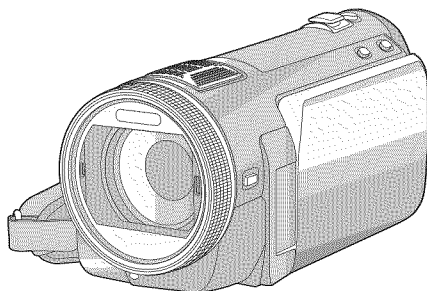# Panasonic®

Operating Instructions
High Definition Video Camera

Model No. **HDC-SDT750PP**

Before connecting, operating or adjusting this product, please read the instructions completely.

∧VCHD ™   ▨ DOLBY DIGITAL 5.1 CREATOR   LEICA DICOMAR   SʾXC

HƆMI   VIErA Link™   ᗱᗪ

For USA and Puerto Rico assistance, please call: 1-800-211-PANA(7262) or, contact us via the web at: http://www.panasonic.com/contactinfo

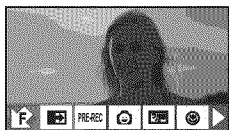For Canadian assistance, please call: 1-800-561-5505 or visit us at www.panasonic.ca

VQT3B18

Recording functions of operation icons

Select the operation icons to add different effects to the images to be recorded.

◇ **Change the mode to [icon] or [icon] .**

1 Touch [icon] to display the operation icons on the screen.

- Touch ► at the bottom right of the screen to change the page and touch [icon] / [icon] to display/not-display the operation icon.

2 (e.g. Backlight compensation)
Select an operation icon.

- Select the operation icon again to cancel the function.
- Refer to the respective pages for canceling the following functions.
  - Smile shot (➜ 64)
  - Built-in flash (➜ 65)
  - Self-timer (➜ 66)
  - Guideline (➜ 67)

Operation icons

Icon	Function
[icon]	Fade*1
[icon]	Intelligent contrast control*1, 2
PRE-REC	PRE-REC*1
[icon]	Smile shot*1
[icon]	Built-in flash*3
[icon]	Red-Eye Reduction*2, 3
[icon]	Self-timer*3
[icon]	Intelligent exposure*2, 3
[icon]	Backlight compensation
[icon]	Soft skin mode*2
[icon]	Tele macro
[icon]	Guideline
[icon]	Color Night Rec*1, 2
[icon]	Headphone volume adjustment*4

*1 Not displayed in Still Picture Recording Mode.
*2 Not displayed in the Intelligent Auto Mode.
*3 Not displayed in Motion Picture Recording Mode.
*4 It is displayed only when a headphone is connected to the headphone output terminal.

- If you turn off the unit or change the mode to [icon] , PRE-REC, Backlight compensation, Color night rec, Self-timer and Tele macro functions are canceled.
- If you turn off the unit, the Fade function is canceled.
- It is possible to set from the menu. (Except for the PRE-REC and Headphone volume adjustment)
- After setting [DISPLAY] to [OFF] if no operation is performed for a few seconds, the operation icon disappears. Touch the screen to display the icon again.

↦ Fade [VIDEO]

When you start recording, the image/audio gradually appears. (Fade in)
When you pause recording, the image/audio gradually disappears. (Fade out)

● The Fade setting is canceled when the recording stops.

■ **To select the color for Fade in/out**

(MENU) : [RECORD SETUP] → [FADE COLOR] → [WHITE] or [BLACK]

(Fade in)

(Fade out)

● The thumbnails of scenes recorded using fade in become black (or white).

Intelligent contrast control [VIDEO]

This brightens parts that are in shadow and difficult to see and suppresses white saturation in bright parts at the same time. Both bright and dark parts can be recorded clearly.

● If there are extremely dark or bright parts or the brightness is insufficient, the effect may not be clear.

PRE-REC [VIDEO]

This prevents you from missing a shot.

This allows recording of the pictures and sound to start approximately 3 seconds before the recording start/stop button is pressed.

● [PRE-REC] appears on the screen.

● **Aim the unit at the subject beforehand.**
● There is no beep sound.
● PRE-REC is canceled in the following cases.
  − If you change the mode
  − If you remove the SD card
  − If you press the MENU button or 1080/60p button
  − If you turn the unit off
  − If you start recording
  − After 3 hours have passed
● After setting PRE-REC, if recording starts in less than 3 seconds, or while the PRE-REC indication flashes within about 3 seconds after initiating the Quick start operation, motion pictures taken 3 seconds before pressing the recording start/stop button cannot be recorded.
● Images displayed on the thumbnail in Playback Mode will differ from the motion pictures displayed at the start of playback.

⊙ Smile shot `PHOTO`

When a smiling face is detected during motion picture recording, the unit automatically records a still picture.

The icon changes each time it is touched.

⊙ **(ON)** → ⊙ᴱ **(Face Recognition)** → **OFF**

⊙ :   The unit records a still picture on detecting a smiling face.

⊙ᴱ :   Still pictures are only recorded when the face of a person registered using Face Recognition (➜ 71) is detected.

OFF: Cancel the setting.

● During Smile Shot recording, the face detected as a smiling face is surrounded by a green frame and ⊙ / ⊙ᴱ are red.

● Smile Shot recording will not work in the following cases. (⊙ / ⊙ᴱ will flash)
  − When there is no SD card inserted
  − When it is set to Manual Focus
  − When the Interval recording is used
  − When [FACE RECOG.] is set to [OFF], or no one is registered (In ⊙ᴱ (Face Recognition) only)

● Depending on the recording conditions (type of smile, camera shake, etc.), the face of the subject may not be detected correctly.

● The number of recording pixels are 13.3M (4864×2736), 8.3M (3840×2160) or 2.1M (1920×1080). (➜ 82)

● When still pictures that have been recorded using the Smile Shot are displayed as thumbnails, the ⊙ appears.

● When the AF/AE tracking function is target locking a face of the subject, still pictures are only recorded if a smiling face is detected on the locked subject. When the Smile Shot function is set to ⊙ᴱ (Face Recognition), it will record only if the face of a subject registered with [FACE RECOG.] is locked as a target.

⚡ Built-in flash `PHOTO`

When the ⬛ button is pressed, the flash is activated and the picture will be recorded. Use the Built-in flash in order to record still pictures in dark places.

Each time the ⚡ icon is selected, the indication changes by one setting in the following order:

⚡ ([ON]) → ⚡A ([AUTO]) → ⊛ ([OFF])

● The unit automatically determines if the flash is necessary even when it has been set to ⊛ by detecting the ambient brightness. (If it determines that the flash is necessary, the ⊛ indication lights up in red.)

■ To adjust the brightness of the flash

(MENU) : **[PICTURE] → [FLASH LEVEL] → desired setting**

[⚡−]: Less bright
[⚡±0]: Normal
[⚡+]: Much brighter

● Set the flash to ⊛ where using a flash is prohibited.
● The light from the flash may be blocked by the lens hood when the lens hood is attached.
● Do not use the flash with the ND filter (optional) or the conversion lens (optional) attached.

● If the ⚡ indication etc. flashes when the ⬛ button is pressed halfway, the flash is not activated.
● The available range of the flash is approx. 1 m to 2.5 m (3.3 feet to 8.2 feet) in dark places.
● Using the flash fixes a shutter speed to 1/500 or slower.

◉ Red-Eye Reduction `PHOTO`

Reduces the phenomena where human eyes become red from flashes.

● The flash is activated 2 times.
● The red-eye phenomenon tends to appear in certain recording conditions and more with some people than with others.
● When faces are detected in the Intelligent Auto Mode, the Red-Eye Reduction is set to on.

⏱ Self-timer `PHOTO`

This is for recording still pictures using the timer.
Each time the ⏱ icon is selected, the indication changes by one setting in the following order:
⏱10 (Records after 10 seconds) → ⏱2 (Records after 2 seconds) → setting canceled

- When the ⚫ button is pressed, a still picture is recorded after the ⏱10 or ⏱2 display and the recording lamp flashes for the time which has been set. After recording, the Self-timer is canceled.
- In Auto Focus Mode, if the ⚫ button is pressed halfway once and then fully, the lens focuses on the subject when the button is pressed halfway. If the ⚫ button is pressed fully all at once, the lens focuses on the subject just before recording.

To stop the timer midway through
Press the MENU button.

- Setting the Self-timer to ⏱2 is a good way to prevent image shake when the ⚫ button is pressed while using a tripod etc.

i⚫ Intelligent exposure `PHOTO`

This brightens dark areas so the image can be recorded clearly.

- If there are extremely dark parts or the brightness is insufficient, the effect may not be clear.

🔳 Backlight compensation `VIDEO` `PHOTO`

This makes the image brighter to prevent darkening of a backlit subject.

⊙ Soft skin mode `VIDEO` `PHOTO`

This makes skin colors appear softer for a more attractive appearance.
This is more effective if you record a person closely from the torso up.

- If the background or anything else in the scene has colors similar to the skin color, they will also be smoothed.
- If the brightness is insufficient, the effect may not be clear.
- If you record a person in the distance, the face may not be recorded clearly. In this case, cancel Soft Skin Mode or zoom in on the face (close-up) to record.

⊛ Tele macro `VIDEO` `PHOTO`

A more impressive image can be obtained by focusing on the object only in close-up and shading off the background.
- The unit can focus on the subject at a distance of approx. 70 cm (28″).
- If the magnification is 12× or less, then it is automatically set to 12×.

- Tele Macro function is canceled when the zoom magnification becomes lower than 12×.

▦ Guideline [VIDEO] [PHOTO]

You can check if the image is level while recording or playing back motion pictures and still pictures. The function can also be used to estimate the balance of the composition.

It will switch every time the icon is touched.

▤ → ▦ → ▦ → Setting canceled
● It is possible to set from the quick menu. (➜ 41)
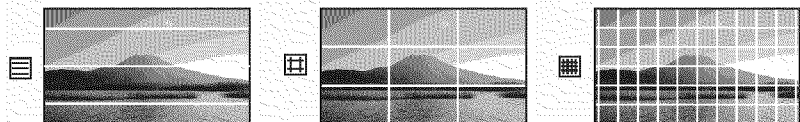
● The guidelines do not appear on the images actually recorded.

■ Displaying Guidelines at playback

● **Change the mode to** ▶ **and touch the play mode select icon to select [SD CARD]/ [1080/60p] or [SD CARD]/[AVCHD]. (➜ 37)**

(MENU) : **[VIDEO SETUP] → [GUIDE LINES] → desired setting**
● To cancel the Guideline function during playback, set to [OFF].
● It cannot be set while in Still Picture Playback Mode.

✹ Color Night Rec [VIDEO] [PHOTO]

This function allows you to record color images in very low light situations. (Minimum required illumination: approx. 1 lx)

● **Recorded scene is seen as if frames were missed.**
● If set in a bright place, the screen may become washed out for a while.
● Bright dots that are usually invisible may be seen, but this is not a malfunction.
● Using a tripod is recommended.
● In darker areas, Auto Focus may focus a bit slower. This is normal.

∩ Headphone volume adjustment [VIDEO]

Adjust the volume of the headphone while recording. (When the LCD monitor is in use)

▲ : Increase the volume
▼ : Decrease the volume
● Actual volume to be recorded does not change.

