

Panasonic®

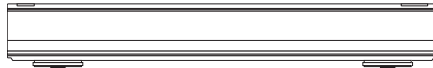
Operating Instructions Blu-ray Disc™ Recorder

Model No. **DMR-BCT820**

DMR-BCT720

DMR-BCT721

DIGA
Blu-ray



Thank you for purchasing this product.

For optimum performance and safety, please read these instructions carefully.

Please keep this manual for future reference.

- This Blu-ray Disc recorder is equipped with two CI/CI Plus slots. It can receive encrypted and free-to-air DVB-C services.

Region management information

BD-Video: This unit can play BD-Video discs supporting the region code "B".

e.g.,



DVD-Video: This unit can play DVD-Video discs supporting the region number "2" or "ALL".

e.g.,



Web Site: <http://www.panasonic-europe.com>

Safety precautions

WARNING

Unit

- To reduce the risk of fire, electric shock or product damage,
 - Do not expose this unit to rain, moisture, dripping or splashing.
 - Do not place objects filled with liquids, such as vases, on this unit.
 - Use only the recommended accessories.
 - Do not remove covers.
 - Do not repair this unit by yourself. Refer servicing to qualified service personnel.
 - Do not let metal objects fall inside this unit.
 - Do not place heavy items on this unit.

AC mains lead

- To reduce the risk of fire, electric shock or product damage,
 - Ensure that the power supply voltage corresponds to the voltage printed on this unit.
 - Insert the mains plug fully into the socket outlet.
 - Do not pull, bend, or place heavy items on the lead.
 - Do not handle the plug with wet hands.
 - Hold onto the mains plug body when disconnecting the plug.
 - Do not use a damaged mains plug or socket outlet.
- Install this unit so that the AC mains lead can be unplugged from the socket outlet immediately if any problem occurs.

SD card

- Keep the Memory Card out of reach of children to prevent swallowing.

CAUTION

Unit

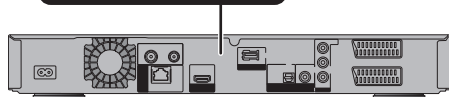
- This unit utilizes a laser. Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- Do not place sources of naked flames, such as lighted candles, on this unit.
- This unit may receive radio interference caused by mobile telephones during use. If such interference occurs, please increase separation between this unit and the mobile telephone.
- This unit is intended for use in moderate climates.

Placement

- Place this unit on an even surface.
- To reduce the risk of fire, electric shock or product damage,
 - Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Ensure this unit is well ventilated.
 - Do not obstruct this unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.
 - Do not expose this unit to direct sunlight, high temperatures, high humidity, and excessive vibration.

Batteries

- Danger of explosion if battery is incorrectly replaced. Replace only with the type recommended by the manufacturer.
- Mishandling of batteries can cause electrolyte leakage and may cause a fire.
 - Do not mix old and new batteries or different types at the same time.
 - Do not heat or expose to flame.
 - Do not leave the battery(ies) in a car exposed to direct sunlight for a long period of time with doors and windows closed.
 - Do not take apart or short circuit.
 - Do not recharge alkaline or manganese batteries.
 - Do not use batteries if the covering has been peeled off.
 - Remove batteries if you do not intend to use the remote control for a long period of time. Store in a cool, dark place.
- When disposing the batteries, please contact your local authorities or dealer and ask for the correct method of disposal.



DANGER - VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID DIRECT EXPOSURE TO BEAM.	
<small>FDA21 CFR/CLASS IIIb</small>	
CAUTION - CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO THE BEAM.	<small>IEC60825-1/CLASS 3B</small>
ATTENTION - RAYONNEMENT LASER VISIBLE ET INVISIBLE CLASSE 3B, EN CAS D'OUVERTURE, ÉVITER UNE EXPOSITION AU FAISCEAU.	
FORSIGTIG - SYNLIG OG USYNLIG LASERSTRÅLING KLASSE 3B, NÅR LÅGET ER ÅBENT, UNDGÅ AT BLIVE UDSAT FOR STRÅLEN.	
VARO - AVATTAESSA OLET ALLTIINA LUOKAN 3B NÄKYVÄÄ JA NÄKYMÄTÖNTÄ LASERSÄTEILYÄ, VARO ALTISTUMISTA SÄTEELLE.	
VARNING - KLASS 3B SYNLIG OCH OSYNLIG LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD, UNDVIK EXPONERING FÖR STRÅLEN.	
VORSICHT - SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG KLASSE 3B, WENN ABDECKUNG GEÖFFNET, NICHT DEM STRAHL AUSSETZEN.	
注意 - 打开时有可见及不可见激光辐射。避免光束照射。	
注意 - ここを開くとクラス3Bの可視及び不可視レーザー放射が出る。ビームの目又は皮膚への被ばくは危険! 見たり触れたりしないでください	
<small>VQL2Q40</small>	

(Inside of product)

Supplied accessories

Please check and identify the supplied accessories.

