Safety Regulations

WARNING
You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.
To prevent fire or shock hazard, do not expose the unit to rain or moisture.
To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

CAUTION:
As the laser beam in the VRD-VC20 is harmful to the eyes, do not attempt to disassemble the cabinet. Refer servicing to qualified personnel only.
The use of optical instruments with this product will increase eye hazard.
The use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

The VRD-VC20 is classified as a CLASS 1 LASER PRODUCT.
The CLASS 1 LASER PRODUCT label is located on the enclosure.

Bei diesem VRD-VC20 handelt es sich um ein Laser-Produkt der Klasse 1.
Das Etikett mit der Aufschrift LASER KLASSE 1 PRODUKT befindet sich auf dem Gehäuse.

CLASS 1 LASER PRODUCT
LASER KLASSE 1 PRODUKT

FCC Compliance:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/ TV technician for help.
The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

Notes:
If you have any questions about this product, you may call the telephone number listed on the “Support overview” on page 50. The telephone number below is not for customer service but only for official purpose.

<table>
<thead>
<tr>
<th>Trade Name:</th>
<th>SONY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model No.:</td>
<td>VRD-VC20</td>
</tr>
<tr>
<td>Responsible Party:</td>
<td>Sony Electronics Inc.</td>
</tr>
<tr>
<td>Address:</td>
<td>16450 W. Bernardo Dr., San Diego, CA 92127 U.S.A.</td>
</tr>
<tr>
<td>Telephone No.:</td>
<td>858-942-2230</td>
</tr>
</tbody>
</table>

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

Declaration of Conformity
**CAUTION**

The mains plug on this equipment must be used to disconnect mains power. Please ensure that the socket outlet is installed near the equipment and shall be easily accessible.

**Achtung**

Zur Trennung vom Netz ist der Netzstecker aus der Steckdose zu ziehen, welche sich in der Nähe des Gerätes befinden muß und leicht zugänglich sein soll.
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Please Record Responsibly

Before copying anything onto a disc, please be sure that you are not violating copyright laws. Most software companies allow you to make a backup or archive copy of software. Check your software’s license agreement for details.

Copyrights

- Television programs, films, video tapes, discs, and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this product with cable television transmission may require authorization from the cable television transmitter and/or program owner.
- This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.
Introduction

Features

This drive offers the following features.

Stand-alone operation

You can use this drive as a stand-alone DVD recorder to record videos on Recordable/Rewritable DVDs directly from connected video cameras and AV devices.

- Synchronized recording allows the drive to record videos automatically.
  - DV connection allows the digital camera operates automatically, synchronized with the operations carried out on this drive.
  - AV connection allows the drive to record videos automatically, synchronized with the operations carried out on the connected video device.
- You can create titles or chapters either automatically or manually.

Computer-controlled operation

- A video recordable DVD drive with Hi-Speed USB (USB 2.0-compliant) interfaces for computers, DV and analog audio/video input terminals for video devices.
- The drive can write to seven types of disc, including a DVD+R Double Layer disc.
- The drive can write at a maximum speed of 16x when using high speed DVD+R or DVD-R discs.
- Adopts the Power-Burn technology to prevent buffer underrun errors.

Others

- Hardware MPEG encoder captures video signals.
- The drive can be placed vertically or horizontally.
Unpacking

Please confirm that the package contains the following items. If any of these items appear to be missing and/or damaged, please contact your dealer.

- Drive
- Hi-Speed USB cable × 1
- Power cord
- AC adaptor (MPA-AC1)
- Quick Start Guide
- Operating instructions (this document)
- Nero Quick Start Guide
- Software disc
- Warranty card

**Note**

Make sure that you back up the supplied software disc on another disc because the software disc is not distributed separately.
Introduction

Parts and controls

Front Panel

1 Disc tray
Insert discs here, label side to the left.

Hint
When you insert a disc into the drive, make sure that you set the disc inside the two lower pins. When using the drive horizontally, make sure that it is under the four pins.

2 Eject button
Opens and closes the disc tray.

3 Display window
The blue LCD backlight goes out automatically when:
- 5 minutes have passed without any operation during the stand-alone operation.
- 1 minute has passed after the cable connection during the computer-controlled operation.

Note
The LCD backlight turns on again when any key is pressed in stand-alone operation, however, it remains off in the computer-controlled operation. The LCD backlight turns on when the USB cable is disconnected (stand-alone operation mode).

4 TIME button
Displays time passed or time remaining.

5 SYNC (synchronize) button
Activates the synchronized recording.

6 INPUT SELECT button
Selects an input signal to be recorded.

7 REC MODE button
Selects a recording mode.

8 SELECT button
Selects the mode of the function.

9 Busy indicator
Indicates the drive status.
Lit (green)
- The power is on.
Blinking (greenish orange)
- The drive is accessing the disc, such as reading, playing or writing.
Off
- The power is off.

10 FUNCTION/ENTER button
Selects a function to be operated.

11 REC (record) button
Starts recording videos.

Continued
Display Window

The display window works only when the drive is used as the stand-alone DVD recorder (p. 12), and indicates the following:

1. Input signal (p. 15, 18, 22)
2. Video signal indicator (p. 15, 18, 22)
3. Recording mode (p. 25)
4. Time display (time passed or time remaining) (p. 17, 21, 24)
5. Status and warning messages (p. 53)
6. Synchronized recording (p. 15, 18)

Rear Panel

1. Power switch
   Turns the drive on or off.
2. USB connector
   Connect a USB cable when connecting the drive to a computer.
3. DV IN connector (4-pin)
   Connect an i.LINK cable (not supplied) when connecting a digital video camera* to the drive.
   * For DV/Digital8 camcorder input only.
4. S VIDEO IN connector
   Connect an S VIDEO cable (not supplied) when connecting the drive to a video device such as a video camera or VCR.
5. VIDEO IN connector
   Connect a video plug of AV cable (not supplied) when connecting the drive to a video device such as a video camera or VCR.
6. AUDIO IN L/R connectors
   Connect audio plugs of AV cable (not supplied) when connecting the drive to a video device such as a video camera or VCR.
7. DC IN jack
   Connect the supplied AC power adaptor.
System requirements

When connected to a computer, the drive should be used with a system that meets the following requirements1).