Recording functions of menus

[SCENE MODE] [VIDEO] [PHOTO]

When you record images in different situations, this mode automatically sets optimum shutter speeds and apertures.
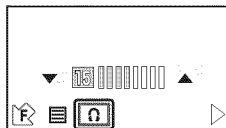- **Change the mode to 🎥 or 📷 .**

(MENU) : [RECORD SETUP] → [SCENE MODE] → desired setting

[OFF]:	Cancel the setting
🏃 Sports:	To make fast moving scenes less shaky with slow playback and pause of playback
👤 Portrait:	To make people stand out against the background
💡 Spotlight:	Improved quality when subject is brightly illuminated.
❄ Snow:	Improved image quality when shooting in snowy locations.
🏖 Beach:	To make blue in the sea or sky vibrant
🌅 Sunset:	To make red in the sunrise or sunset vibrant
🎆 Fireworks:	To capture the fireworks in the night sky beautifully
🏔 Scenery:	For spatial scenery
🌃 Night scenery:	To capture the evening or night scenery beautifully.
🕯 Low light:	For dark scenes, such as at dusk (In Motion Picture Recording Mode only)
👤 Night portrait:	To capture a person and the background brightly. (In Still Picture Recording Mode only)

- **(Sports/Portrait/Spotlight/Snow/Beach/ Sunset/Scenery)**
  - The shutter speed is 1/8 or more in Still Picture Recording Mode.
- **(Sunset/Low light)**
  - The shutter speed is 1/30 or more (When [DIGITAL CINEMA] is [ON], it is 1/24 or more.) in Motion Picture Recording Mode.
- **(Sunset/Fireworks/Scenery/Night scenery)**
  - Image may get blurry when a close object is recorded.

- **(Sports)**
  - During normal playback, the image movement may not look smooth.
  - Color and screen brightness may change under indoor lighting.
  - If the brightness is insufficient, the Sports Mode does not function. The 🏃 display flashes.
- **(Portrait)**
  - Color and screen brightness may change under indoor lighting.

- **(Fireworks)**
  - The shutter speed is 1/30.
  - Image may get washed out when recorded in bright surroundings.

- **(Night scenery/Night portrait)**
  - The shutter speed is 1/2 or more in Still Picture Recording Mode.
  - Using a tripod is recommended.

- **(Night portrait)**
  - The flash is set to [ON].

[ZOOM MODE] ▐ VIDEO ▌ ▐ PHOTO ▌

Set the maximum zoom ratio for the Motion Picture Recording Mode.
- **Change the mode to** 🎥 .

(MENU) : [RECORD SETUP] → [ZOOM MODE] → desired setting

[Opt.Zoom 12×]:	Optical zoom only (Up to 12×)
[i.Zoom 18×]:	This zoom function allows you to maintain high-definition picture quality (Up to 18×)
[D.Zoom 30×]:	Digital zoom (Up to 30×)
[D.Zoom 700×]:	Digital zoom (Up to 700×)

- The larger the digital zoom magnification, the more the image quality is degraded.

- This function cannot be used in Still Picture Recording Mode.

[REC MODE] ▐ VIDEO ▌

Switch the picture quality of the motion pictures to be recorded.
- **Change the mode to** 🎥 .

(MENU) : [RECORD SETUP] → [REC MODE] → desired setting - It is possible to set from the quick menu. (→ 41)

[HA]/[HG]/[HX]/[HE]

Ⓐ ◄─────────────► Ⓑ

Ⓐ Favors image quality
Ⓑ Favors recording time

- **Recordable time using the battery (→ 21)**
- This function's default setting is [HG] mode.
- Please refer to page 156 about approximate recordable time.
- When the unit is moved a lot or moved quickly, or when a fast-moving subject is recorded (particularly when recording in [HE] mode), mosaic-type noise may appear at playback.

[TIME LAPSE REC] `[VIDEO]`

A scene that moves slowly for long period of time is recorded frame by frame with an interval, and is recorded as a short time motion picture.
A frame is recorded with a set recording interval.
30 frames will make up motion picture of 1 second.
● **Change the mode to** 🎥 .
● **Set [ZOOM MODE] to [Opt.Zoom 12×]. (➜ 69)**

(MENU) : **[RECORD SETUP]** → **[TIME LAPSE REC]** → **desired setting**
● It is possible to set from the quick menu. (➜ 41)

[OFF]:
Cancel the setting.
[1 SECOND]/[10 SECONDS]/[30 SECONDS]/[1 MINUTE]/[2 MINUTES]:
Change the recording interval.

● ⟷ appears on the screen.
● After recording, the setting of interval recording is canceled.
● Audio cannot be recorded.

Setup example	Setup time (recording interval)	Recording time	Recorded time
Sunset	1 s	Approx. 1 h	Approx. 2 min
Blooming	30 s	Approx. 3 h	Approx. 12 s

● Maximum recordable time is 12 hours.

● Still picture recording cannot be used.
● This function cannot be used in the 1080/60p recording mode.
● Recording mode cannot be changed when the Interval recording is set.
● If you turn off the unit or change the mode to ▶ , this function is canceled.
● The shortest motion picture recording time is 1 second.
● Color balance and focus may not be adjusted automatically depending on light sources or scenes. If so, manually adjust these settings. (➜ 87, 89)

[DIGITAL CINEMA] [VIDEO]

Use this function to record an image with vivid color, like an image on a movie film.
- Change the mode to 🎥 .
- Switch to Manual Mode. (→ 86)
- Set [ZOOM MODE] to [Opt.Zoom 12×]. (→ 69)
- Set [REC MODE] to [HA] or [HG]. (→ 69)

(MENU) : [RECORD SETUP] → [DIGITAL CINEMA] → [ON]

- The shutter speed is 1/48 or more. (When [AUTO SLOW SHTR (2D)] is [ON], it is 1/24 or more.)

- This function cannot be used in the Intelligent Auto Mode or 1080/60p recording mode.
- The images may not appear smooth.

[FACE RECOG.] [VIDEO] [PHOTO]

Face Recognition is a function for finding faces that resemble faces which have already been registered and automatically prioritizing focus and exposure for those faces. This function makes it possible to keep the face of your loved ones in focus even when they are at the back or on the end of a line in a group picture.
- Change the mode to 🎥 or 📷 .

(MENU) : [RECORD SETUP] → [FACE RECOG.] → desired setting

[OFF]:	Cancel the setting
[ON]:	The Face Recognition function is available
[SET]:	Face Recognition registration/editing/cancellation

■ Registering a face for face recognition

[RECORD SETUP] → [FACE RECOG.] → [SET] → [SET]

● Up to a maximum of 6 people can be registered.

1 **Align the person's face with the guide.**
● Take a picture of the persons face from the front,
   ensuring that their hair does not hide the outline of
   their face, their eyes or their eyebrows.

2 **Touch [REC] or press the ⬤ button fully.**
● Touch [ENTER].
● It may not be possible to register a face depending
   on the recording conditions. In this case, try
   recording the face again.

3 **Entering the person's name.**
● Touch the text entry icon in the center of the screen
   and enter the name.
● After entering the name, touch [Enter].

Ⓐ Guide
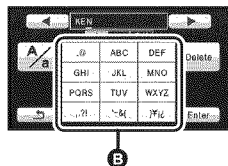
Ⓑ Text entry icon

Entering text

Icon	Description of operation
[A] etc.	Enters a character.
◀	Moves cursor left.
▶	Moves cursor right.
[A/a]	Switches between [A]/[a] (alphabet) and [&/1] (symbols/numbers).
[Delete]	Deletes a character. Deletes the previous character if the cursor is in an empty space.
[Enter]	Ends text entry.

● A maximum of 9 characters can be entered.

4 **Touch [ENTER] to end registration.**
● Touch [EXIT].

■ Changing the information of a registered person

1 Select the menu.

[RECORD SETUP] → [FACE RECOG.] → [SET] → [EDIT]

2 Touch the desired item to enter the setting.

● Up to 3 face shots can be registered. To additionally register or to change/delete the registered face shots, touch [☐] or the face shot.

● If you register several face shots of the same person (up to 3 face shots can be registered), each with a different facial expression or different background, it is more likely that face recognition will be successful.
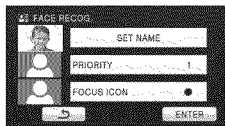
[SET NAME]:
Change the name.

[PRIORITY]:
Focus and exposure will be set in priority according to the registration order setting from the first person. Target will be locked according to the registration order setting from the first person when AF/AE tracking is active.

● To change the registration order, select the person you wish to change.
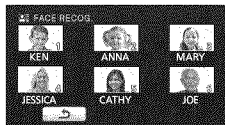
[FOCUS ICON]:
This changes the focus indication icon that appears during still picture recording. (Only displayed when Face Recognition is in use.)

● Touch the icon you wish to have displayed.
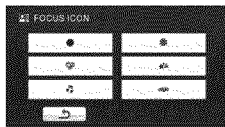
3 Touch [ENTER].

■ Canceling a registered person

1 Select the menu.

[RECORD SETUP] → [FACE RECOG.] → [SET] → [DELETE] or [DELETE ALL]

● Touching [DELETE ALL] cancels all the registered people.

2 (When [DELETE] is selected)
Touch the person to cancel.

● When touched, the person is selected and 𝕰 is displayed. To cancel the selected person, touch again.

● Touch [ENTER].

● Since face recognition searches for faces that resemble the registered faces, there is no guarantee of positive recognition.

● It may not be possible to correctly recognize a person who has been registered due to differences in facial expression and environment.

● Perform the registration again if recognition becomes unstable in cases such as when facial features change with age.

[NAME DISPLAY] [VIDEO] [PHOTO]

When a registered person is detected by face recognition during recording, the name registered for that person is displayed.
• **Change the mode to** 🎥 **or** 📷 .

> (MENU) : [RECORD SETUP] → [NAME DISPLAY] → desired number

[OFF]/[1]/[2]/[3]

• Displayed name will disappear after a while.
• It is displayed according to the registration order setting from the first person.
• This function is not displayed during the face-to-face recording or Playback Mode.

[FACE FRAMING] [VIDEO] [PHOTO]

Detected faces appear with frames.
• **Change the mode to** 🎥 **or** 📷 .

> (MENU) : [RECORD SETUP] → [FACE FRAMING] → desired setting

[OFF]:
Cancel the setting.
[PRIMARY]:
Only the prioritized face framing is displayed.
[ALL]:
All face detection framings are displayed.

• Up to 15 frames are indicated. Larger faces and faces nearer to the center of the screen take preference over others. When [FACE RECOG.] is [ON] registered people are given priority.

■ Prioritized face framing

Prioritized face framing is displayed as orange frames. Focus and adjustment of brightness will be performed against the prioritized face framing.
• Prioritized face framing is only displayed in Intelligent Auto Mode.
• The white frame is for face detection only.
• Focus will be set to prioritized face framing and the brightness adjusted when the unit is set to Portrait mode in Intelligent Auto Mode. Focus will be set to prioritized face framing when the unit is in Spotlight or Low light modes.
• Focus will be set to prioritized face framing when the 📷 button is pressed halfway when recording still pictures. Prioritized face framing will turn to green when the focus is set.

[AUTO SLOW SHTR (2D)] [VIDEO] [PHOTO]

You can record bright pictures even in dark places by slowing the shutter speed.
● **Change the mode to** 🎥 .
● **Switch to Manual Mode. (➡ 86)**

(MENU) : **[RECORD SETUP] → [AUTO SLOW SHTR (2D)] → [ON]**

● The shutter speed is set to 1/30 or more depending on the surrounding brightness.

● This function cannot be used when using the 3D Conversion Lens.
● This function cannot be used in Still Picture Recording Mode.
● When the shutter speed becomes 1/30, the screen may be seen as if frames are missed and afterimages may appear.