(Product numbers correct as of July 2012. These may be subject to change.)

- Remote control (N2QAYB000759):** 1 pc.
- Batteries for remote control:** 2 pcs.
- AC mains lead:** 1 pc.
- RF coaxial cable:** 1 pc.

- Do not use AC mains lead with other equipment.

Indemnity concerning recorded content

Panasonic does not accept any responsibility for damages directly or indirectly due to any type of problems that result in loss of recording or edited content (data), and does not guarantee any content if recording or editing does not work properly. Likewise, the above also applies in a case where any type of repair is made to the unit (including any other non-HDD related component).

Restriction on use of unauthorized copied content

This unit adopts the following technology for copyright protection.

Cinavia Notice

This product uses Cinavia technology to limit the use of unauthorized copies of some commercially-produced film and videos and their soundtracks. When a prohibited use of an unauthorized copy is detected, a message will be displayed and playback or copying will be interrupted. More information about Cinavia technology is provided at the Cinavia Online Consumer Information Center at <http://www.cinavia.com>. To request additional information about Cinavia by mail, send a postcard with your mailing address to: Cinavia Consumer Information Center, P.O. Box 86851, San Diego, CA, 92138, USA.

Table of contents

Safety precautions	2
Supplied accessories	3
Getting started	
HDD and media information	6
- Recordable/playable contents	6
- Recording mode	8
- Notes	9
Unit care	11
Control reference guide	12
CI module	14
Connection	16
- Basic connections	16
- Amplifier/receiver connections	18
- Other TV connections	19
- Network connection	20
Settings	21
- TV operation buttons	21
- Easy Setting	22
- Easy Network Setting	24
FUNCTION MENU screen	26
Watching broadcasts	
Watching broadcasts	27
- Using Channel List	27
- Using TV Guide system	28
- Using channel information	28
- Operations while watching broadcast	29
- REWIND LIVE TV/PAUSE LIVE TV	30
Recording	
Recording TV programmes	31
- Operation during Recording	32
- Notes for recording of an encrypted broadcast	33
Timer recording	35
- Manually programming timer recording	36
- Timer recording options	36
- Timer recording from channel information	37
- Notes on timer recording	37
- To confirm and edit a timer programme	38
Playing back video	
Playing titles on the HDD	39
- DIRECT NAVIGATOR (VIDEO) screen	39
Playing titles on the media	42
- Notes for BD-Live discs	43
Operation during play	44
- General operations	44
- 3D video playback	46
Editing video	
Deleting recorded titles	48
Editing recorded titles	49
Copying video	
Copying titles	54
- Copying from media other than HDD with DIRECT NAVIGATOR	56
- Copying titles with copying list	56
- Notes for copying	59
- Copying a finalised disc	60
- Copying Title Playing	61
- Copying HD Video (AVCHD) to the DVD-R in High Definition	61
Photo	
Playing photos	62
- DIRECT NAVIGATOR (PHOTO) screen	62
- Photo play option	63
- Slideshow settings	63
Editing photos	64
Copying photos	65
- Selecting and copying the photos	65
- Copying automatically	65
Music	
Playing music	66
- Copying music to HDD	66
- Playing music recorded on HDD	67
- Operations during music play	68
Editing music/playlist	69
With Other Equipment	
Recording from external equipment	70
- Manual Recording	70
- Flexible Recording via AV input	70
- Linked timer recording (SKY Digital STB, etc.)– EXT LINK	71
Copying the HD Video or the SD Video	72
- Copying HD Video (AVCHD)	72
- Copying SD Video (MPEG2)	73
Smart Home Networking (DLNA)	74
- Using this unit as Server	74
- Using this unit as Client	75
- Using this unit as Media Renderer	76
Convenient functions	
VIERA Connect (Enjoying Internet Service)	77
- To enjoy video communication (e.g., Skype™)	77
Media management	78