- CPU: Pentium III, 800 MHz or higher
  (with NeroVision Express: Pentium 4, 1.6 GHz recommended)
- RAM: 256 MB or higher
- 1 GB (with NeroVision Express: 10 GB) free hard disk space
- Operating system:
  Windows 2000 Professional
  (referred to as Windows 2000),
  Windows XP Home Edition or Windows XP Professional
  (referred to as Windows XP)
- Hi-Speed USB (USB2.0) port

1) The above requirements are the minimum necessary requirements to write to disc normally. Under actual operating conditions, the requirements imposed by your software must also be met. For details, refer to your software documentation.

Notes

- You must use discs that are compatible with the write speed you have selected.
- Writing speed may automatically be adjusted depending on the disc, specified disc speed, or disc conditions such as weight imbalance and eccentricity.
- System should meet following requirements in order to use USB 2.0 operation with this device.
  - Hi-Speed USB (USB 2.0-compliant) interface cable (included).
  - System equipped with a Hi-Speed USB (USB 2.0-compliant) connector or PCI adaptor card, and running the USB 2.0 EHCI device driver1).
- When connected to a product that does not support Hi-Speed USB, the maximum transfer rate is limited to 12 Mbps (equivalent to a USB 1.1 transfer rate).

1) The USB 2.0 EHCI driver software is supplied with currently available PCI adaptor cards that conform to USB 2.0. You can also use the USB 2.0 EHCI driver software supplied with Windows 2000 SP4 and Windows XP SP1. For details, contact your USB 2.0 adaptor dealer or consult the Microsoft Corporation Web site.
Creating DVDs

You can use this drive as a stand-alone DVD recorder to record videos on Recordable/Rewritable DVDs directly from a connected video cameras or video devices such as VCRs.

**Note**

Stand-alone operation of the drive is not available when the drive is connected to a computer with the USB cable and the computer is turned on.

**Discs that can be used**

In stand-alone operation, you can use only DVD+R (single layer disc), DVD+R DL (double layer disc), DVD-R (single layer disc), DVD+RW, and DVD-RW discs.

**Note**

You cannot make additional recording on discs that have been created using computers or other DVD recorders by the stand-alone operation.

**Recording procedure**

You can record videos from video cameras or VCRs to a DVD using the following procedure.

1. Connect a playback device to the drive.
2. Turn on and set up the connected device.
3. Turn on the drive, and insert a disc.
4. Start recording.
Recording methods

The drive features synchronized recording mode and manual recording mode.

<table>
<thead>
<tr>
<th>Recording method</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synchronized recording –DV/i.LINK cable</td>
<td>The digital video camera will start/stop playback automatically, synchronized with the operations carried out on the drive.</td>
</tr>
<tr>
<td>connection</td>
<td>page 15</td>
</tr>
<tr>
<td>Synchronized recording –AV cable</td>
<td>The drive will start/stop recording automatically when it detects signals from the connected playback device.</td>
</tr>
<tr>
<td>connection</td>
<td>page 18</td>
</tr>
<tr>
<td>Manual recording</td>
<td>You can start/pause/stop recording manually by operating the drive and the connected device respectively.</td>
</tr>
<tr>
<td>page 22</td>
<td></td>
</tr>
</tbody>
</table>

Recording mode

Three recording modes are available. Select a recording mode according to your priority - picture quality or recording duration (page 25).

<table>
<thead>
<tr>
<th>Mode</th>
<th>Picture quality</th>
<th>Single layer disc</th>
<th>Double layer disc</th>
</tr>
</thead>
<tbody>
<tr>
<td>HQ (default)</td>
<td>High</td>
<td>Approx. 1 hour</td>
<td>Approx. 2 hours</td>
</tr>
<tr>
<td>SP</td>
<td>Standard</td>
<td>Approx. 2 hours</td>
<td>Approx. 4 hours</td>
</tr>
<tr>
<td>SLP</td>
<td>Low</td>
<td>Approx. 6 hours</td>
<td>Approx. 12 hours</td>
</tr>
</tbody>
</table>
What are titles and chapters?

DVD contents consist of sections, called titles, and smaller sub-sections, called chapters. On this drive, a title is created between the points where you start and stop a recording. Chapters are created automatically at specified intervals (default: 5 minutes), or they can be created manually (page 25).

Maximum number of titles on a disc

No additional titles can be created after title 49. Recording will not be initiated on a disc on which 49 titles have already been recorded.
Synchronized recording — i.LINK (DV) cable connection

You can record pictures on Recordable/Rewritable DVDs while playing them back on your digital video camera.*
Connect the DV jack on the digital video camera and that on the drive using an i.LINK cable (not supplied), and the digital video camera will play/pause/stop automatically following operations carried out with the REC/PAUSE/STOP buttons on the drive.
* DV/Digital8 camcorder input only. MICROMV camcorder not supported.

1 Connect the digital video camera.
Refer also to the manual supplied with the device to be connected.

2 Turn on and set up the digital video camera.

3 Turn on the drive.
The busy indicator lights up in green.
Make sure "SYNC" is displayed on the display window.

Continued
Hint

The drive switches the input automatically when detecting the video signal (Auto Source Selection function page 30).
Once you play back the video on the connected video camera (video signal is output), for example, to search a scene to be recorded, the drive switches the input to “DV” automatically.
Make sure “DV” is displayed on the display window before recording, or display “DV” by pressing INPUT SELECT manually.

4 Press the eject button, and insert a disc.
A new blank disc is formatted automatically. Wait until [Format] on the display window changes to [Ready].

5 Press REC to start recording.
The drive starts recording at the same time the video camera starts playback. [Recording] appears on the display window, and the REC button lights up during recording. [SIG] on the display window indicates that the drive is receiving signals from the digital video camera.

Hint
Recording stops automatically when playback of the digital video camera ends.

6 Press STOP to stop recording.
[STOP] appears on the display window.
The digital video camera stops playback automatically.
7 Press the eject button to eject the disc.

**Note**

When using DVD+R, DVD-R, or DVD-RW disc and ejecting the disc, the following message appears.

![Finalize screen]

To play these discs on DVD devices, you need to finalize the disc after recording (page 27).

---

**To pause recording**

Press PAUSE. [Pause] appears on the display window.
The digital video camera pauses playback automatically.
To resume recording, press REC or PAUSE again.

**To check the time passed or remaining**

Press TIME.
Each time you press TIME, the time passed within the current title or the time remaining within the disc appears in turn.

**Note**

Recording will pause if you press the following buttons on the digital video camera:
- Fast forward
- Rewind
- Pause
- Stop (If you do not operate the digital video camera for about 10 minutes, recording will stop.)
To resume recording, press the Play button on the digital video camera.
Synchronized recording — AV cable connection

You can record videos on Recordable/Rewritable DVDs while playing them back on your video device. Connect the video device to the drive using an AV cable, and the drive will start/stop recording automatically when you start/stop playback on the video device. In synchronized recording with an AV cable connection, the drive starts/stops recording when it detects signals from the video device.