[AUTO SLOW SHTR (3D)] [VIDEO]

This auto slow shutter function is only used with the 3D Conversion Lens.

(MENU) : **[RECORD SETUP] → [AUTO SLOW SHTR (3D)] → [ON]**

● For details, refer to [AUTO SLOW SHTR (2D)].

● This function's default setting is [ON].
● When a 3D Conversion Lens is used, the recording scene will become darker. We recommend setting this function to [ON].

[AGS] [VIDEO]

If the unit continues to be tilted upside down from the normal horizontal position while recording motion pictures, it is automatically put into recording pause.
● **Change the mode to** 🎥 .

(MENU) : **[RECORD SETUP] → [AGS] → [ON]**

● The AGS function may activate and cause the unit to pause the recording if you are recording a subject right above or right below you.

[Digital Cinema Color] $\boxed{\text{VIDEO}}$

Recording motion pictures with more vivid colors, using x.v.Color™ technology.
- **Change the mode to** 🎥 .
- **Switch to Manual Mode. (➜ 86)**

> (MENU) : **[RECORD SETUP]** → **[Digital Cinema Color]** → **[ON]**

- For more realistic colors, use an HDMI mini cable with a TV that supports the x.v.Color™.

- This function cannot be used when switched to Intelligent Auto Mode.
- **When motion pictures recorded while this function is turned [ON] are played back with a TV not compatible with x.v.Color™, colors may not be reproduced properly.**
- To play back images recorded in Digital cinema color with vivid colors of wider color ranges, a device compatible with x.v.Color™ is required. When these images are played back with devices other than ones compatible with x.v.Color™, it is recommended to record the images after this function is turned [OFF].
- x.v.Color™ is a name for devices that are compatible with the xvYCC format, an international standard for expanded color in motion pictures, and that follow the rules for signal transmission.

[SHOOTING GUIDE] $\boxed{\text{VIDEO}}$

Message is displayed when this unit is moved rapidly.
- **Change the mode to** 🎥 .

> (MENU) : **[RECORD SETUP]** →
> **[SHOOTING GUIDE]** → **[ON]**

When "CAMERA PANNING IS TOO FAST." appears, move the unit slowly while recording.
- **Set to [OFF] to turn off the message indication.**

- Message will not appear while pausing the recording. (Message will appear even if it is pausing the recording if [DEMO MODE] is set to [ON].)
- In some recording conditions, messages may not appear.

[WIND NOISE CANCELER] [VIDEO]

This will reduce the wind noise coming into the built-in microphones while maintaining the realism.

● Change the mode to ▦ .
● Switch to Manual Mode. (→ 86)

> (MENU) : [RECORD SETUP] → [WIND NOISE CANCELER] → [ON]

● This function's default setting is [ON].
● When switching to Intelligent Auto Mode, [WIND NOISE CANCELER] is set to [ON], and the setting cannot be changed.
● You may not see the full effect depending on the recording conditions.
● If wind sound cannot be reduced with the Wind noise canceler function alone, set [BASS SETTING] to [LOWCUT]. (→ 79)

[MIC SETUP] [VIDEO]

Recording setting of the built-in microphone can be adjusted.

● Change the mode to ▦ .
● Switch to Manual Mode. (→ 86)

> (MENU) : [RECORD SETUP] → [MIC SETUP] → desired setting

[SURROUND]:	Sound is recorded with 5.1 ch surround microphone.
[ZOOM MIC]:	Directivity of the microphone is synchronized with the zoom operation. Sounds near the front of the unit are recorded more clearly if you zoom in (close-up) and surrounding sounds are recorded more realistically if you zoom out (wide angle).
[FOCUS MIC]:	Directivity of the center is enhanced for recording audio near the front of the unit more clearly.
[STEREO MIC]:	Sound from two directions is recorded in 2 ch by forward-facing stereo microphones.

● If you wish to record higher quality sound and maintain realism even when zooming in, for instance, when recording a music recital, we recommend setting [MIC SETUP] to [SURROUND].

[MIC LEVEL] [VIDEO]

When recording, the input level from the built-in microphones and the external microphone terminal can be adjusted.
● Change the mode to ⚏.
● Switch to Manual Mode. (➜ 86)
1 **Select the menu.**

(MENU) : [RECORD SETUP] → [MIC LEVEL] → desired setting

[AUTO]:	AGC is activated, and the recording level is adjusted automatically.
[SET+🔲🔲🔲]/[SET]:	The desired recording level can be set.

● It is possible to select the setting from the quick menu in Manual Mode. (➜ 41) The microphone level returns to the setting adjusted previously, and it cannot be set from the quick menu.

2 (When [SET+🔲🔲🔲]/[SET] is selected)
   Touch ◄/► to adjust the microphone input level.
● Touch 🔲🔲🔲 to activate/disactivate AGC.
   When AGC is activated, the icon is surrounded by yellow and the amount of sound distortion can be reduced. When AGC is disactivated, natural recording can be performed.
● Adjust the microphone input level so that the last 2 bars of the gain value are not red. (Otherwise, the sound is distorted.) Select a lower setting for microphone input level.

3 **Touch [ENTER] to determine the microphone input level and then touch [EXIT].**
● □□□■■■■■ (Microphone input level meter) appears on the screen.
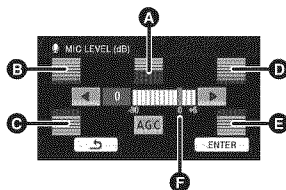
Ⓐ Center
Ⓑ Front left
Ⓒ Back left
Ⓓ Front right
Ⓔ Back right
Ⓕ Microphone input level

● When switching to Intelligent Auto Mode, the setting is fixed to [AUTO] and cannot be changed.
● When [MIC SETUP] is [ZOOM MIC], the volume will be different depending on the zoom rate.
● When [MIC SETUP] is set to [STEREO MIC] or external microphone input is used, the sound is stereo (2 ch) and only the front-left and front-right input level meters function.
● The microphone input level meter shows the largest volume for the microphones.
● You cannot record with the audio completely muted.

[BASS SETTING] [VIDEO]

Change the lower setting of the built-in microphone according to your choice.
● **Change the mode to** 🎥 .
● **Switch to Manual Mode. (➜ 86)**

> (MENU) : **[RECORD SETUP] → [BASS SETTING] → desired setting**

[0dB]/[+3dB]/[+6dB]/[LOWCUT]

● Normally set to [0dB].
● Select [+3dB] or [+6dB] to get strong power feeling at bass level.

[PICTURE ADJUST] [VIDEO] [PHOTO]

Adjust the quality of the image while recording.
Adjust by outputting to a TV while adjusting the quality of the image.
● **Change the mode to** 🎥 **or** 📷 .
  (This setting is retained when you change between Motion Picture Recording Mode and
  Still Picture Recording Mode)
● **Switch to Manual Mode. (➜ 86)**
1   Select the menu.

> (MENU) : **[RECORD SETUP] → [PICTURE ADJUST]**

2   Touch the desired setting items.

[SHARPNESS]:	Sharpness of the edge
[COLOR]:	Depth of the color of the image
[EXPOSURE]:	Brightness of the image
[WB ADJUST]:	Picture color balance

3   Touch ◀/▶ to adjust settings.
4   Touch [ENTER].

● Touch [EXIT] or press the MENU button to complete the settings.
● ✴ appears on the screen.

[ZEBRA] | VIDEO | PHOTO

Parts where white saturation (color saturation) is likely to occur (extremely brightly lit or shiny parts) are displayed with diagonal lines (zebra pattern).
● **Change the mode to 📹 or 📷 .**
● **Switch to Manual Mode. (➜ 86)**

(MENU) : **[RECORD SETUP] → [ZEBRA] → [ON]**
● It is possible to set from the quick menu in Manual Mode. (➜ 41)

Ⓐ Zebra pattern

● You can record an image with little white saturation if you manually adjust the shutter speed or brightness (iris/gain) (➜ 88).
● The zebra pattern does not appear on the images actually recorded.

[LUMINANCE] | VIDEO | PHOTO

Displays the luminance level of the center of the screen (luminance display frame) in %. It makes the adjustment of the brightness of the object easier, by checking the luminance level of the object, when recording same object in different surroundings.
Adjust the brightness using [IRIS]. (➜ 88)
● **Change the mode to 📹 or 📷 .**
● **Switch to Manual Mode. (➜ 86)**

(MENU) : **[RECORD SETUP] → [LUMINANCE] → desired setting**
● It is possible to set from the quick menu in Manual Mode. (➜ 41)

[OFF]:
Cancel the setting.
[ALWAYS]:
Constantly display.
[ON ADJUST]:
Display only when [IRIS] is adjusted. (➜ 88)

Ⓐ Luminance display frame
Ⓑ Luminance level
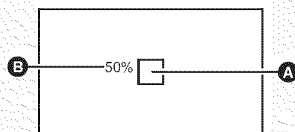
● Luminance level is displayed between [0%] and [99%]. It will be displayed as [99%↑] when it is over 99%.

● Luminance is displayed while adjusting [IRIS] even if [DISPLAY] is set to [OFF].

[HISTOGRAM]   [VIDEO] [PHOTO]

A graph with brightness as horizontal axis and number of pixels at that brightness as vertical axis is displayed. It is possible to determine the exposure of the whole image by looking at the distribution in the graph.
Adjust the brightness using [IRIS]. (➜ 88)
● **Change the mode to 🎥 or 📷 .**
● **Switch to Manual Mode. (➜ 86)**

┌───┐
│ (MENU) : **[RECORD SETUP]** → **[HISTOGRAM]** → **desired setting**   │
│ ● It is possible to set from the quick menu in Manual Mode. (➜ 41)   │
└───┘

[OFF]:   ■ **Example of the display**
Cancel the setting.
[ALWAYS]:
Constantly display.
[ON ADJUST]:
Display only when [IRIS] is adjusted. (➜ 88)

Ⓐ Normal   Ⓑ ◄─────────── Ⓐ ───────────► Ⓒ
Ⓑ Dark
Ⓒ Bright

● Histogram is displayed while adjusting [IRIS] even if [DISPLAY] is set to [OFF].

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[PICTURE SIZE]

The higher the number of pixels, the higher the clarity of the picture when printing.
● Change the mode to 🔾 .

```
(MENU) : [PICTURE] → [PICTURE SIZE] → desired setting
● It is possible to set from the quick menu. (➜ 41)
```

● The number of recording pixels that can be set changes depending on selected screen aspect ratio. (➜ 83)

■ Picture size and Maximum zoom ratio

Picture size		Aspect ratio	Extra optical zoom (➜ 51)
[12.2M]	4032×3024	4:3	–*
[7.7M]	3200×2400		13.2×
[4.9M]	2560×1920		16.5×
[0.3M]	640×480		25×
[14.2M]	4608×3072	3:2	–*
[8.6M]	3600×2400		13.2×
[5.5M]	2880×1920		16.5×
[13.3M]	4864×2736	16:9	–*
[8.3M]	3840×2160		13.2×
[5.3M]	3072×1728		16.5×

* Extra optical zoom cannot be used. The maximum zoom magnification is 12×.

