx.) LP : 4 hours. (approx.) EP : 6 hours. (approx.) Manual : Approx. 1-6 hours. (32 steps)		FINE : 17 hours (approx.) SP : 34 hours (approx.) LP : 68 hours (approx.) EP : 102 hours (approx.) Manual : Approx. 17-102 hours (32 steps) Max Continuous Recording : 6 hours	FINE : 1 hour. (approx.) SP : 2 hours. (approx.) LP : 4 hours. (approx.) EP : 6 hours. (approx.) Manual : Approx. 1-6 hours. (32 steps)	
	Variable Bit Rate Recording		●		●	●	
	Easy Timer		●		●	●	
	G-Code Recording		●		●	●	
	One Touch Recording		●		●	●	
	Number of Timer-Recordable Titles		32 (up to 1 month ahead)		32 (up to 1 month ahead)	32 (up to 1 month ahead)	
	Linear PCM Recording (Audio)		● (FINE,MN32)		● (FINE,MN32)	● (FINE, MN32)	
	Editing Functions	Disc Name/Title Name Input		●		● (Title Name only)	●
Easy Title Input (like Mobile Phone)		●		●	●		
Wall paper samples (Title Menu)		-	● (when finalized)	-	-	● ( when finalized)	
Erase Title		●	●*7	●	●	●*7	
Chapter Edit		●	-	●	●	-	
Playlist		●	-	-	●	-	
Accuracy		Frame	Title	Frame*8	Frame	Title	
Chapter Mark		●	10min/15min/No Separation	●	●	10min/15min/No Separation	
Undo		●		-	●		
Seamless Playback		●	-	●	●	-	
Copy List		-		●	-		
Picture Quality	Component Frame DNR		●		●	●	
	10-bit/54MHz Video DAC		●		●	●	
	3D Y/C Separation Circuit (NTSC only)		●		●	●	
	Digital TBC		●		●	●	
	Picture Creation		●		●	●	
HDD Function	Grouping		-	-	●	-	-
	One-Touch Copy		-	-	● (HDD to DVD , DVD to HDD)	-	-
	High-Speed Copy		-	-	● (HDD to DVD , DVD to HDD)*9	-	-
	Rate Conversion Copy		-	-	● (HDD to DVD , DVD to HDD)	-	-
	Optimized Copy		-	-	● (HDD to DVD)	-	-
	Disc Back-up*10		-	-	● (DVD-R/RW, Video Mode)	-	-
	Auto Replace Recording		-	-	●	-	-
	Resume (by Title)		-	-	●	-	-
Convenience	Recovery Recording		-	-	●	-	-
	Disc History		●		-	●	
	Setup Navigator		●		●		
Auto scan channel preset		●		●			
Tuner	System		PAL-B/G , I , D/K , M/N NTSC-M SECAM-D/K		PAL-B/G , I , D/K , M/N NTSC-M SECAM-D/K		
Terminal	Input	AV (Audio/Video)	3 (incl. 1 on front)		3 (incl. 1 on front)		
		S-Video	3 (incl. 1 on front)		3 (incl. 1 on front)		
	Output	AV (Audio/Video)	2		2		
		S Video	2		2		
		Digital Audio	Optical		Optical		
	i.LINK (IEEE1394)*11 (DV Terminal)		IN / OUT		IN / OUT		
System Remote Control		IN		IN			
Dimensions (W x H x D)			420 x 69 x 341mm		420 x 69 x 341mm		
Weight			4.3kg		5.0kg		
Power requirements			AC110 - 127/220 - 240V 50 / 60Hz		AC110 - 127/220 - 240V 50 / 60Hz		
Power consumption			34 W		48W		
Power consumption in standby mode			0.7W		0.7W		
Remote Control			●		●		

\*1) CD-R/RW Playback :

Disc may not be played back because of following reasons: recording characteristics of recorder/characteristics of disc/ scratch and dust on disc/dust and condensation on pickup lens. CD-R/RW Playback : CD-R/RW discs for Audio, recorded in CD Audio, Video CD or MP3/WMA audio formatting can be played back. Unfinalized discs except CD audio formatting cannot be played back. Only CD audio is not compatible with multi-session discs. Only the first session of a multi-session disc will be recognized.

\*2) WMA content can be encoded by using Windows Media™ Player version 8, or Windows Media™ Player for Windows® XP.

Compatible with sampling rate of 44.1 or 48kHz. Not compatible with loss-less-encoding or variable bit-rate (VBR) WMA files. WMA files encoded with DRM (Digital Rights Management) copy protection\* will not play.

\*DRM copy protection : DRM (Digital Rights Management) copy protection is a technology designed to prevent unauthorized copying by restricting playback, etc. of material on devices other than the PC (or other WMA recording equipment) used to record it. For detailed information, please see the instruction manuals or help files that came with your PC (or other WMA recording equipment) and/or software. Up to 99 folders and 999 tracks (MP3 and WMA) in total can be played.

\*3) Compatible with MPEG1 Audio Layer3 44.1kHz and 48kHz formats.

MP3 file name requires MP3 or mp3 as an extension. Compatible with VBR (Variable Bit Rate) (however time display may not be shown correctly).

Up to 99 folders and 999 tracks (MP3 and WMA) in total can be played.

\*4) JPEG file compatibility: This Recorder is compatible with FUJICOLOR CD and Kodak Picture CD formats, as well as CD-R/RW/ROMs containing JPEG files.