**Note**

Synchronized recording may not operate properly or entirely in the following cases:
- The video device continues to output signals even after playback has stopped. For example, standard VCRs output signals from the built-in tuner after they stop playback of tapes, therefore, the drive keeps detecting signals and does not stop recording. To avoid this, set the VCR so that it does not output signals when it is not playing back tape, by switching the input selection to line-in, etc. This symptom will occur with some video cameras that output a video signal to make blue or plain back-screen. In this case, disable the signal for back-screen on your video cameras.
- The drive has detected a copy protection signal. Recording stops.
- Videos may not be recorded for a moment when recording has just started.

1. **Connect a video device.**

Refer also to the manual supplied with the device to be connected.

*When the video camera or VCR has the S VIDEO jack.*
2 Turn on the drive.

The busy indicator lights up in green.
Make sure "SYNC" is displayed on the display window.

Hint

The drive switches the input automatically when detecting the video signal (Auto Source Selection function page 30).
Once you play back the video on the connected video device (video signal is output), for example, to search a scene to be recorded, the drive switches the input to “VIDEO”* automatically. Make sure “VIDEO”* is displayed on the display window before recording, or display “VIDEO”* by pressing INPUT SELECT manually.
* “S-VIDEO” when S-Video cable used

3 Press the eject button, and insert a disc.

A new blank disc is formatted automatically. Wait until [Format] on the display window changes to [Ready].

Continued
4 Press REC on the drive.
The drive comes in standby for recording.

5 Start playback on the video device.
[Recording] appears on the display window and the REC button lights up during recording.
[SIG] on the display window indicates that the drive is receiving signals from the video device.

When the video signal is interrupted, the drive pauses. If the drive detects no video signals after 2 minutes, it stops.

6 Press STOP to stop recording.

7 Press the eject button to eject the disc.

Note
When using DVD+R, DVD-R, or DVD-RW disc and ejecting the disc, the following message appears.

To play these discs on DVD devices, you need to finalize the disc after recording ( page 27).
To pause recording
Press PAUSE. [Pause] appears on the display window.
To resume recording, press REC or PAUSE again.

Recording pauses also when you stop playback on the video device. To resume recording, restart playback.

To check the time passed or remaining
Press TIME.
Each time you press TIME, the time passed within the current title or the time remaining within the disc appears in turn.
Manual recording

You can start/pause/stop recording manually by operating the drive and the connected device respectively.

1 Connect a video device.
   See “Synchronized recording — i.LINK (DV) cable connection” on page 15 or “Synchronized recording — AV cable connection” on page 18.

2 Turn on the drive.
   The busy indicator lights up in green.

3 Press the eject button, and insert a disc.
   A new blank disc is formatted automatically. Wait until [Format] on the display window changes to [Ready].
4 Select the recording conditions.

Display a desired signal by pressing INPUT SELECT.
Each time you press the button, [VIDEO], [S-VIDEO], or [DV] appears in sequence.
If you have connected an S video cable, display [S-VIDEO].
If you have connected an i.LINK cable, display [DV].

Turn off [SYNC] by pressing SYNC.

5 On the video device, search the start point you want to record and set it in the playback pause mode.

6 Press REC on the drive, and start playback on the connected device.

[Recording] appears on the display window and the REC button lights up during recording.
[SIG] on the display window indicates that the drive is receiving signals from the connected device.
7 Press STOP to stop recording.  
[STOP] appears on the display window, and stop playback on the video device.  
Wait for a moment until [Ready] appears.

8 Press the eject button to eject the disc.

**Note**

When using DVD+R, DVD-R, or DVD-RW disc and ejecting the disc, the following message appears.

```
VIDEO
HQ
Finalize?
[No]/ Yes
```

To play these discs on DVD devices, you need to finalize the disc after recording ( page 27).

---

**To pause recording**

Press PAUSE. [Pause] appears on the display window.  
To resume recording, press REC or PAUSE again.

---

**To check the time passed or remaining**

Press TIME.  
Each time you press TIME, the time passed within the current title or the time remaining within the disc appears in turn.
**Additional operations**

**Selecting a recording mode**

Press REC MODE.
Each time you press the button, [HQ], [SP], or [SLP] appears in sequence.
See page 13 for details on the recording mode.

**Note**
You cannot do this operation during recording.

**Selecting a chapter interval**

See page 14 for details on chapters.

1. Display [Auto Chp] by pressing FUNCTION/ENTER.
   Each time you press the button, [Finalize?], [Erase All?], [Auto Play?], [Auto Chp], or [Stop Timer] appears in sequence.

2. Press SELECT to select the interval and press FUNCTION/ENTER to preset.
   Each time you press the button, [5 minutes], [10 minutes], [15 minutes], or [None] appears in sequence.

**Note**
You cannot do this operation during recording.

**To create chapters manually**

Select [None] for [Auto Chp].
The videos are recorded as one chapter until you pause recording.
Pressing REC during recording also writes a chapter mark.

**Creating titles manually**

Stop recording. The videos are recorded as one title until you stop recording.
Selecting automatic playback mode

You can set automatic playback mode on the disc before recording. In the default setting ([No]), the disc is to start playback with displaying the menu screen of the title recorded.

1 Display [AutoPlay?] by pressing FUNCTION/ENTER.
   Each time you press the button, [Finalize?], [Erase All?], [Auto Play?], [Auto Chp], or [Stop Timer] appears in sequence.

2 Press SELECT to select [Yes] or [No], and press FUNCTION/ENTER.
   When you select [Yes] (automatic playback mode is on), the disc starts playback on a DVD player with the first title recorded.

   When you select [No] (automatic playback mode is off), the disc starts playback on a DVD player with displaying the menu screen of the titles recorded.

   ![DVD player diagram](image)
**Finalizing a Disc**

**What is “Finalize”?**
To finalize the disc means to make the created disc compatible with other DVD devices, so that the disc can be played back on them.

When using DVD+R, DVD-R, and DVD-RW disc, after recording is complete you need to finalize the disc to play them back on other DVD devices. You cannot record incrementally on them after finalizing.

DVD+RW disc is finalized automatically after recording. You can record videos incrementally on the disc even after finalizing.

1. Turn on the drive and insert the non-finalized disc.
2. Press FUNCTION/ENTER to display [Finalize?] on the display window.
   