■ Picture size in Motion Picture Recording Mode

● Change the mode to 🎥 .

```
(MENU) : [PICTURE] → [PICTURE SIZE]
→ desired setting
● It is possible to set from the quick
  menu. (➜ 41)
```

Picture size		Aspect ratio
[13.3M]	4864×2736	16:9
[8.3M]	3840×2160	
[2.1M]	1920×1080	

● This function's default settings are [14.2M] in Still Picture Recording Mode and [13.3M] in Motion Picture Recording Mode.
● Please refer to page 157 for details about the number of recordable pictures.
● The recording will become longer depending on the recording pixels.

[QUALITY]

PHOTO

Selecting the picture quality.
● **Change the mode to** 🎥 **or** 📷 .

> 📋 : [PICTURE] → [QUALITY] → desired setting

🖼️ : Still pictures with a high picture quality are recorded.

🖼️ : Priority is given to the number of still pictures recorded. Still pictures are recorded in normal picture quality.

[ASPECT RATIO]

PHOTO

This allows you to select the aspect ratio of the pictures to suit printing or the playback method.
● **Change the mode to** 📷 .

> 📋 : [PICTURE] → [ASPECT RATIO] → desired setting

4:3: Aspect ratio of 4:3 television

3:2: Aspect ratio of conventional film camera or prints (such as L-size print)

16:9: Aspect ratio of high-definition television, etc.

● This function's default setting is [3:2].
● When the aspect ratio is set to [4:3] or [3:2], black bands may appear on the left and right of the screen.
● The edges of still pictures recorded on this unit with a 16:9 aspect ratio may be cut at printing. Check the printer or photo studio before printing.

[HI-SPEED BURST] [PHOTO]

Recording is done continuously at the rate of 60 still pictures per second.
Use this function to record an object with fast movement.
● **Change the mode to 📷 .**

1 Select the menu.

(MENU) : **[PICTURE] →**
[HI-SPEED BURST] → desired setting

[OFF]:
Cancel the setting.
[60 frames/sec]:
180 still pictures are recorded
continuously at the rate of 60 per second.
The picture size is 2.1M (1920×1080).

2 Press the 📷 button.
● 🔲 flashes in red during recording.
● First press the 📷 button halfway, then
press it fully to set the focus and record. It
will automatically focus if you press fully
once, so it is convenient when recording
objects moving back and forth.

3 Touch [Record] or [Delete].

[Record]: Pictures are stored.
[Delete]: All pictures are deleted.

4 (When [Record] is selected in step 3)
Touch [REC ALL] or [SELECT].
[REC ALL]: All pictures are stored.
[SELECT]: Pictures are stored by
specifying range.

5 (When [SELECT] is selected in step 4)
**Touch the range of pictures that
will be stored.**
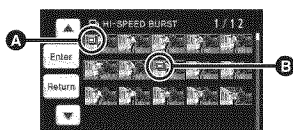
Ⓐ Start point*
Ⓑ Finish point

● Previous (Next) page is displayed by
touching [▲]/[▼] .
* Only select the picture for start point if only
1 picture is to be stored.
● A confirmation message is displayed
when [Enter] is touched after selecting the
start point and finish point.
Touch [YES] to store the pictures.

● If you turn off the unit or change the mode, this function is canceled.
● The maximum number of times you can record on a media is 15.
(In the case of SD cards it is the maximum number of recordable scenes per card.)
● Color balance and brightness on the screen may change with some light sources such as
fluorescent lamps.
● Image quality is different from ordinary still picture recording.

[AF ASSIST LAMP]   [PHOTO]

Illuminating the subject makes it easier for the camera to focus when recording in low light conditions that make focusing difficult.
● **Change the mode to** 📷 **.**
● **Switch to Manual Mode. (➜ 86)**

(MENU) : **[PICTURE] → [AF ASSIST LAMP] → [AUTO]**

● The available distance of the AF assist lamp is approx. 1.5 m (5 feet).

● A conversion lens (optional) or the 3D Conversion Lens (supplied) can block the AF assist lamp, and it will become harder to adjust the focus.
● When switching to Intelligent Auto Mode, the setting is fixed to [AUTO] and cannot be changed.

[SHTR SOUND]   [PHOTO]

You can add a shutter sound when recording still pictures.
● **Change the mode to** 📷 **.**

(MENU) : **[PICTURE] → [SHTR SOUND] → desired setting**

[OFF]:   Cancel the setting.

🔉 :   Volume low

🔊 :   Volume high

● No shutter sound is emitted in Motion Picture Recording Mode.

8 Manual recording

The operation sequence differs for the LCD monitor and viewfinder.

◇ **Change the mode to 🎥 or 📷 .**

(The manual focus, white balance, shutter speed, brightness (Iris and Gain) settings are retained when you change between Motion Picture Recording Mode and Still Picture Recording Mode)

Press the iA/MANUAL button or CAMERA FUNCTION button to switch to Manual Mode.

● MNL appears on the screen.

CAMERA
FUNCTION
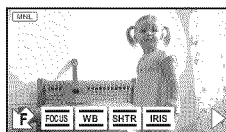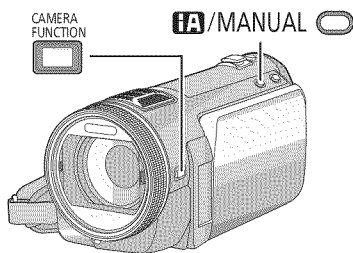
iA/MANUAL

FOCUS	Focus (➜ 89)
WB	White balance (➜ 87)
SHTR	Manual shutter speed (➜ 88)
IRIS	Iris adjustment (➜ 88)

■ **When using the LCD monitor**

1 Touch the desired item to be set.

2 Touch ▲/▼ to enter the selection.
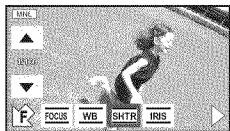
● Press the iA/MANUAL button to cancel manual setting.
● Touch ► to change the page and the manual icon appears or disappears each time 🔧 / 📷 is touched.

■ **When using the viewfinder**

1 Press the CAMERA FUNCTION button to select the desired item.

● Selected item changes whenever the CAMERA FUNCTION button is pressed.

2 Rotate the multi manual ring to select the setting and press the CAMERA FUNCTION button to enter the setting.
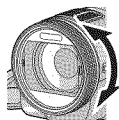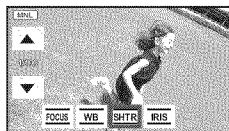
● Zoom operation cannot be done using the multi manual ring during setting.

White balance

VIDEO | PHOTO

Automatic white balance function may not reproduce natural colors depending on the scenes or lighting conditions. If so, you can adjust the white balance manually.

- **Press the iA/MANUAL button or CAMERA FUNCTION button to switch to Manual Mode. (→ 86)**
- **For how to perform the settings when using the viewfinder, refer to page 86.**

1 Touch [WB].
2 Touch ▲/▼ to select White balance mode.
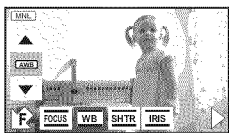
- Select the optimal mode by confirming the color on the screen.

Icon	Mode/Recording conditions
AWB	**Auto white balance adjustment**
☀	**Sunny mode** Outdoors under a clear sky
☁	**Cloudy mode** Outdoors under cloudy sky
❄1	**Indoor mode 1** Incandescent light, video lights like in the studio, etc.
❄2	**Indoor mode 2** Color fluorescent lamps, sodium lamps in gymnasiums etc.
✉	**Manual adjustment mode** ● Mercury-vapor lamps, sodium lamps, some fluorescent lights ● Lights used for wedding receptions at hotels, stage spotlights in theaters ● Sunrise, sunset, etc.

- To return to auto setting, set to **AWB** or press the iA/MANUAL button again.

■ To set the white balance manually

1. Select ✉, fill the screen with a white subject.
2. Touch and set the blinking ✉.
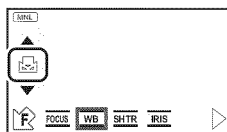
- When using the viewfinder, press and hold the CAMERA FUNCTION button.
- When the screen turns black instantly and the ✉ display stops flashing and then lights constantly, the setting is complete.
- If the ✉ display continues flashing, the white balance cannot be set. In this case, use other White balance modes.

- When the ✉ display flashes, the manual white balance previously adjusted is stored. Whenever recording conditions change, re-set the white balance.
- When setting both the white balance and the iris/gain, set the white balance first.
- **AWB** is not displayed on the screen when **AWB** is being set.

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Manual shutter speed/iris adjustment

Shutter Speed:
Adjust it when recording fast-moving subjects.
Iris:
Adjust it when the screen is too bright or too dark.

● **Press the iA/MANUAL button or CAMERA FUNCTION button to switch to Manual Mode. (➔ 86)**
● **For how to perform the settings when using the viewfinder, refer to page 86.**

1 **Touch [SHTR] or [IRIS].**

2 **Touch ▲/▼ to adjust settings.**

SHTR **Shutter speed:**
1/60 to 1/8000
● If [AUTO SLOW SHTR (2D)] is set to [ON], the shutter speed will be set between 1/30 and 1/8000.
● If [DIGITAL CINEMA] is set to [ON], the shutter speed will be set between 1/48 and 1/8000. (When [AUTO SLOW SHTR (2D)] is set to [ON], the range is 1/24 to 1/8000.)
● The shutter speed closer to 1/8000 is faster.
● The shutter speed will be set between 1/2 and 1/2000 in Still Picture Recording Mode.

IRIS **Iris/Gain value:**
CLOSE ↔ (F16 to F1.7) ↔ OPEN ↔ (0dB to 18dB)
● Value closer to [CLOSE] darkens the image.
● Value closer to [18dB] brightens the image.
● When the iris value is adjusted to brighter than [OPEN], it changes to the gain value.
● To return to auto setting, press the iA/MANUAL button again.

● When setting both the shutter speed and the iris/gain value, set the shutter speed and then set the iris/gain value.

Manual shutter speed adjustment
● When the shutter speed is set lower than 1/15 in the Still Picture Recording Mode, using a tripod is recommended. Also, white balance cannot be set. The shutter speed will be set to 1/30 when the unit is turned on again or when the Quick start is performed.
● You may see a band of light around an object that is shining very bright, or highly reflective.
● During normal playback, image movement may not look smooth.
● If you record an extremely bright object or record under indoor lighting, color and screen brightness may change or a horizontal line may appear on the screen. In this case, record in the Intelligent Auto Mode or set the shutter speed to 1/60 in areas where the power supply frequency is 60 Hz, or 1/100 in areas of 50 Hz.

Manual iris/gain adjustment
● Luminance level and histogram are displayed during the iris adjustment. (➔ 80, 81)
● If the gain value is increased, the noise on the screen increases.
● Depending on the zoom magnification, there are iris values that are not displayed.

Recording with Manual focus

Perform focus adjustments using the multi manual ring.
If auto focusing is difficult due to the conditions, then use Manual Focus.

◇ **Change the mode to 📹 or 📷 .**

- Press the iA/MANUAL button or CAMERA FUNCTION button to switch to Manual Mode. (➔ 86)
- For how to perform the settings when using the viewfinder, refer to page 86.

iA/MANUAL ⬤

CAMERA FUNCTION
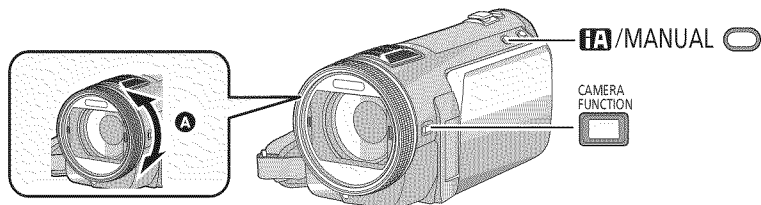
Ⓐ Rotate the multi manual ring to adjust the focus.

