

**What type of recordable DVD media is supported on the PRV-9000?**

The PRV-9000 DVD-Video Recorder is a DVD-R and DVD-RW device. It can record on to DVD-R for General (write-once) media or DVD-RW version 1.1 or higher (re-writable) media.

**What type of video formats can be recorded on the PRV-9000?**

The PRV-9000 DVD-Video Recorder records two different video formats. It can record the DVD-Video format onto either DVD-R or DVD-RW media, as per above. And it can also record the VR (Video Recording) format onto DVD-RW media.

**What is the playback compatibility of the DVD-Video format on DVD-R media?**

Most DVD players and DVD-ROM drives will play DVD-R media. If the player/drive plays DVD-Video content that has been authored and copied onto DVD-R media then it will play DVD-Video content that has been recorded and finalized onto DVD-R media with the PRV-9000.

When addressing playback compatibility there are always two issues to consider: 1) will the device play the video file format of the recorded content and 2) does the device support and play the recordable DVD media format?

Both the DVD-Video file format and the DVD-R media format are part of the DVD Forum's specification. Therefore,

- 1) Any DVD player or DVD drive/computer system that plays replicated DVD-Video discs will also play the DVD-Video content recorded and finalized on the PRV-9000.
- 2) Any DVD player or drive that supports and plays DVD-R media will play DVD-R discs recorded and finalized on the PRV-9000. \*

\* DVD-R media is currently compatible with most DVD players and DVD-ROM drives. Pioneer fully expects this number to increase to nearly 100% over the next year.

### **What is the playback compatibility of the DVD-Video format on DVD-RW media?**

Many DVD players and DVD-ROM drives will play DVD-RW media. If the player/drive plays DVD-Video content that has been authored and copied onto DVD-RW media then it will play DVD-Video content that has been recorded and finalized onto DVD-RW media with the PRV-9000.

However, the same two issues above also apply to this question. While the DVD-RW media format is also part of the DVD Forum's specification, it is a more recent technology so it does not yet enjoy the same level of playback compatibility as the DVD-R media format.

As per Pioneer's technology assessment, DVD-RW media can be played on many DVD players and DVD-ROM drives. Pioneer fully expects this number to significantly increase over the next year.

### **What is the playback compatibility of the VR format on DVD-RW media?**

All new Pioneer DVD-Video player models bearing the "RW Compatible" logo will play VR format as well as DVD-Video format on DVD-RW media. However, many DVD players and DVD-ROM drive player software, even if they play DVD-RW media, may not play discs recorded in the VR file format.

Therefore, even if your player plays DVD-RW media containing DVD-Video formatted content, it may not play VR formatted content on DVD-RW media. In this instance the media format is supported but not the video file format. The best thing to do is test playability of a VR formatted DVD-RW disc on the intended playback device.

### **Why use VR format if it will not play on other DVD devices?**

Obviously, the PRV-9000 will play a VR format recorded DVD-RW disc with the full range of playback and basic editing features build into the recorder. There are some applications that require record and play to occur in the same device. Instant replay at sporting events or video surveillance for security, are two examples. In this case, The PRV-9000's VR format offers more flexibility in record time and video encoding rates (32 settings), allowing 1 hour to 6-hour record times on the DVD-RW disc.

Note: All new Pioneer DVD-Video player models with the "RW Compatible" logo will play back DVD-RW discs recorded in the VR format.

**Can the PRV-9000 be set to record in multiple bit rates in DVD-Video format?**

Yes, in DVD-Video format the PRV-9000 recorder has two MPEG2 CBR video encoding bit rate settings. Mode #1 (V1) is 9.78 Mbps and allows one hour of recorded video on a single-sided 4.7Gbyte DVD-R or DVD-RW disc. Mode #2 (V2) is 5.11 Mbps and allows two hours of recorded video on a single-sided 4.7Gbyte DVD-R or DVD-RW disc.

You can change the DVD-Video format bit rate setting for each record session. However, you cannot use more than one bit rate setting in the same record session

**What is the pixel resolution of the video recorded in DVD-Video format?**

The pixel resolution of V1 mode (9.78 Mbps) is 720x480.  
The pixel resolution of V2 mode (5.11 Mbps) is 720x480.

**How is the audio encoded in DVD-Video format?**

The PRV-9000 can accept two channels of unbalanced audio. This audio is encoded as Dolby Digital (AC3) 2-channel audio (16bit-48kHz-256kbps) for both DVD-Video bit rate settings.