   Each time you press the button, [Finalize?], [Erase All?], [Auto Play?], [Auto Chp], or [Stop Timer] appears in sequence.

   ![VIDEO SYNC HQ Finalize? [No]/Yes]

   **Hint**
   When you eject the DVD+R, DVD-R, or DVD-RW disc after recording, [Finalize?] is displayed as well.

3. Press SELECT to select [Yes].
   If you do not finalize the disc, select [No].

4. Press FUNCTION/ENTER.
   [Reconfirm?] appears on the display window.

   ![VIDEO SYNC HQ Reconfirm? [No]/Yes]

5. Press SELECT to select [Yes].
   If you do not finalize the disc, select [No].

---

Continued
6 Press FUNCTION/ENTER.
Finalizing of the disc starts.
When finalizing is complete, [Finalize Complete] appears.

![Finalizing to Finalize Complete]

7 Eject the disc.

**Notes**
- Depending on the disc condition, recording condition, or DVD device, discs may not play even if the discs are finalized.
- The drive can finalize only the discs recorded on this drive.
- It may take about five minutes or more to finalize a disc. Please wait until [Finalize Complete] is displayed.

### Erasing a Disc

You can erase the contents of DVD+RW and DVD-RW disc recorded on this drive. This operation erases all of the contents in the disc at once.

1 Turn on the drive and insert the disc.

2 Press FUNCTION/ENTER repeatedly to display [Erase All?] on the display window.
Each time you press the button, [Finalize?], [Erase All?], [Auto Play?], [Auto Chp], or [Stop Timer] appears in sequence.

![Erase All?]

3 Press SELECT to select [Yes].
If you do not erase the disc, select [No].

4 Press FUNCTION/ENTER.
5 Press SELECT to select [Yes].
   If you do not erase the disc, select [No].

6 Press FUNCTION/ENTER.
   Erasing of the disc starts.
   When erasing is complete, [Ready] appears.

7 Eject the disc.

   **Note**
   You cannot erase title by title, or chapter by chapter.

### Stop timer recording

Recording will stop automatically after the preset time.

1 Display [Stop Timer] by pressing FUNCTION/ENTER.
   Each time you press the button, [Finalize?], [Erase All?], [Auto Play?], [Auto Chp], or [Stop Timer] appears in sequence.

2 Press SELECT repeatedly to display the desired time.
   30m, 1h, 1h30m, 2h, 3h, 4h, 6h, and 8h are available.

3 Press ENTER to set the desired time.
   [Ready] appears on the display window.
4 Press REC to start recording.
Recording will stop after the preset time.

**Notes**
- The stop timer setting is cancelled when the operation is completed, or the power is turned off.
- If you press TIME repeatedly during the stop timer recording, recorded time, remaining recording time, and remaining disc time are displayed in turn.
- If you press PAUSE, recording pauses. To resume recording, press it again.

**Auto source selection**

The drive selects the type of input signal (DV, S-VIDEO, or VIDEO) automatically by detecting the video signal from the connected device (Auto Source Selection function). Once you play back the video on the connected video device (video signal is output), for example, to search a scene to be recorded, the drive automatically selects the input connector connected to the video device. However, this function may not work correctly when plural jacks are connected at the same time, or depending on the connected device. If this happens, select the input signal manually by pressing INPUT SELECT (page 9).
Using the Drive as an External DVD Drive

Connecting the drive to a computer

Connect the drive to a computer using the supplied USB cable to use the drive as an external DVD drive. When connecting the drive to your computer for the first time, you need to install the driver software.

Note

When the drive is connected to a computer, you cannot use the drive as a DVD recorder in stand-alone operation. The buttons and display window of the drive do not function.

Procedure for using the drive as an external drive

In order to use this unit as a DVD drive, you need to install the supplied driver and software.

1. Turn on the computer  page 32
2. Turn on the drive  page 32
3. Connect the drive to the computer  page 32
4. Installing the drivers and software  page 33
   - Install the USB Driver.
   - Install the software.

You can use the drive as the DVD drive.

When you install the supplied driver and software in various driver and software, follow the above procedure.
Connecting the drive to a computer

1 Connect the supplied USB cable, the power cord, and the AC adaptor to the drive.

2 Turn on the drive.

3 Turn on your computer.
4 Connect the other end of the USB cable to your computer.

**Note**
Please connect the drive directly to a USB connector on the computer.

5 Install the drive on the computer.
On Windows XP, see below.
On Windows 2000, see page 35.

---

**Installing the USB driver**

**On Windows XP**

1 Insert the supplied software disc into a drive on the computer.
When connecting the USB cable to the computer, the following screen is displayed.
2 Check [Install from a list or specific location (Advanced)] (1), then click [Next] (2).

The following screen will appear.

3 Check [Search for the best driver in these locations.] (1), [Include this location in the search:] (2), click [Browse] (3), browse for the drive you insert the software disc, then click [Next] (4).

The following screen will appear.

If “The software you are installing for this hardware: Sony VRD-VC20 [Video Capture] has not passed Windows Logo testing to verify its compatibility with Windows XP,” is displayed, click [Continue Anyway].

4 Click [Finish], and continue to install the writing software in the supplied software disc following the instructions on the screen.
On Windows 2000

1. Insert the supplied software disc into a drive on the computer. When connecting the USB cable to the computer, the following screen is displayed.

2. Click [Next]. The following screen will appear.

3. Check [Search for a suitable driver for my device (recommended)] (1), then click [Next] (2). The following screen will appear.
4 Check [Specify a location] (1), then click [Next] (2).
The following screen will appear.

5 Click [Browse] (1), browse for the drive you insert the software disc (2), then click [OK] (3).
The following screen will appear.

6 Make sure that “VRD-VC20 [Video Capture]” is displayed, then click [Next].
The following screen will appear.

If “Digital Signature Not Found” is displayed, click [Yes].

7 Click [Finish], and continue to install the writing software in the supplied software disc following the instructions on the screen.
Installing the software

1 Click [INSTALL SUITE] button to install the software.

2 After installation is complete, continue to install other options or click [EXIT] to finish installation.

Disconnection

The disconnection procedure varies depending on your OS. When your computer detects the drive successfully, appears on the Windows task bar. When you want to disconnect the drive, you must first stop it using this icon.

1 Click on the task bar, and click the drive to be disconnected on the shortcut menu.

2 Operate following the message displayed, if any.

3 Disconnect the USB cable.

Note

If you disconnect the USB cable without performing the procedure above, your computer may operate erratically or data may be damaged. Be sure to perform the procedure above before disconnecting the USB cable.
About software

Use the supplied software to create discs and play back DVDs. The supplied software disc contains the following software. (Refer to the PDF or online documentation of each software for details about their operation.)