1 (When MF assist function is used)
Select the menu.

(MENU) : [RECORD SETUP] →
[MF ASSIST] → [ON]
- It is possible to set from the quick menu. (➔ 41)

- Touch 📐 to display the manual icon.

2 Touch [FOCUS].

3 Touch [MF] to change to Manual Focus.
- MF appears on the screen.

4 Adjust the focus by rotating the multi manual ring.

Ⓐ Part displayed in blue
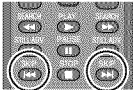
The in-focus area is displayed in blue. The normal screen returns approximately 2 seconds after you finish bringing the subject into focus.
- When [MF ASSIST] is [OFF], the blue area is not displayed.
- To restore Auto Focus, touch [AF] in step 3 or press the iA/MANUAL button again.
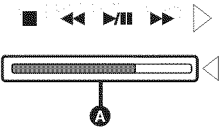
- When adjusting the focus, you cannot zoom using the multi manual ring.
- The blue display does not appear on the images actually recorded.

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1 **Playback Operations**

Motion picture playback using operation icon

VIDEO

For details on the basic playback operations, refer to page 37.

Playback operation	Playback display	Operating steps
Fast forward/ rewind playback	**During Playback** ■ ◀◀ ▶/❙❙ ▶▶ ▷	Touch ▶▶ during playback to fast forward. (Touch ◀◀ to rewind.) ● The fast forward/rewind speed increases if you touch ▶▶/◀◀ again. (The display on the screen changes from ▶▶ to ▶▶▶.) ● Normal playback is restored when you touch ▶/❙❙.
Skip playback (to the start of a scene)		Press the ❙◀◀ or ▶▶❙ button during playback. (Operation is possible with the remote control only.)
Slow-motion playback	**During Pause** ■ ◀❙❙ ▶/❙❙ ❙❙▶ ▷ ● When the operation icon disappears, touch the screen to display the icon again.	With the playback paused, continue touching ❙❙▶. (◀❙❙ is for slow rewind playback) Playback is slow while touching. ● Normal playback is restored when you touch ▶/❙❙. ● When slow-motion pictures are played back in reverse, they will be shown continuously at approximately 2/3rd the speed of normal playback (intervals of 0.5 seconds).
Frame-by-frame playback The motion picture is advanced one frame at a time.		With the playback paused, touch ❙❙▶. (Touch ◀❙❙ to advance the frames one at a time in the reverse direction.) ● Normal playback is restored when you touch ▶/❙❙. ● When the frames are advanced one at a time in the reverse direction, they will be shown in intervals of 0.5 seconds.

Playback operation	Playback display	Operating steps
Direct playback	**During Playback** ■ ◄◄ ►/❚❚ ►► Ⓐ	1) Touch ► to display the direct playback bar Ⓐ. 2) Touch or drag the direct playback bar. (➜ 27) ● The playback pauses temporarily and skips to the touched or dragged position. ● Playback will start by releasing your touching or dragging finger. ● Touch ◄ to display the operation icon. ● Direct playback bar cannot be operated with the remote control.

Creating still picture from motion picture

[VIDEO]

A single frame from the recorded motion picture can be saved as a still picture.
Picture size of the still picture to be recorded is [2.1M] (1920×1080).

1 Pause at the scene you want to save as a still picture during playback.

● It is convenient to use slow-motion playback and frame-by-frame playback.

2 Press the ⬤ button fully.

● Date the motion picture was recorded will be registered as date of the still picture.
● Quality will be different from the normal still picture.

Highlight&Time frame index

An image of one scene is displayed as a thumbnail at set search condition. Scene can be played back from any midway point of the scene you wish to see.
● **Operate the zoom lever or the adjust zoom buttons to** Q **side and change over the thumbnail display to Highlight&Time frame index. (➜ 39)**

1 Touch selected search condition.
● Next (previous) scene can be displayed by touching
[▲]/[▼].

2 Touch the desired search condition.
[3 SECONDS]/[6 SECONDS]/[12 SECONDS]/ [MINUTES]/[FACE]/[HIGHLIGHT]
● When select [FACE], it will select the portion for which face recognition was performed from the scenes judged to be clearly recorded. This will then be displayed as a thumbnail.

Ⓐ Selected search condition
Ⓑ Scene selection

● A portion judged to be clearly recorded will be detected and displayed in thumbnail if you select [HIGHLIGHT].
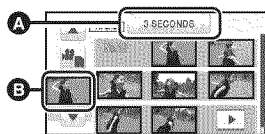
3 (When [MINUTES] is selected)
Touch [▲]/[▼] to set the time.
● It can be set up to a maximum of 60 minutes.
● Touch [ENTER].
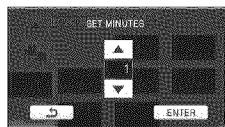
4 Touch the thumbnail to be played back.
● Next (previous) thumbnail can be displayed by touching [◄]/[►].

Repeat playback

VIDEO

Playback of the first scene starts after playback of the last scene finishes.

(MENU) : **[VIDEO SETUP]** → **[REPEAT PLAY]** → **[ON]**

The 🔄 indication appears on the full screen views.
● All the scenes are played back repeatedly. (When playing back motion pictures by date, all the scenes on the selected date are played back repeatedly.)

Resuming the previous playback

If playback of a scene was stopped halfway, the playback can be resumed from where it was stopped.

(MENU) : [VIDEO SETUP] → [RESUME PLAY] → [ON]

If playback of a motion picture is stopped, ▷▷ appears on the thumbnail view of the stopped scene.

● The memorized resume position is cleared if you turn off the unit or change the mode. (The setting of [RESUME PLAY] does not change.)

Zooming in on a still picture during playback (Playback zoom)

You can zoom in by touching a still picture during playback.

1 Touch the part you wish to zoom in on during still picture playback.
● The still picture is zoomed in on, centering on the part you touched. With each touch, you zoom in further. (×1 → ×2 → ×4)

2 Touch ▲/▼/◄/► or drag the screen (➜ 27) to move to the zoomed position.
● The location of the zoom displays for about 1 second when zooming in (zooming out) or moving the displayed location.
● The more picture is enlarged, the more its quality deteriorates.

Zooming out from the zoomed still picture
Touch 🔍 to zoom out. (×4 → ×2 → ×1)
● Touch 1x to return to normal playback (×1).

Ⓐ Displayed location of the zoom

● You can also perform zoom operations using the zoom lever or the adjust zoom buttons.

2 Various playback functions

Playing back motion pictures/still pictures by date

VIDEO PHOTO

The scenes or the still pictures recorded on the same day can be played back in succession.

1 Touch the date select icon.

A Date select icon

2 Touch the playback date.
The scenes or the still pictures recorded on the date selected are displayed as thumbnails.

3 Touch the scene or the still picture to be played back.

● Playing back of all the scenes or the still pictures returns if the unit is turned off or the mode is changed.
● Even if scenes are recorded on the same day, they are grouped separately in the following cases. −1, −2... is added after the recording date displayed on the screen.
  − When the number of scenes exceeds 99
  − When the media is repaired
  − When the Interval recording is used
● Even if still pictures are recorded on the same day, they are grouped separately in the following cases.
  − When the number of still pictures exceeds 999
  − When pictures are recorded in Hi-Speed Burst Shooting mode (🖻 is indicated after the date in the list by date).
● 🔽 is displayed after the date in the list by date for the still pictures created from the motion picture. (➜ 91)

VIDEO

A part can be extracted and played back even when not set to normal playback.

1 Touch 🖵.

2 Touch the desired playback mode.

[FACE HIGHLIGHT]:   Giving priority to the parts with detected faces, the part that was recognized as clearly recorded is extracted from a long recording, and it can be played back in a short time with music added.

[HIGHLIGHT]:   Part that was recognized as clearly recorded is extracted from a long recording, and it can be played back in a short time with music added.

[INTEL. SCENE]:   Scenes can be played back with music, excluding a portion of the scene judged to have failed to shoot due to fast movement of this unit, camera shake, or focus error.

3 Touch the desired item.
● When [FACE HIGHLIGHT]/[HIGHLIGHT] is selected

[SCENE SETUP]:   Select the scene or date to be played back. (➜ 96)

[PRIORITY SETUP]*:   Select the person registered for face recognition to be played back. (➜ 96)

[PLAYBACK TIME]:   Select the time to play back. (➜ 97)

[MUSIC SELECT]:   Select the music to be played on playback. (➜ 97)

* This appears only when [FACE HIGHLIGHT] is selected.

● When [INTEL. SCENE] is selected

[DATE SETUP]:   Select the date to be played back. (➜ 97)

[MUSIC SELECT]:   Select the music to be played on playback. (➜ 97)

4 Touch [START].
● When Face Highlight Playback/Highlight Playback is selected, the playback time is displayed and playback is paused.

5 Select the playback operation. (➜ 37, 90)
● When the playback is finished or stopped, the screen to select [REPLAY], [SELECT AGAIN] or [EXIT] is displayed. Touch the desired item.

- Playing back of all the scenes returns if the unit is turned off or the mode is changed. (Highlight playback)
- Highlight playback cannot be performed with interval-recorded motion pictures. (→ 70) (Intelligent scene selection)
- Up to 9 sections can be skipped for a single scene.
- When motion pictures are skipped, the image stops momentarily.
- Divided scene will not be skipped.
- For data that are edited with the editing function of HD Writer AE 2.6T, the Intelligent scene selection is disabled.

■ Scene setting

1 Touch [SELECT SCENES] or [SELECT DATE].
2 (When [SELECT SCENES] is selected)
Touch the scenes to be played back.

- Up to 99 scenes can be selected in succession.
- When touched, the scene is selected and ⎷ is displayed. Touch the scene again to cancel the operation.

(When [SELECT DATE] is selected)
Touch the date to be played back.

- A maximum of 7 days can be selected.
- When touched, the date is selected and surrounded by red. Touch the date again to cancel the operation.
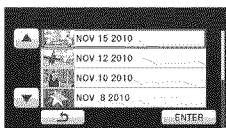
3 Touch [Enter]/[ENTER].

■ Priority setting

1 Touch [SELECTED FACE].
- If you touch [NONE], any detected face, including the face of person registered for Face Recognition, is given priority on playback.

2 (When [SELECTED FACE] is selected)
Touch a face to specify.

- You can specify up to 6 faces, which are to be played back in priority.
- When touched, the registered face is selected and surrounded by red. Touch the registered face again to cancel the operation.
- Touch [ENTER]. When a single face is specified, the name registered for that face is displayed. When multiple faces are specified, the number of faces is displayed.
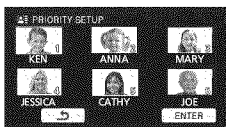
■ Playback time setting

Touch the playback time.

● The playback time of [AUTO] is a maximum of approx. 5 minutes.
● Playback time may become shorter than the setting, or it may not even play back if the part recognized as clearly recorded is short.

■ Date setting

Touch the playback date.
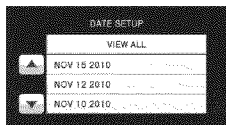
■ Music setting

1 Touch your favorite music.

● When [NO MUSIC] is selected, the audio recorded at the time of shooting is played back.
● To adjust the volume of music during playback or audio testing, operate the volume lever or the adjust zoom buttons. (➜ 39)

2 Touch [ENTER].
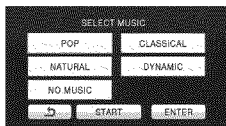
To test the music audio
Touch [START].

● Touch the other music option to change the music to be tested.
● When you touch [STOP], the music playback stops.