**Can the PRV-9000 be set to record in multiple bit rates in VR format?**

Yes, in VR format the PRV-9000 recorder can be set to one of one of 32 video encoding bit rates. The highest quality setting is 10.08 Mbps and allows for one hour of recorded video on a single-sided 4.7Gbyte DVD-RW disc. The lowest quality setting is 1.73Mbps and allows for six hours of recorded video on a single-sided 4.7Gbyte DVD-RW disc.

You can change the VR format bit rate setting for each record session. However, you cannot use more than one bit rate setting in the same record session

Note: When using the DV IEEE-1394 video input you cannot set the VR bit rate below 2.60Mbps.

**What video compression attributes are applied in VR format?**

All but the lowest six VR bit rates settings use MPEG2 compression. The lowest six VR format settings utilize MPEG1. Also, depending on the bit rate selected either VBR or CBR is applied to offer the best possible quality video and audio signal at the selected bit rate setting.

**What is the pixel resolution of the video recorded in VR format?**

The pixel resolution of video recorded in VR format differs based on video bit rate setting selected for that record session. The highest bit rate settings, from one hour to two-hour recording modes, offer 720x480 pixel resolution.

**How is the audio encoded in VR format?**

The PRV-9000 can accept two channels of unbalanced audio. At the highest VR video bit rate setting (10.08Mbps) the audio is encoded as Linear PCM (16bit-48kHz-256kbps). In all other VR video bit rate settings the audio is encoded as Dolby Digital (AC3) 2-channel audio (16bit-48kHz-256kbps).

**Why does the PRV-9000 record in 30 second intervals when recording the DVD-Video format?**

The DVD-Video format DVD Forum specification requires DSI (Disc Search Information) data to be contained on the user data stream of the DVD-Video disc. The DSI must include the end time data associated with the video. When authoring a DVD-Video disc with a computer-based system, one knows when the video will end because it has pre-recorded, so it is clear on how to set this data in the DSI.

However, when recording in real time one cannot predict exactly where the conclusion of the video will be on the disc. But in order to adhere to the DVD-Video spec, the DSI data must be present. Therefore, the PRV-9000 adds this data every 30 seconds in the record process and recording must be done in 30-second intervals. If the user stops recording between 30-second intervals, the recorder will continue to record until it reaches a 30-second point in time.

This procedure is designed to insure content recorded by the PRV-9000 maintains maximum playback compatibility of DVD-Video format.

**Why does the 30-second record interval not apply when recording in the VR format?**

The VR format is also a specification created by the DVD Forum. It is designed as a simple way to record video and audio data onto a DVD. It does not require much of the logical layer data included in DVD-Video formatted content. As such, the DSI end point data is not required in the VR format.

Since the DSI end point data is not required, the PRV-9000 does not need to add it and the recorder does not need to record VR formatted content in pre-defined intervals. When the user stops the record process in VR format on the PRV-9000, the recording process stops.

### **How long does it take to finalize a disc in DVD-Video format on DVD-R media or brand new DVD-RW media?**

The DVD disc specification requires that lead in and lead out data must be written to the disc. In addition, the DVD Forum states that a minimum of 35mm of data, starting from the inner radius, must be recorded onto the disc to meet specification. The data size of a recorded segment is dependent on the bit rate set for that segment and the length of the segment

Therefore, finalization time is based on how much data is recorded to the DVD-R or DVD-RW disc. On the PRV-9000, finalization times for video recorded in the DVD-Video format range from 3 minutes to 14 minutes, depending on the bit rate and running time of the all the video recorded onto the disc.

Finalization time is not dependent on disc media; the time it takes to finalize a disc is the same for both DVD-R media and a brand new piece of DVD-RW media.

(See DVD-Video Finalization Times Chart.)

### **Do finalization times differ when using a previously recorded and finalized DVD-RW disc on the PRV-9000?**

Yes, when using DVD-RW media that has been previously recorded and finalized on the PRV-9000, the finalization time is always 3 minutes. This is because the newly recorded content is written over the existing content and the lead in/out and minimum data requirements (outlined in the answer above) have already been met. If you take that DVD-RW media and completely reformat it in a DVR-A03 drive, then it will be treated by the PRV-9000 as a brand new piece of DVD-RW media and the finalization times in the chart will apply.