**Nero StartSmart**
Serves as the command center to quickly start all the software of the Nero suite.

**Nero Burning ROM SE**
Writes data on CDs and DVDs.

**Nero Express**
A light version of the Nero Burning ROM software. Makes it easier to create CDs and DVDs.

**NeroVision Express**
Authoring software to create DVD-Videos and video CDs.

**Nero Recode**
Compresses your videos to burn and fit them all onto one disc.

**Nero ShowTime**
Plays back DVD-Videos and video CDs.

**Nero BackItUp**
Allows to back up the data from a hard disk to DVDs and CDs.

**InCD**
Packet writing software that supports DVD±RW and CD-RW.

**Nero MediaHome**
Share media files on a Local Area Network (LAN).

**Nero PhotoSnap / Nero PhotoSnap Viewer**
Allows photo editing and viewing.

**Nero Wave Editor**
Audio processing software that allows editing audio files.

**Nero Media Player**
Audio processing software specialized in playing back music.

**Nero Cover Designer**
Creates CD and DVD covers and labels.

**Nero Toolkit**
Utility software consists of Nero CD-DVD Speed, Nero DriveSpeed, and Nero InfoTool.
Notes on using other software with the drive

- Using software other than the supplied software (such as commercially available software, shareware, or freeware) to write data to disc with this drive is not under warranty and Sony provides no customer service.

- Make sure that the supplied writing software and other writing software do not coexist on your computer. Especially if other packet writing software 1) exists in your computer, the software and/or computer may operate erratically.

- If the commercially available software you are using does not detect the drive correctly, visit the web site of the software manufacturer and update the software, as this may solve the problem.

1) Such as Drag-to-Disc (ROXIO), Direct CD (ROXIO), B’s CLIP (BHA), and DLA (Sonic).
Maximizing performance

Reaching the highest possible data transfer rate

Make sure that you use high-speed certified discs for which this operation has been guaranteed by Sony. For the latest information about these discs, visit the user support web site. When using discs other than those mentioned above, the drive may limit writing speed to preserve a good reading quality.

Updating the firmware

We recommend using the drive with the latest firmware as some problems encountered when using the drive can be solved simply by updating the drive firmware. Firmware updates are available on the user support web site. See page 50 for details.

Hint
The firmware is the built-in software that makes the drive work.

Using 48x read/write speed for CDs

The default read/write speed for CDs of this drive is 40x speed. With a single touch, you can make the read/write speed 48x speed.

Notes
- On rare occasions, some discs may not be able to tolerate 48x speed, causing them to break. We recommend that you do not use deeply scratched, brittle, or other discs that may break at 48x speed.
- This function does not guarantee a 48x write speed. Depending on the condition of the disc you are using, the speed may be lower.
- This function does not increase read/write speed with CD-RW discs.

1 Insert a disc into the drive.
   The read/write speed when you insert a disc is normally 40x speed.

2 Press the Eject button for five seconds.
   The busy indicator blinks twice and the read/write speed switches to 48x speed.

Hint
When you open the disc tray, the read/write speed reverts to its default of 40x speed.
## Compatible discs

The following discs are compatible with the drive.

### DVD

<table>
<thead>
<tr>
<th>Disc types</th>
<th>Logo</th>
<th>Read</th>
<th>Write</th>
<th>Write (Stand-alone)</th>
<th>Write speed*</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVD+R</td>
<td>![Logo]</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Max. 16×</td>
</tr>
<tr>
<td>DVD+R DL (Double layer)</td>
<td>![Logo]</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Max. 4×</td>
</tr>
<tr>
<td>DVD+RW</td>
<td>![Logo]</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Max. 8×</td>
</tr>
<tr>
<td>DVD-R</td>
<td>![Logo]</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Max. 16×</td>
</tr>
<tr>
<td>DVD-RW</td>
<td>![Logo]</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Max. 6×</td>
</tr>
<tr>
<td>DVD-ROM</td>
<td>![Logo]</td>
<td>✓</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>DVD-Video</td>
<td>![Logo]</td>
<td>✓</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

* Maximum speed when using a disc for the specified writing speed. Depending on your system and disc, this speed may vary.
## CD

### Disc types

<table>
<thead>
<tr>
<th>Disc types</th>
<th>Logo</th>
<th>Read</th>
<th>Write</th>
<th>Write speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD-R</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>Max. 48×</td>
</tr>
<tr>
<td>CD-RW</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>Max. 4×</td>
</tr>
<tr>
<td>CD-RW (High Speed)</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>Max. 10×</td>
</tr>
<tr>
<td>CD-RW (Ultra Speed)</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>Max. 24×</td>
</tr>
<tr>
<td>CD-ROM</td>
<td></td>
<td>✓</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>CD-DA (audio only)</td>
<td></td>
<td>✓</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>CD Extra</td>
<td></td>
<td>✓</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Video CD</td>
<td></td>
<td>✓</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>CD TEXT</td>
<td></td>
<td>✓</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

* Maximum speed when using a disc for the specified writing speed. Depending on your system and disc, this speed may vary.

### Disc diameters

<table>
<thead>
<tr>
<th>Disc diameters</th>
<th>Read</th>
<th>Write</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 cm</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>8 cm</td>
<td>✓</td>
<td>—</td>
</tr>
<tr>
<td>CD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 cm</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>8 cm</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Notes

- Only round discs should be used with this drive. Never use odd-shaped discs (stars, hearts, card shape, etc.), otherwise the drive may be damaged.
- It is not guaranteed to write to or play back 99-minute discs.
- With 8 cm discs, you must place the drive horizontally.
Recommended discs

We recommend that you only use discs for which operation has been guaranteed. You can obtain the latest list of writable discs for which operation with this drive has been guaranteed at the user support web site (see page 50 for details).

**Note**

You can safely use most disc formats that comply with the appropriate standards with this drive. However, bear in mind that some commercially available discs do not comply with the quality or performance standards that are necessary to use with this drive. If you use such discs, the drive may automatically adjust the writing speed, may not be able to write at all, etc. Even if the discs are successfully written, they may cause errors at the time of reading.
Features of writable discs

You can use various discs with the drive to write data. Refer to the table below to find the type of disc that matches what you want to do.