[PHOTO]

1 Touch 🔳 .

2 **Touch the desired item.**

[DATE SETUP]:   Select the date to be played back.

[SLIDE INTERVAL]:   Selects the interval between still pictures at playback.

[MUSIC SELECT]:   Select the music to be played on playback.

3 (When [DATE SETUP] is selected)
Touch the playback date.
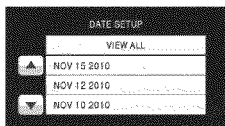
(When [SLIDE INTERVAL] is selected)
Touch the interval of playback for the slide show.

[SHORT]:   Approx. 1 second

[NORMAL]:   Approx. 5 seconds

[LONG]:   Approx. 15 seconds

(When [MUSIC SELECT] is selected)
Touch the desired sound.

● To adjust the volume of music during playback of the slide show or audio testing, operate the volume lever or the adjust zoom buttons. (➜ 39)
● Touch [ENTER].

(To test the music audio)
Touch [START] and start the audio testing.

● Touch the other music option to change the music to be tested.
● When you touch [STOP], the music playback stops.

4 **Touch [START].**

5 **Select the playback operation. (➜ 37)**

● When the playback is finished or stopped, the screen to select [REPLAY], [SELECT AGAIN] or [EXIT] is displayed. Touch the desired item.
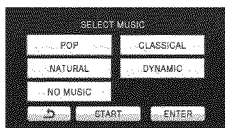
Deleting scenes/still pictures

Deleted scenes/still pictures cannot be restored, so perform appropriate confirmation of the contents before proceeding with deletion.

◇ Change the mode to 🔲 .
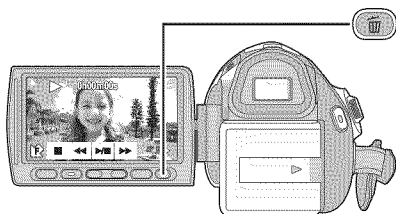
To delete by confirming images being played back

Press the 🗑 button while scenes or still pictures to be deleted are being played back.

■ **Deleting multiple scenes/still pictures from the thumbnail display**

1 Press the 🗑 button while the thumbnail view screen is displayed.

2 Touch [ALL SCENES] or [SELECT].

● When [ALL SCENES] is selected, all the scenes or still pictures on the media will be deleted.
  (In case of playing back scenes or still pictures by date, all the scenes or still pictures on the selected date will be deleted.)
● Protected scenes/still pictures cannot be deleted.
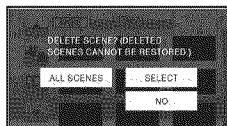
3 (When [SELECT] is selected in step 2)
Touch the scene/still picture to be deleted.

● When touched, the scene/still picture is selected and the 🗑 indication appears on the thumbnail. Touch the scene/still picture again to cancel the operation.
● Up to 99 scenes can be selected to be deleted.

4 (When [SELECT] is selected in step 2)
Touch [Delete] or press the 🗑 button.

● To continuously delete other scenes/still pictures, repeat steps 3-4.

When you stop deleting halfway
Touch [CANCEL] or press the MENU button while deleting.
● The scenes or still pictures that have already been deleted when the deletion is canceled cannot be restored.

To complete editing
Press the MENU button.

- You can also delete scenes by pressing the MENU button, selecting [EDIT SCENE] →
  [DELETE] → [ALL SCENES] or [SELECT].
- You can also delete still pictures by pressing the MENU button, selecting [PICT. SETUP] →
  [DELETE] → [ALL SCENES] or [SELECT].
- During Face Highlight Playback, Highlight Playback, Intelligent Scene Selection, or Disc
  Playback when connected to a DVD burner (optional), scenes/still pictures cannot be
  deleted.
- Scenes which cannot be played back (the thumbnails are displayed as [!]) cannot be
  deleted.
- In case of [ALL SCENES], the deletion may take time if there are many scenes or still
  pictures.
- If you delete scenes recorded on other products or still pictures conforming to DCF
  standard with this unit, all the data related to the scenes/still pictures may be deleted.
- When still pictures recorded on an SD card by other products are deleted, a still picture
  (other than JPEG) that cannot be played back on this unit may be erased.

Dividing a scene to partially delete

To delete an unnecessary portion of a scene, first divide the scene and then delete the unnecessary portion.
● **Change the mode to** ▣ **and touch the play mode select icon to select [SD CARD]/ [1080/60p] or [SD CARD]/[AVCHD]. (➜ 37)**

1 Select the menu.

(MENU) : [EDIT SCENE] → [DIVIDE] → [SET]

2 Touch the scene to be divided.

3 Touch ✂ to set the dividing point.

● Using slow-motion playback or frame-by-frame playback makes it easy to search for the point where you want to divide the scene. (➜ 90)
● Touch [YES] to continue dividing the same scene. To continue dividing other scenes, touch [NO] and repeat steps 2-3.

4 Press the MENU button to complete dividing.

5 Delete the unnecessary scene. (➜ 99)

To delete all the divided points

[DIVIDE] → [CANCEL ALL]

● The scenes that were deleted after division cannot be recovered.

● You cannot divide a scene if you are playing back a disc with a DVD burner (optional) connected, or if the number of scenes of a given date would exceed 99 scenes.
● It may not be possible to divide scenes with a short recording time.
● Data that has been recorded or edited on another device cannot be divided and the divided points cannot be deleted.
● If personal information in the divided scenes is deleted, the personal information is deleted when the divided scenes are canceled.

Deleting personal information

Deletes face recognition information from scenes in which faces were recognized.
- **Change the mode to** `▶` **and touch the play mode select icon to select [SD CARD]/ [1080/60p] or [SD CARD]/[AVCHD]. (→ 37).**

1 Select the menu.

`(MENU)` : **[VIDEO SETUP] → [DELETE PERSONAL INFO]**

2 Touch the desired scenes with personal information to be deleted.

- `🎥☰` appears at scenes for which faces were recognized. Touch one of the scenes where `🎥☰` appears.
- `🎥☰` will change to `🎥🗑` (red) when touched. Touch the `🎥🗑` (red) again to cancel the operation.
- Up to 99 scenes can be selected in succession.

3 Touch [Delete] or press the 🗑 button.

- To continuously delete other personal information, repeat steps 2-3.
- Press the MENU button to complete the settings.

When you stop deleting halfway

Touch [CANCEL] or press the MENU button while deleting personal information.
- The personal information that has already been deleted when the deletion is canceled cannot be restored.

- During Disc Playback when connected to a DVD burner (optional), scenes/still pictures cannot be deleted.

Protecting scenes/still pictures

Scenes/still pictures can be protected so that they are not deleted by mistake.
(Even if you protect some scenes/still pictures, formatting the media will delete them.)
- **Change the mode to** `▶` .

1 Select the menu.

`(MENU)` : **[VIDEO SETUP] or [PICT. SETUP] → [SCENE PROTECT]**

2 Touch the scene/still picture to be protected.

- When touched, the scene/still picture is selected and the `⊶` indication appears on the thumbnail. Touch the scene/still picture again to cancel the operation.
- Press the MENU button to complete the settings.

- When the disc playback is selected while a DVD burner (optional) is connected, scenes/ still pictures cannot be protected.

2 DPOF setting

PHOTO

You can write the data selecting still pictures to be printed and the number of prints (DPOF data) onto the SD card.

◇ **Change the mode to ▶ and touch the play mode select icon to select [SD CARD]/[PICTURE]. (→ 37)**

■ What is DPOF?

DPOF (Digital Print Order Format) is a format which allows the user of a digital camera to define which captured images on the SD card are to be printed, together with information on the number of copies they wish to print. (Please note: Not all commercial printing services support this feature at this time.)

1 Select the menu.

MENU : [PICT. SETUP] → [DPOF SET] → [SET]

2 Touch the still picture to be set.

3 Touch ▲/▼ to set the number of prints.

● Up to 999 prints can be selected. (Prints for set number can be printed with a printer that supports DPOF.)

● To cancel the setting, set the number of prints to [0].
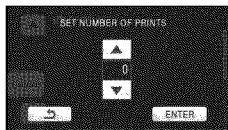
4 Touch [ENTER].

● To continuously set other still pictures, repeat steps 2-4.

● Press the MENU button to complete the settings.

To cancel all DPOF settings

[DPOF SET] → [CANCEL ALL]

● When the disc playback is selected while a DVD burner (optional) is connected, scenes/ still pictures cannot be set DPOF.

● You cannot add the recording date to pictures to be printed with the DPOF settings.

Watching Video/Pictures on your TV

1

VIDEO | PHOTO

Confirm the terminals on your TV and use a cable compatible with the terminals. Image quality may vary with the connected terminals.

❶ High quality
❷ HDMI terminal
❸ Component terminal
❹ Video terminal
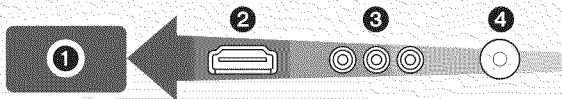
- **Use the AV multi cable (supplied) or HDMI mini cable (supplied/optional) and check the output settings. (➜ 107)**
- Use of the following Panasonic HDMI mini cables is recommended to connect the unit to the HDMI terminal.
- HDMI is the interface for digital devices. If you connect this unit to a HDMI compatible high definition TV and then play back the recorded high definition images, you can enjoy them in high resolution with high quality sound.

1 Connect this unit to a TV.
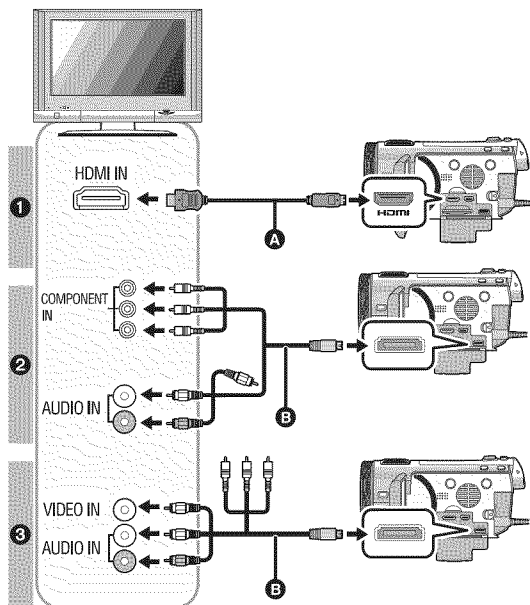
Ⓐ HDMI mini cable
- Be sure to connect to the HDMI terminal.
Ⓑ AV multi cable (supplied)

Picture quality
❶ High definition images when connecting to HDMI terminal
❷ High definition images when connecting to component terminal compatible with 1080i
Standard images when connecting to component terminal compatible with 480i
❸ Standard images when connecting to video terminal

- Check that the plugs are inserted as far as they go.
- Always use the supplied HDMI mini cable or a genuine Panasonic HDMI mini cable (RP-CDHM15, RP-CDHM30; optional).
- Do not use any other AV multi cables except the supplied one.
- When connecting to the component terminal of the TV, the yellow plug of the AV multi cable is not required.
- When connecting to the AV terminal of the TV, do not connect the component terminal plug of the AV multi cable. Image may not display when the component terminal plug is connected simultaneously.