### **Is there a difference in finalization time based on bit rate settings and number of record sessions?**

Yes, finalization time is based on how much data is recorded to the disc. Therefore, a ten-minute segment recorded at 5.11Mbps will be a smaller data file than a ten-minute segment recorded at 9.78Mbps. As a smaller file it would occupy less space on the disc and may take longer to finalize. The more record sessions on the disc, the more data, and therefore, the finalization times decrease until the minimum of 3 minutes is reached.

### **When recording DVD-Video format to a DVD-RW disc, can you un-finalize the disc to record additional content? Without losing the original content?**

No, when you un-finalize a DVD-RW disc recorded in the DVD-Video format the original content will be overwritten when recording new content. Therefore, you cannot add information to the previously recorded DVD-RW disc in DVD-Video format if it has been previously finalized.

**When recording VR format to a DVD-RW disc, can you un-finalize the disc to record additional content? Without losing the original content?**

Yes, you can add content to the DVD-RW disc that has been recorded in VR format without un-finalizing the disc.

**What happens if disc finalization is cancelled or interrupted before completed?**

The disc will not be finalized and you will need to resume the process from the beginning.

**Is external DV camera control possible via IEEE-1394 connector on the PRV-9000?**

Yes, a DV camera can be controlled with the PRV-9000 remote control unit if the camera is connected to the player via the IEEE-1394 interface. If there is a DV tape in the camera the functions available for camera control are Start, Stop, Pause, Fast Forward and Rewind.

**Is external DV computer control possible via IEEE-1394 connector on the PRV-9000?**

No, this external computer control via the IEEE-1394 interface is not available on the PRV-9000.

**How many characters can be used to label the disc name? How many characters can be used to label the Title Menu Buttons?**

When recording a disc in DVD-Video format, a maximum of 32 characters can be used to create the disc label and for each button in the title menu.

When recording a disc in VR format, a maximum of 64 characters can be used to create the disc label, and for each thumbnail picture button in the Original Title Menu and for each thumbnail picture button in the edited Play-List Menus.

**Does the PRV-9000 provide progressive scan output?**

Yes.

**Can the PRV-9000 output video from the DV, component, S-Video, composite outputs simultaneously?**

Yes, the PRV-9000 can display video from all output connectors simultaneously.

**Does the PRV-9000 record in both NTSC & PAL video standards?**

No, the PRV-9000 records only NTSC video.

**Does the PRV-9000 play DVD-Video discs in both NTSC & PAL video standards?**

Yes, the PRV-9000 can play replicated DVD-Video discs and previously recorded DVD-Video programs on DVD-R and DVD-RW discs in both NTSC & PAL video standards.

**Can I record Linear Time Code to one of the audio channels on the PRV-9000?**

Yes, Linear Time Code (LTC) can be recorded as an audio signal to one of the two AC3 Dolby Digital audio channels the audio track. This LTC audio signal allows archiving the original SMPTE LTC with the associated video. It cannot be used to search for content on the DVD disc.

(See PIB#190001 “PRV-9000 Time Code Support”)

**Will Closed Captioning data on line 21 of the video signal be encoded, recorded and passed through on the PRV-9000?**

If Closed Captioning data is present on line 21 of the original video source, the PRV-9000 will pass and encode it onto the recorded DVD-Video program. When this DVD-Video disc is played back via the PRV-9000 or other DVD player and the video is passed through a CC decoder the Closed Captions will be present on the video display.

**How many separate titles can be recorded by the PRV-9000?**

Each record session is recorded as a separate title by the PRV-9000. According to the DVD-Video specification a maximum of 99 titles can be included on one side of DVD-Video disc. Therefore, as per the spec, the PRV-9000 can record a maximum of 99 titles (or separate recording sessions) provided there is space available of the disc.

**Can chapter marker points be set in the video with the PRV-9000?**

Yes, chapter marker settings can be selected by the user from the on-screen user interface. The user can select chapter marker points to be inserted into the video at 3, 5, or 10-minute intervals. The user can also choose to have only one chapter per record session (title).

**Can the audio recording level be adjusted on the unbalanced audio inputs?**

Yes, using the front panel Function button and the jog shuttle knob you can adjust the recording levels of the unbalanced audio inputs.

**Can DV audio recording level be adjusted on the DV input?**

No, the audio level is fixed to the source DV audio input level.

**Can one record a single audio channel to both channels?**

Yes, in the Audio Input section of the recorder's Initial Settings choose Dual Mono and select either channel 1 or 2 for the audio input. Following this procedure will record the same audio signal to both channels.

Note: Dual Mono recording can only be achieved in DVD-Video format, modes V1 & V2, or in VR format at the highest bit rate setting in one hour mode (MN32).