<table>
<thead>
<tr>
<th>To</th>
<th>DVD+R</th>
<th>DVD+R DL</th>
<th>DVD+RW</th>
<th>DVD-R</th>
<th>DVD-RW</th>
<th>CD-R</th>
<th>CD-RW</th>
</tr>
</thead>
<tbody>
<tr>
<td>create DVD-Video that can be played back by most drives and/or players</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>create DVDs that you can edit</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>create DVDs to which you can add to later.</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>create video CDs that can be played back with most computers</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>use DVDs like video tapes (allowing multiple rewrites)</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>distribute 700 MB of data or more (create DVD-ROM discs)</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>distribute data that can be used on most computers (create CD-ROM discs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>create audio CDs that can be played back on most CD players</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>back up your hard disk</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>store data without deleting it</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>use discs in the same way as floppy discs</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Note

You can access/play back the data written to the discs above with most drives/players that support their formats. However, some combinations of drives/players and discs (depending on their quality and/or characteristics) may make access/playback impossible. For details, refer to your drive/player documentation.
Writable CDs and compatibility

The drive can write to CD-R and CD-RW discs, when used with writing software. To play back (read) these CD-R and CD-RW discs on other CD-ROM drives, make settings on the writing software according to the purpose of the data.

CD-R discs
Data can be written to this type of disc only once, and once it has been written, it cannot be erased. Music CDs created on CD-R disc media can be played on standard CD players.

CD-RW discs
Data can be written to and erased from this type of disc repeatedly. Typically, a new CD-RW disc can be rewritten about 1,000 times. Music CDs created on CD-RW disc media cannot be played on a CD player unless it is designed to be CD-RW compatible.

High speed CD-RW discs
The drive can write to High Speed CD-RW disc media. Data written on High Speed CD-RW discs can be read by standard CD-ROM drives.

Note
Drives that do not have the High Speed CD-RW logo cannot be used to write to High Speed CD-RW discs. When writing or adding to such discs with a drive other than this one, make sure that the drive has the High Speed CD-RW logo. Also, always set the writing speed to that specified for the particular High Speed CD-RW disc media being used.

Ultra speed CD-RW discs
The drive can write to High Speed CD-RW and Ultra Speed CD-RW disc media. Data written to these discs can be read by standard CD-ROM drives.

Note
Drives that do not have the Ultra Speed CD-RW logo cannot be used to write to Ultra Speed CD-RW discs. When writing or adding to such discs with a drive other than this one, make sure that the drive has the Ultra Speed CD-RW logo. Also, always set the writing speed to that specified for the particular Ultra Speed CD-RW disc media being used.

Writing speed
When writing to CD-R and CD-RW discs, set the writing speed to that specified on the disc. Change the writing speed on the writing software.

About playback/reading compatibility in CDs
CD-R and CD-RW discs created with the drive can be read on most CD-ROM drives. However, some older CD-ROM drives cannot read CD-RW discs. In addition, CD-R music discs created and finalized with the drive can be played on most CD players, however, there are some CD players and automobile CD players that do not guarantee playback of CD-R discs. Also, CD-R music discs created with the drive can be played back on many standard CD players. However, depending on the type of your player, playback of CD-R and CD-RW discs may not be supported.

Continued
Further, because of the differences in quality and characteristics between various CD-ROM drive, CD player, CD-R disc, and CD-RW disc manufacturers, playback may not be possible depending on the combination.

**Writable DVDs and compatibility**

The drive can write to DVD+R DL, DVD+R and DVD-R discs, as well as to DVD+RW and DVD-RW discs, when used with writing software. The playback (read) compatibility of data written by this drive depends on the capabilities of the DVD-ROM drives or the DVD players and on the logical format selected when the disc is recorded (written).

**DVD+R DL/DVD+R/DVD-R discs**

Data can be written to this type of disc only once. Once it has been written, it cannot be erased. Playback (read) compatibility of DVD+R and DVD-R discs depends on the capability of the DVD-ROM drive and the DVD player and on the logical format selected when it is recorded (written).

**DVD+RW and DVD-RW discs**

Data can be repeatedly written to or erased from this type of disc. Typically, a new DVD+RW or DVD-RW disc can be rewritten about 1,000 times. Playback (read) compatibility of DVD+RW and DVD-RW discs depends on the capability of the DVD-ROM drive and the DVD player and on the logical format selected when it is recorded (written).

**About playback/reading compatibility in DVDs**

DVD+R DL/DVD+R/DVD-R discs, as well as DVD+RW and DVD-RW discs created and finalized with the drive can be played back on almost all DVD-ROM drives. However depending on the type of your drive, playback of DVD+R DL, DVD+RW, and DVD-RW discs may not be supported. In addition, some drives do not support multi-session (DVD+R DL/DVD+R/ DVD+RW) or multi-border (DVD-R/DVD-RW). In these cases, you can only play back the disc in single-session (DVD+R DL/DVD+R/DVD+RW) or single-border (DVD-R/DVD-RW).

Also, DVD-Video discs created with the drive can be played back on many standard DVD players. However depending on the type of your player, playback of DVD+RW and DVD-RW discs may not be supported. Further, because of the differences in quality and characteristics between various DVD-ROM drive, DVD player, DVD+R DL disc, DVD+R disc, DVD+RW disc, DVD-R disc, and DVD-RW disc manufacturers, playback may not be possible depending on the combination. (Playback compatibility is not under warranty.)
Precautions on writing/playing discs

Write speed and compatible discs

- When writing data to disc at high speeds, you must use the appropriate type of disc.
- Set the writing speed on your writing software. For details about the setting procedures, refer to your writing software documentation.
- Writing speed may be adjusted automatically according to the quality of the disc used. Also, writing speed may be limited by the transfer rate of the computer.

DVD region codes

The playback of DVD-Video (DVD discs) is protected and controlled by a region code setting. For the drive to play back DVD-Video, the region code on the DVD disc, the drive, and the DVD-Video playback software must be identical.

With this drive, the region code can be set up to five times, including the initial assignment (RPC phase 21) standard). After setting the region code five times, the setting becomes permanent and can no longer be changed. From this point on, you are only able to play back DVD-Video whose region code matches the one set at the fifth time.

Do not attempt to make unauthorized changes to the region code. Any problems resulting from doing so are not covered by the warranty.

Hint

- You can change the region code of the drive on it's properties dialog box that is accessible from the Device Manager.
- The DVDs created in stand-alone operation have the region code “All”.

1) Region Playback Control (RPC) standard.

Playing back DVD-Video

DVD-Video disc playback conditions are sometimes determined by software manufacturers. Because the drive plays back discs as determined by software manufacturers, some drive functions may not always perform as expected. When playing back DVD-Video, refer to the documentation accompanying each disc.