2 Select the video input on the TV.

- Example:
  Select the [HDMI] channel with a HDMI mini cable.
  Select the [Component] or [Video 2] channel with an AV multi cable.
  (The name of the channel may differ depending on the connected TV.)
- Check the input setting (input switch) and the audio input setting on the TV. (For more information, please read the operating instructions for the TV.)

3 Change the mode to ▶ to play back.
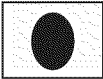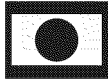
Cables	Reference items
Ⓐ HDMI mini cable	● Connecting with a HDMI mini cable (➜ 107) ● Listening in 5.1 channel sound (➜ 107) ● Playback using VIERA Link™ (HDAVI Control™) (➜ 110)
Ⓑ AV multi cable (supplied)	● Connecting with the AV multi cable (➜ 107)

■ **To watch images on a regular TV (4:3) or when both sides of the images do not appear on the screen**

Change the menu setting to display the images correctly. (Check the TV setting.)

(MENU) : **[SETUP]** → **[TV ASPECT]** → **[4:3]**
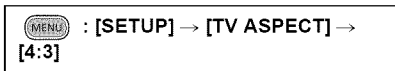
Example of images with a 16:9 aspect ratio on a regular TV (4:3)

[TV ASPECT] setting	
[16:9]	[4:3]

● If a wide-screen TV is connected, adjust the aspect setting on the TV. (Refer to the operating instructions of the TV for details.)

■ **To display the on-screen information on the TV**

When the EXT DISPLAY button on the remote control is pressed, the information displayed on the screen (operation icon and time code etc.) can be displayed/not displayed on the TV.

● It will not display when the unit is turned off.
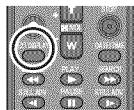
● When the AV multi cable is connected to this unit, the setup screen of the AV multi destination is displayed on the screen of this unit. Touch either [COMPONENT] or [AV OUT] in accordance with the terminal connecting to the TV. (→ 107)
● If the HDMI mini cable and AV multi cable are connected at the same time, output will be prioritized in order of the HDMI mini cable, AV multi cable.

Refer to the following support site for information about Panasonic TVs with an SD card slot for playing back your pictures.
http://panasonic.net/
● It may not be possible to play back scenes on the TV depending on the recording mode.
● For details on how to play back, please read the operating instructions for the TV.

Connecting with a HDMI mini cable

Select the desired method of HDMI output.

(MENU) : [SETUP] → [HDMI RESOLUTION] → [AUTO]/[1080p]/[1080i]/[480p]

● [AUTO] determines the output resolution automatically based on information from the connected TV.
  If the images are not output on the TV when the setting is [AUTO], switch to the method [1080p], [1080i] or [480p] which enables the images to be displayed on your TV. (Please read the operating instructions for the TV.)
● Image will not display on TV for a few seconds in the following cases.
  — When the 1080/60p recording mode is turned on/off during Motion Picture Recording Mode
  — When [1080/60p] is touched during Motion Picture Playback Mode

Listening in 5.1 channel sound

You still can listen to the 5.1 channel sound recorded from the internal microphones when this unit is connected to the 5.1 channel compatible AV amplifier or TV using the HDMI mini cable.
Please read the AV amplifier and TV operating instructions for how to connect this unit to the AV amplifier and TV.
● If you connect this unit to a Panasonic AV amplifier that are compatible with VIERA Link, linked operations (VIERA Link) become possible. (→ 110)
● Audio recorded when [MIC SETUP] is set to [STEREO MIC] or recorded from an external microphone is in stereo (2 ch).

Connecting with the AV multi cable

AV multi connector output setting can be changed.

(MENU) : [SETUP] → [AV MULTI] → desired setting

[COMPONENT]:   When connecting to the component terminal

[AV OUT]:   When connecting to the video terminal

Changing the component output setting

(MENU) : [SETUP] → [COMPONENT OUT] → desired setting

[480i]:   When connecting to the component terminal on the TV compatible with 480i. (Playback is in standard quality.)

[1080i]:   When connecting to the component terminal on the TV compatible with 1080i. (Playback is in high definition quality.)

3D video playback

VIDEO

Connect the unit to a 3D compatible television and play back scenes recorded in 3D to enjoy life-like and powerful 3D video.

For the latest information on 3D compatible televisions and recorders that are capable of playing back 3D video recorded using the unit, see the support site below.
http://panasonic.jp/support/global/cs/e_cam/index.html

◇ **Change the mode to** ▶ **and touch the play mode select icon to select [SD CARD]/[AVCHD]. (→ 37)**

1 Select the menu.

(MENU) : **[SETUP]** → **[3D PLAYBACK]** → **[3D]**

[3D]:	Play back scenes recorded in 3D in unaltered form as 3D video.
[2D]:	If your television does not support 3D, set to [2D] to play back scenes recorded in 3D.

2 Connect the unit to 3D compatible television and play back scenes recorded in 3D. (→ 104)

● Connect the unit to the 3D compatible television using the HDMI mini cable.
● For the scenes recorded in 3D, [3D] will appear on the thumbnail display at playback.
● Playback switches between 3D video and 2D video automatically.
● If your television does not switch to a 3D video, make the necessary settings on the TV. (For further details, please read the operating instructions for the TV.)

■ Playing back scenes recorded in 3D as (conventional) 2D video

---
(MENU) : **[SETUP]** → **[3D PLAYBACK]** → **[2D]**

● Set to [2D] when using a television that is not 3D compatible.
● If you feel tired, uncomfortable or otherwise strange when viewing scenes recorded in 3D, set to [2D].

- You cannot play back 3D video on the LCD monitor of the unit. When you play back scenes recorded in 3D on the LCD monitor, they will be played back in 2D.
- You can also play back scenes recorded in 3D by date. Even if scenes are recorded on the same day, the unit will display the date separately when switching between 2D and 3D recordings. (→ 94)
- When you play back scenes successively, a black screen will appear for a few seconds between scenes recorded in 3D and scenes recorded in 2D.
- When outputting 3D video to a television, the date and time display is double normal size.
- In the 1 scene or Highlight&Time frame index thumbnail display, a black frame appears around the thumbnails. For the 9 scenes or 20 scenes thumbnail display, black frames may appear when a divide or repair is performed. (The unit automatically performs scene repair if faulty management information is detected.)
- When you select a 3D video thumbnail, it may take a few seconds for playback to start. After playback, the thumbnail display may take a few seconds to reappear.
- If you set [3D PLAYBACK] to [3D] with the unit connected to a television that does not support 3D, the video will be played back in 2 screens.
- Depending on the 3D-compatible television used, switching to 3D mode may be slow and you may not be able to watch the first scene. In this case, use the pause button.
- When viewing 3D video, your eyes may become tired if you are too close to the television screen. Use the supplied remote control to operate from a distance.

Functions not available during 3D playback

- Creating still picture from motion picture
- Highlight&Time frame index ([FACE], [HIGHLIGHT])
- Yellow button display and deletion function during VIERA Link (During playback only)
- Face highlight playback
- Highlight playback
- Intelligent scene selection

3 Playback using VIERA Link™ (HDAVI Control™)

VIDEO **PHOTO**

What is the VIERA Link?

● VIERA Link™ is a new name for EZ Sync™.
● This function allows you to use your remote control for the Panasonic TV for easy operations when this unit has been connected to a VIERA Link compatible device using a HDMI mini cable for automatic linked operations. (Not all operations are possible.)
● VIERA Link is a unique Panasonic function built on a HDMI control function using the standard HDMI CEC (Consumer Electronics Control) specification. Linked operations with HDMI CEC compatible devices made by other companies are not guaranteed. When using devices made by other companies that are compatible with VIERA Link, refer to the operating instructions for the respective devices.
● This unit is compatible with VIERA Link Ver.5. VIERA Link Ver.5 is the newest Panasonic version and is also compatible with existing Panasonic VIERA Link devices. (As of Dec 2009)

◇ **Change the mode to ▶ .**

1 Select the menu.

(MENU) : [SETUP] → [VIERA Link] → [ON]

● If you are not using VIERA Link, set to [OFF].

2 Connect this unit to a Panasonic TV compatible with VIERA Link with a HDMI mini cable.
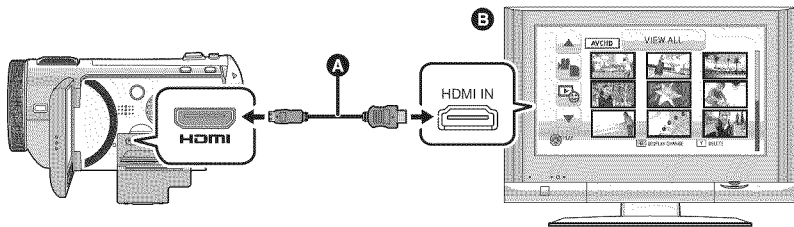
Ⓐ HDMI mini cable
Ⓑ Panasonic TV compatible with VIERA Link
● It is recommended to connect this unit to an HDMI terminal other than the HDMI1 if there are 2 or more HDMI input terminals on the TV.
● VIERA Link must be activated on the connected TV. (Read the operating instructions of the TV for how to set etc.)
● Always use the supplied HDMI mini cable or a genuine Panasonic HDMI mini cable (RP-CDHM15, RP-CDHM30; optional).

110
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3 Operate with the remote control for the TV.
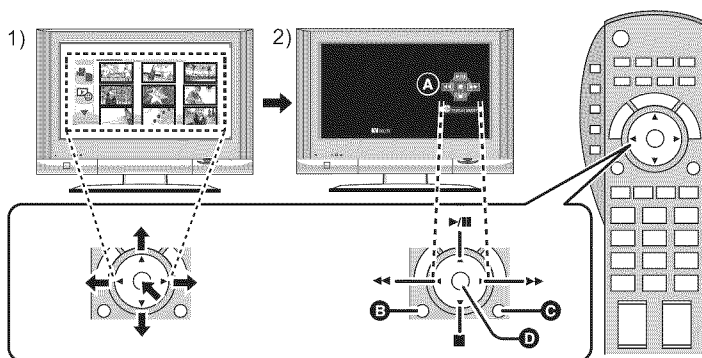
1) Press the button up, down, left or right to select a scene or still picture to be played back, and then press the button in the center to set it.
2) Activate the operation icons that are displayed on TV screen with the remote control for the TV.

Ⓐ Operation icons
Ⓑ Display operation icons
Ⓒ Cancel operation icons
Ⓓ Display/Cancel operation icons

● The following operations are available by pressing the color buttons on the remote control.
  – Green: Switching the number of scenes/still pictures in thumbnail display
    (9 thumbnails → 20 thumbnails → 9 thumbnails...)
    Zoom in on still picture
  – Yellow: Deleting scenes/still pictures
  – Red: Zoom out from still picture

■ Other linked operations

Turning the unit off:
If you use the remote control for the TV to turn off the power, this unit also turns off.
Automatic input switching:
If you connect with a HDMI mini cable and then turn on this unit, the input channel on the TV automatically switches to this unit's screen. If the TV's power is in standby status, it will turn on automatically (if [Set] has been selected for the TV's [Power on link] setting).
● Depending on the HDMI terminal on the TV, the input channel may not switch automatically. In this case, use the remote control for the TV to switch the input channel.

● If you are unsure whether or not the TV and AV amplifier you are using are compatible with VIERA Link, read the operating instructions for the devices.
● Available linked operations between this unit and a Panasonic TV is different depending on the types of Panasonic TVs even if they are compatible with VIERA Link. Refer to the operating instructions of the TV for the operations that support on the TV.
● Operation is not possible with a cable that is not based on the HDMI standard.