Baseline JPEG and EXIF files up to 19 megapixels are supported (maximum vertical is 3840 pixels and horizontal resolution is 5120 pixels).

\*5) Recording format should be in accordance with ISO9660 level 2 CD-ROM file system. Both Romeo and Joliet file systems are playable.

CD physical format: Mode1, Mode2 XA Form 1.

Chinese characters cannot be displayed, although files featuring such names can be played.

\*6) Only for DVD-RW Ver. 1.1/2X disc.

\*7) For DVD-R discs, remaining volume is not increased after erasing titles.

For DVD-RW discs, remaining volume is increased when erasing the last title.

\*8) Start and end of edited scenes may be slightly shifted when a program recorded in Video mode is copied at high speed.

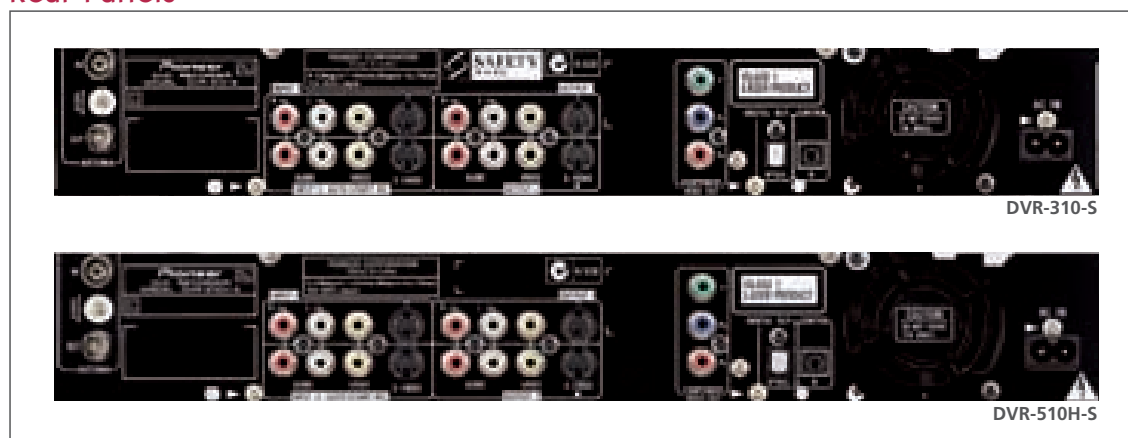
\*9) Only available for copy-free, single-channel-broadcast programs, which were once recorded to HDD at high speed in VR mode.

\*10) Only for DVD-R/DVD-RW discs recorded in Video mode.

\*11) "i.LINK" and  are trademarks of Sony Corporation.

Can be connected to video DV decks and DV camcorders (some models are not compatible). CANNOT be connected to DVD players and AV amplifiers.

## Rear Panels



# Pioneer

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**For more information, Call or Write to :**

**Notice:** This DVD recorder features an integrated TV tuner receiver that is capable of handling analog TV broadcasting signals via the "ANTENNA IN" terminal according to the TV Standards of each country.

#### Recording equipment and copyright

Recording equipment should be used only for lawful copying and you are advised to check carefully what is lawful copying in the country in which you are making a copy. Copying of copyright material such as films or music is unlawful unless permitted by a legal exception or consented to by the rightowners.

**Pioneer is a member of the RWPPI (PW Products Promotion Initiative).**

RWPPI is an action organization of 57 companies (as of August 1, 2003) whose goal is to effectively popularize and promote DVD-R/RW products, commercial products that are developed on the basis of DVD-R/RW standards allowing recording and playback of DVD discs.

#### Trademarks

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"G-Code" is registered in at least the following countries: Australia, China, Hong Kong, Japan, New Zealand, South Korea, Taiwan and Singapore.

"i.LINK" and "i" are trademarks of Sony Corporation.

#### DTS Disclaimer

When playing a DTS-encoded source (CDs, DVDs), excessive noise will be exhibited from the analog stereo outputs. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo output of the DVD recorder is connected to an amplifier system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel DTS Digital Surround™ decoder system must be connected to the digital output (S/PDIF, AEF/EBU, or TosLink) of the DVD recorder.

#### Playback Malfunction Caused by the Condition of a DVD Player

Once finalized, a DVD-R or DVD-RW disc recorded by this recorder can be played on other DVD players. But on some players, you may experience malfunctions including:

- Rejection of a loaded disc
- Macro block noise (mosaic patterns) visible on the TV screen
- Intermittent sound and image
- Stoppage of play during playback

Repairing such malfunctioning DVD players is the user's obligation.

#### DVD-RW, DVD-R LOGOS

DVD-RW and DVD-R logos are the standard marks used in conjunction with DVD-RW and DVD-R discs. For recording on a Pioneer DVD recorder, be sure to use discs bearing one of these marks.

#### CD-R/RW and DVD-R/RW Playback

Discs may not be played back because of following reason(s): recording characteristics of recorders; characteristics of discs; scratches and dust on discs; dust and condensation on pickup lenses.

**CD-R/RW Playback:** CD-R/RW discs for Audio recorded in CD Audio, Video CD, Super Video CD, MP3/WMA audio or JPEG format can be played back. Unfinalized discs except those in CD Audio formatting cannot be played back.

CD-R/RW and DVD-R/RW software disc boxes also provide additional information on compatibility.

Products colors and illumination may differ in photographs from actual appearance, due to effects of printing and photography.