About copy protected DVDs

Most DVD-Video discs on the market are protected against unauthorized copy. Attempting to copy protected discs violates copyright laws.
About copy controlled CDs

This product is designed to play back discs conforming to the compact disc (CD) standard. Audio CDs encoded with copyright protection technology are now marketed by various record companies. Be aware that some of these discs do not conform to the CD standard and you may not be able to play them back with the drive. When using the drive as an audio CD player, only use audio CDs with the following mark. Some of these discs are encoded in such a way as to prevent sampling and/or copy, while others can only be played back under certain conditions. For details, refer to the documentation of your audio CD.

Note on DualDiscs

A DualDisc is a two sided disc product which mates DVD recorded material on one side with digital audio material on the other side. However, since the audio material side does not conform to the Compact Disc (CD) standard, playback on this product is not guaranteed.
Additional Information

Precautions

Operation and storage conditions
Avoid using or storing the drive in a hot or humid location, or where it might be subject to severe vibration or direct sunlight.

Transportation
- Please repack the drive in its original carton when shipping by itself.
- If the drive is to be shipped while installed in a computer, remove any disc beforehand.

Moisture condensation
Do not expose the drive to sudden temperature changes. Do not use the drive immediately after moving it from a cold to a warm location, or raising the room temperature suddenly, as condensation may form within the drive. If the temperature changes suddenly while using the drive, stop using it, but keep the power on for at least an hour.

Handling discs
- Handle discs only by the edges. Never touch the recording surface.
- Do not affix labels on discs.

- Do not store discs in dusty, dirty or humid locations, in direct sunlight, or near heat-generating devices.
- To protect important data, always keep discs in their cases.
- Do not wipe writable discs using a disc cleaner before recording data. Instead, use a blower to remove any dust.
- Data may not be recorded properly if there are scratches or dust on the unrecorded area of writable discs. Handle discs very carefully.
Support overview

User support web site

You can find the following information on this web site. The information is periodically updated, so we recommend that you visit regularly.
- Information about the drive
- Information about the software supplied with the drive
- Latest firmware
- Frequently asked questions
- Troubleshooting guide
- Guaranteed compatible computers
- Guaranteed compatible discs
- Operating instructions
- Others

Accessing the user support web site

Sony Storage Support web sites
(As of March, 2005)

http://sony.storagesupport.com/

About the Bundled Software
Detailed information about the supplied software is available on the web sites of the software manufacturer.

http://www.nero.com

Update the drive firmware

Some problems encountered when using the drive can be solved simply by updating the drive firmware. Firmware updates are available on the user support Web site. Access the site, make sure that there is an update for your firmware, and follow the instructions on the screen to proceed with download and installation.

Technical support

Please visit the above web sites that provide technical support and other information on the drive and the supplied software. When asking questions using telephone or e-mail, please have the following information available:

- Model number: VRD-VC20
- Serial number
- Date and place of purchase
- Computer maker and model number
- Computer specifications (CPU speed, memory size, OS version, etc.)
- Writing software used (version, etc.)

Local technical support is only available in the specified sales regions. The customers in these regions should be provided with a warranty card for this product. For contact information, refer to the warranty card.

Note that technical support conditions may vary according to the locality, and that charges and/or limited service may apply in some regions.
Specifications

Recording (stand-alone)

Video signal format
NTSC color

Video encoding format
MEPG-2

Audio encoding format
Dolby Digital 2 ch

Recordable disc

DVD recording format
- DVD+VR format
  (DVD+R, DVD+R DL, DVD+RW)
- DVD-Video format
  (DVD-R, DVD-RW)

DVD/CD drive

Writing systems
DVD:
  Random write
  Sequential write
CD:
  Track-at-once
  Disc-at-once
  Session-at-once
  Packet writing

Access time (average/random stroke)
  DVD: Approx. 135 ms
  CD: Approx. 140 ms

Buffer capacity
2 MB

Inquiry strings
SONY DVD RW DRU-720A

Laser

CD
  Type: DL-7140-211RA
  Wavelength: 783 nm
  Output power:
  260 mW (pulse)
  90 mW (CW)

Compatible discs

<table>
<thead>
<tr>
<th>Type</th>
<th>Read (max.)</th>
<th>Write (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVD+R</td>
<td>8×-CAV</td>
<td>2.4×</td>
</tr>
<tr>
<td>DVD+R (4×)</td>
<td>8×-CAV</td>
<td>4×</td>
</tr>
<tr>
<td>DVD+R (8×)</td>
<td>8×-CAV</td>
<td>8×-PCAV</td>
</tr>
<tr>
<td>DVD+R (16×)</td>
<td>8×-CAV</td>
<td>16×-CAV</td>
</tr>
<tr>
<td>DVD+R Double Layer</td>
<td>6×-CAV</td>
<td>2.4×</td>
</tr>
<tr>
<td>DVD+R Double Layer (4×)</td>
<td>6×-CAV</td>
<td>4×</td>
</tr>
<tr>
<td>DVD+RW</td>
<td>8×-CAV</td>
<td>2.4×</td>
</tr>
<tr>
<td>DVD+RW (4×)</td>
<td>8×-CAV</td>
<td>4×</td>
</tr>
<tr>
<td>DVD+RW (High Speed)</td>
<td>8×-CAV</td>
<td>8×-ZCLV</td>
</tr>
<tr>
<td>DVD-R</td>
<td>8×-CAV</td>
<td>1×</td>
</tr>
<tr>
<td>DVD-R (4×)</td>
<td>8×-CAV</td>
<td>4×</td>
</tr>
<tr>
<td>DVD-R (8×)</td>
<td>8×-CAV</td>
<td>8×-PCAV</td>
</tr>
<tr>
<td>DVD-R (16×)</td>
<td>8×-CAV</td>
<td>16×-CAV</td>
</tr>
<tr>
<td>DVD-RW</td>
<td>8×-CAV</td>
<td>1×</td>
</tr>
<tr>
<td>DVD-RW (2×)</td>
<td>8×-CAV</td>
<td>2×</td>
</tr>
<tr>
<td>DVD-RW (4×)</td>
<td>8×-CAV</td>
<td>4×</td>
</tr>
<tr>
<td>DVD-RW (6×)</td>
<td>8×-CAV</td>
<td>6×</td>
</tr>
<tr>
<td>DVD-ROM</td>
<td>16×-CAV</td>
<td>—</td>
</tr>
<tr>
<td>DVD-Video</td>
<td>6×-CAV</td>
<td>—</td>
</tr>
<tr>
<td>CD-R</td>
<td>48×-CAV</td>
<td>48×-CAV</td>
</tr>
<tr>
<td>CD-RW</td>
<td>32×-CAV</td>
<td>4×</td>
</tr>
<tr>
<td>CD-RW (High Speed)</td>
<td>32×-CAV</td>
<td>10×</td>
</tr>
<tr>
<td>CD-RW (Ultra Speed)</td>
<td>32×-CAV</td>
<td>24×-ZCLV</td>
</tr>
<tr>
<td>CD-ROM</td>
<td>48×-CAV</td>
<td>—</td>
</tr>
<tr>
<td>CD-DA</td>
<td>10×-CAV</td>
<td>—</td>
</tr>
<tr>
<td>CD-DA (DAE)</td>
<td>48×-CAV</td>
<td>—</td>
</tr>
</tbody>
</table>