Connecting a DVD burner to copy to/play back a disc

| VIDEO | PHOTO |

Motion pictures or still pictures recorded with this unit can be copied to a DVD disc by connecting a DVD burner (optional) to this unit using a Mini AB USB Connection Cable (supplied with DVD burner). The copied DVD disc can also be played back.
● Please read the operating instructions of the DVD burner for how to use it.

Preparing for copying/playing back

We recommend using Panasonic DVD burner VW-BN2/VW-BN01.

■ **About discs that can be used for copying**

Disc type	DVD-RAM	DVD-RW / +RW	DVD-R / DVD-R DL / +R / +R DL
Copy*1	○	○	○
Additional copy*2	○	—	—
Format*3	○	○	—

*1　Use a new disc. You can additionally copy only to a DVD-RAM. When you copy to DVD-RW, DVD-R, DVD-R DL, +RW, +R or +R DL, the disc is automatically finalized to allow playback on other devices and additional copying will not be possible.

*2　Only DVD-RAM copied with the DVD burner or HD Writer AE 2.6T can additionally copy.

*3　Connect this unit and a DVD burner before formatting. If you format a used disc, you can copy on that disc. Please be aware that if a disc is formatted, then all the data recorded on the disc will be erased. (➡ 119)

● We recommend using the discs that have been recommended in the operating instructions of the DVD burner. Refer to the operating instructions of the DVD burner for details about recommended discs, disc handling etc.

1 **Connect the AC adaptor (supplied with DVD burner) to the DVD burner.**

● You cannot supply power to the DVD burner from this unit.

2 **Connect this unit to the AC adaptor and change the mode to ▶ .**

3 **Connect this unit to the DVD burner with the Mini AB USB Connection Cable (supplied with DVD burner).**
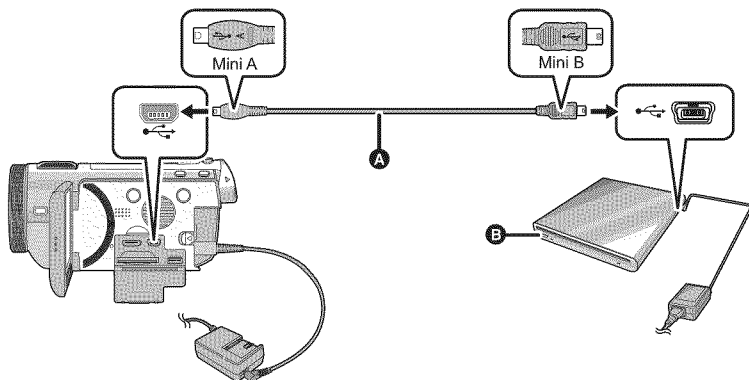
A Mini AB USB Connection Cable (supplied with DVD burner)
B DVD burner (optional)
● Insert the plugs as far as they will go.

4 **Insert the disc in the DVD burner.**

● Insert the DVD disc with the recording side down when using the DVD burner.

5 **Touch the desired item.**

[BURN DISC]:
Refer to page 114 for how to copy discs.
[PLAY DISC]:
Refer to page 118 for how to play back the copied discs.
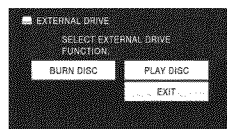
To terminate the connection with the DVD burner
Touch [EXIT].
● Disconnect the Mini AB USB Connection Cable from this unit.

● You cannot copy from multiple SD cards to 1 disc. (You can additionally copy only to a DVD-RAM.)
● You cannot copy motion pictures together with still pictures or motion pictures in a different picture quality (AVCHD picture quality and conventional normal picture quality) to the same disc.

1 Connect this unit to the DVD burner to prepare for copying. (➜ 113)

2 Touch [BURN DISC].

3 Touch the desired items following the instructions on the screen.

● It will return to the previous step by touching ➜ .
● (When [SELECT SCENES] is selected)
When touched, the scene/still picture is selected and the ☐ indication appears on the thumbnail. Touch the scene/still picture again to cancel the operation.
● (When [SELECT DATE] is selected)
When touched, the date is selected and surrounded by red. Touch the date again to cancel the operation.
● Up to 99 scenes/99 dates can be selected in succession.

4 Touch [START].

● When 2 or more discs are necessary for copying, follow the on-screen instructions to switch discs.
● You may need more discs than displayed number of discs when you are copying additionally to a used DVD-RAM.
● Eject the disc after copying is completed.
● When the copied disc is played back on another device and the list of scenes is displayed, they are ordered by date.

■ About recording formats when copying motion pictures

[AVCHD] ([HA]/[HG]/[HX]/[HE]):

Copying scenes of 1080/60p picture quality

The scenes recorded in 1080/60p by this unit will be copied after converting to AVCHD picture quality.

● When copying scenes recorded in 1080/60p, select the recording picture quality ([HA]/[HG]/[HX]/[HE]).

Copying scenes of AVCHD picture quality

The scenes recorded in AVCHD format will be copied as high definition picture quality as recorded.

Copying scenes recorded in 3D

The scenes recorded in 3D using the unit can be copied and stored in unaltered form as 3D video.The video is recorded unaltered in side-by-side format.

[Standard] ([XP]/[SP]):

Copying scenes of 1080/60p or AVCHD picture quality

Images are converted into the original standard picture quality and then copied.

● Since XP has a higher picture quality compared to SP, the data capacity becomes large so that you may need more discs for copying than SP.

Copying scenes recorded in 3D

Scenes recorded in 3D are converted to 2D video before being copied and stored. In this case, 3D video cannot be stored in unaltered form.

● A black frame will appear around the thumbnail and image after a scene is converted to 2D.

Before you delete the data on the media after copying is complete, be sure to play back the discs to check that they have been copied to correctly. (➜ 118)

Important Notice

● When connecting an optional DVD burner and this unit for copying a disc, do not insert a disc with recorded motion pictures in high definition picture quality into devices that do not support the AVCHD format. In some cases the disc may get stuck in the device. The disc will not play back on devices that do not support the AVCHD format.

● When inserting a disc containing recorded motion/still pictures into other devices, a message prompting you to format the disc may be displayed. Do not format the disc, since deleted data cannot be restored later.

Approximate time for copying to a disc

To copy motion pictures to the full capacity of a disc

Disc type	Copy time		
	[AVCHD]	[Standard] ([XP])	[Standard] ([SP])
DVD-RAM	Approx. 50 min to 1 h 20 min	Approx. 1 h 30 min to 2 h 30 min	Approx. 3 h to 5 h
DVD-RW*/ +RW*	Approx. 35 min to 1 h 15 min		
DVD-R*/+R*	Approx. 15 min to 45 min		

* Even if the data capacity to be copied is small, the time it takes for copying may be about the same as the time shown in the table.
● When copying motion pictures in standard picture quality to a disc, the recordable time of [Standard] ([XP]) is approx. 1 hour and that of [Standard] ([SP]) is approx. 2 hours.

To copy approx. 600 MB still pictures (picture size 14.2M)

Disc type	Copy time
DVD-RAM/DVD-RW/DVD-R/+RW/+R	Approx. 10 min to 20 min

To copy approx. 30 minutes of motion pictures recorded in 1080/60p converted to [AVCHD]/[Standard]

| Disc type	Copy time
DVD-RAM/DVD-RW/DVD-R/+RW/+R	Approx. 45 min to 1 h

● Copy time of DVD-R DL/+R DL is approximately 2 to 3 times that of DVD-R/+R.
● Depending on the following conditions or discs, the time it takes for copying may be longer than the above times. Wait until the end of copying is displayed.
  — When the number of recorded scenes is large
  — When the temperature of the DVD burner has become high

- **The disc that was copied to can be played back by connecting this unit and a DVD burner.**
- Do not turn off this unit or the DVD burner or disconnect the Mini AB USB Connection Cable while copying. Also, do not shake this unit or the DVD burner.
- It is impossible to stop copying halfway.
- The order in which the scenes were copied cannot be changed.
- Data that has been recorded on another device may not be copied.
- When 2 or more discs are necessary for copying, the last scene copied to a disc is automatically divided to fit the space on the disc.
- Copying may complete with more or less than the number of discs displayed when dividing of scenes was performed automatically etc.
- For discs being copied using [Standard] ([XP])/[Standard] ([SP]), you cannot select Face Highlight Playback, Highlight Playback, Intelligent Scene Selection and [HIGHLIGHT] or [FACE] of Highlight & Time Frame Index.
- The remaining copy time displayed while copying is the approximate time for a single disc.

Playing back the copied disc

● Only discs that have been copied by connecting this unit to the DVD burner or created with HD Writer AE 2.6T can be played back.
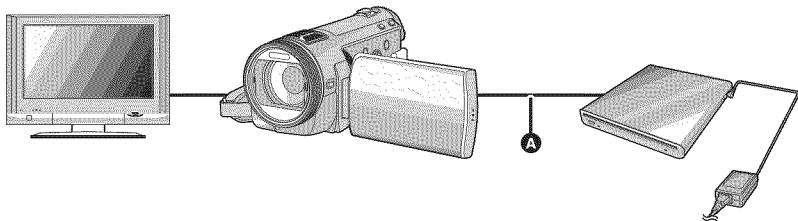
Ⓐ Mini AB USB Connection Cable (supplied with DVD burner)

1 Connect this unit to the DVD burner to prepare for playback. (➜ 113)
● When playing back on a TV, connect this unit to the TV. (➜ 104)

2 Touch the scene or still picture to be played back and then play it back.
● The playback operation is performed the same as when playing back motion pictures or still pictures. (➜ 37, 90)
● It will return to Step 5 on page 113 when [Return] is selected in the thumbnail screen.

● It is also possible to switch the media to play back by touching the play mode select icon. It is possible to select [DISC]/[VIDEO] or [DISC]/[PICTURE] when the DVD burner is connected.
● Black bands may appear on the left and right of the screen when it is played back connected to a TV with 4:3 ratio.

Managing the copied disc

● Connect this unit to the DVD burner and then touch [PLAY DISC]. (→ 113)

■ Formatting discs

This is for initializing DVD-RAM, DVD-RW and +RW discs.

Please be aware that if a disc is formatted, then all the data recorded on the disc will be erased. Back up important data on a PC etc.

(MENU) : [DISC SETUP] → [FORMAT DISC]

● When formatting is complete, touch [EXIT] to exit the message screen.

● Connect this unit and the DVD burner to format discs.
 You may no longer be able to use the discs if you format them on another device such as a PC etc.

■ Auto protect

You can protect (write protect) a DVD-RAM disc when copying motion pictures in high definition picture quality or DVD-RW disc when copying motion pictures or still pictures in high definition picture quality to the disc.

1 Select the menu.

(MENU) : [DISC SETUP] → [AUTO PROTECT] → [ON]

● If a disc that you copied to is inserted in another device without protecting it, a message may be displayed prompting you to format the disc. We recommend setting [AUTO PROTECT] to [ON] in order to prevent accidental deletion.

2 Copy to the disc. (→ 114)

● After copying, the disc is write protected.

To release the disc protection

[DISC SETUP] → [CANCEL PROTECT]

● Touch [EXIT] and close the message screen after the auto protection is released.

■ Displaying disc information

Information such as the type of recorded disc, the number of recorded scenes and whether or not the disc is finalized is displayed.

(MENU) : [DISC SETUP] → [DISC STATUS]

● Touch [EXIT] to exit the information screen.

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