Disc diameters

<table>
<thead>
<tr>
<th>Type</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVD</td>
<td>12 cm</td>
</tr>
<tr>
<td></td>
<td>8 cm 2)</td>
</tr>
<tr>
<td>CD</td>
<td>12 cm</td>
</tr>
<tr>
<td></td>
<td>8 cm 2)</td>
</tr>
</tbody>
</table>

1) The default setting is 40×. You must use the speed acceleration function to achieve 48× speed.

2) With 8 cm discs, you must place the drive horizontally.

Continued
Interface

USB port
- Hi-Speed USB (USB 2.0-compliant)

DV IN\(^1\)
- 4-pin i.LINK (IEEE1394), S100
- DVC-SD input

VIDEO input
- 1 Vp-p/75 ohms

S VIDEO input
- Y: 1 Vp-p/75 ohms
- C: 0.286 Vp-p/75 ohms

AUDIO input
- 2 Vrms, Impedance more than 47 kilohms

\(^1\) DV camcorder/Digital8 camcorder input only. You cannot record video from MICROMV camcorder and other digital video devices having the i.LINK connector. You cannot use the drive as a DVD drive by connecting it to a computer with an i.LINK connector.

General

Power
- DC 12 V (supplied from the DC IN jack)

Consumption
- Max. 3.0 A

AC adaptor
- AC 100 - 240 V
- Use a power cord appropriate to the region or country of use.

Size
- Approx. 66 × 164 × 234 mm (W × H × D)
- (excluding the projecting parts)

Weight
- Approx. 1.85 kg (drive only)

Operating temperature
- 5 to 35 °C

Design and specifications are subject to change without notice.
Troubleshooting

If you experience any of the following difficulties while using the drive, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your dealer.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause/remedy</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>A recorded disc cannot be played back.</td>
<td>➔ If the disc is a DVD+R, DVD-R, or DVD-RW disc, it may not have been finalized. Finalize the disc.</td>
<td>p. 27</td>
</tr>
<tr>
<td></td>
<td>➔ The disc you are using may not be of a certified brand by Sony. Try to use a disc of a brand of which operation has been certified by Sony.</td>
<td>p. 43</td>
</tr>
<tr>
<td></td>
<td>➔ The playback device you are using may have an issue on playback compatibility.</td>
<td>p. 43, p. 46</td>
</tr>
<tr>
<td>No recording can be done.</td>
<td>➔ You can use only DVD±R or DVD±RW disc on stand-alone recording. You cannot use other discs for this operation.</td>
<td>p. 12</td>
</tr>
<tr>
<td></td>
<td>➔ Auto source selection function did not detect a input signal correctly. Select the input manually.</td>
<td>p. 18</td>
</tr>
<tr>
<td></td>
<td>➔ There are 49 titles in the disc.</td>
<td>p. 22</td>
</tr>
<tr>
<td>No additional recording can be made.</td>
<td>➔ You cannot add anything to a finalized DVD±R disc.</td>
<td>p. 14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p. 27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Display</th>
<th>Cause/remedy</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disc Error</td>
<td>➔ The drive cannot read or write the disc due to an issue related to the disc, such as scratches, being dirty, low-quality, etc. Try with other disc.</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>➔ If errors occur frequently with any type of new discs, the drive may have a hardware problem. Contact an authorized service center.</td>
<td></td>
</tr>
<tr>
<td>Insert +/- R/RW DISC</td>
<td>➔ The inserted disc may be unsupported type of discs for stand-alone operation. Use a DVD±R or DVD±RW disc.</td>
<td>p. 12</td>
</tr>
<tr>
<td>Format Error</td>
<td>➔ The drive cannot format the disc because of the disc error.</td>
<td>—</td>
</tr>
<tr>
<td>Invalid Operation</td>
<td>➔ You tried to finalize or erase a disc when there is no disc in the drive.</td>
<td>p. 27</td>
</tr>
<tr>
<td></td>
<td>➔ You tried to erase a DVD+R or DVD-R disc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➔ You tried to finalize a DVD+RW disc.</td>
<td></td>
</tr>
</tbody>
</table>

— Continued —
<table>
<thead>
<tr>
<th>Display</th>
<th>Cause/remedy</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recording Prohibited</td>
<td>➔ Copyright protection signal (CGMS or Macrovision) was detected. You cannot record the source.</td>
<td>📘 p. 6</td>
</tr>
<tr>
<td>No Disc</td>
<td>➔ Tray has no disc. Insert a disc.</td>
<td>📘 p. 16</td>
</tr>
</tbody>
</table>
| Insert Blank Disc        | ➔ The disc may have been already recorded on other recordable device that is not compatible with this drive. Use a blank disc.  
                          | ➔ This will appear also when you insert a finalized DVD±R or DVD-RW disc.   | —       |
| Erase All [No]/Yes       | ➔ The DVD±RW disc may have been recorded on other recordable device. If you want to erase the disc, select [Yes]. | 📘 p. 28 |
| Finalize/Error           | ➔ The disc may have been recorded on other recordable device. Try with other disc.  
                          | ➔ The disc may not be a DVD±R or DVD-RW disc.                               | —       |
|                          | ➔ The disc may be damaged for any reason.                                   | —       |
| No Signal                | ➔ Video input signal is not detected. Check if the AV cable is properly connected with the output terminal on the playback device, or check if the connectors are firmly mated.  
                          | ➔ When connecting a digital video camera using an i.LINK cable and the i.LINK cable is disconnected during recording, the drive can no longer detect the signal from the video camera depending on the model. Turn on the digital video camera again.  
                          | ➔ Check if input is correctly selected.                                    | —       |
| Disc Full                | ➔ The disc came to full and recording stopped.                             | —       |