Registering the external HDD (USB HDD) . . .	80
- Connecting the USB HDD	80
- Disconnecting the USB HDD	80
- Registering the USB HDD	81
VIERA Link/Q Link functions	82
Playback menu	84
Changing the unit's settings (Setup)	86
- Common procedures	86
- DVB Tuning	88
- HDD / Disc / USB HDD	91
- Picture	93
- Sound	94
- Display	95
- Connection	96
- Network	98
- Others	99
- Language code list	101
Software (Firmware) Update	102
- Update software (firmware) of this unit	102
- CI Plus compatible CAM software (firmware) update	103
Other operations	104
- Entering text	104
- Switching the aspect ratio of the screen	104
- HOLD function	104
Troubleshooting	
Troubleshooting guide	105
- General operation	105
- Displays	106
- TV screen and video	106
- Sound	107
- Recording, timer recording and copying	108
- Play	109
- Edit	109
- Photo	110
- Music	110
- USB	110
- TV Guide	110
- Broadcast	110
- VIERA Link	111
- Network	111
- Reset	111
- Messages on the unit's display	112
- When you experience problems with Easy Network Setting	113
Reference	
Specifications	115
Licenses	121
Index	124

About descriptions in these operating instructions

- These operating instructions are applicable to models DMR-BCT820, DMR-BCT720 and DMR-BCT721. The illustrations in these Operating Instructions show images of DMR-BCT820 unless otherwise indicated.
- **BCT820** :indicates features applicable to DMR-BCT820 only.
- **BCT720** :indicates features applicable to DMR-BCT720 only.
- **BCT721** :indicates features applicable to DMR-BCT721 only.
- Pages to be referred to are indicated as "⇒ ○○".

Getting started

Watching broadcasts

Recording

Playing back video

Editing video

Copying video

Photo

Music

With Other Equipment

Convenient functions



















Troubleshooting

Reference









HDD and media information

Recordable/playable contents

(-: Impossible)

Media type	Standard symbol	Recordable contents	Playable contents
Built-in hard disk drive (HDD)*1 	HDD	<ul style="list-style-type: none"> • Video • AVCHD/AVCHD 3D • JPEG • MPO (3D photo) • Music copied from music CD • MP3 	
External HDD *1, 2, 3 (⇒ 80) 	USB HDD	<ul style="list-style-type: none"> • Video 	
BD-Video  	BD-V	-	• Video
BD-RE*1  	BD-RE	<ul style="list-style-type: none"> • Video • AVCHD/AVCHD 3D*4 • JPEG • MPO (3D photo) 	
BD-R  	BD-R	<ul style="list-style-type: none"> • Video • AVCHD/AVCHD 3D*4 	
		-	• DivX® • MKV
DVD-Video*5  	DVD-V	-	• Video
DVD-RAM*1  	RAM	<ul style="list-style-type: none"> • Video • JPEG • MPO (3D photo) 	
		-	• AVCHD*4
DVD-R DVD-R DL   	DVD-R	<ul style="list-style-type: none"> • Video • AVCHD*4 	<ul style="list-style-type: none"> • DivX® • JPEG • MPO (3D photo) • MKV • MP3
DVD-RW*1 	DVD-RW	-	• AVCHD*4
+R/+R DL 	+R	<ul style="list-style-type: none"> • Video 	• AVCHD*4
+RW*1 	+RW	<ul style="list-style-type: none"> • Video 	• AVCHD*4

(-: Impossible)

Media type	Standard symbol		Recordable contents	Playable contents
Audio CD (CD-DA) 			-	• Music
CD (including CD-R/RW)				• DivX® • JPEG • MPO (3D photo)
SD Cards *1 			• JPEG • MPO (3D photo)	• AVCHD/AVCHD 3D**4 • SD Video (MPEG2)**6 • MP4 • MPO (3D photo)
USB memories			-	• AVCHD/AVCHD 3D**4, 7 • SD Video (MPEG2)**6 • MP4 • DivX® • JPEG • MPO (3D photo)

*1 Rewritable media

*2 Referred to as "USB HDD" in these operating instructions.

*3 It cannot be recorded directly. (Only compatible with copying from the built-in HDD)

*4 Recorded with AVCHD format compatible devices (Panasonic video camera, etc.). It may not be able to play back, add, or edit depending on the device.

*5 Includes finalised DVD-R, DVD-R DL, DVD-RW, +R and +R DL.

*6 Recorded with SD-Video format compatible devices (Panasonic video camera, etc.). It can be played back only after copying to HDD. (⇒ 73)

*7 It cannot be played back directly from the USB memory. Playback is possible by copying to the HDD. (⇒ 72)



- **+RW** This unit cannot record to 8X Speed +RW disc.
- **USB** Video images of the copyright-protected DivX contents stored on USB device can be output only through the HDMI output terminal.
- The producer of the disc can control how discs are played. So you may not always be able to control play as described in these operating instructions. Read the disc's instructions carefully.
- With certain recording states and folder structures, the play order may differ or playback may not be possible.

Playable contents on a DLNA server

When this unit works as a DLNA client (⇒ 75), following contents are playable.



- Recorded video*
- AVCHD*
- MP4
- MPEG2
- JPEG
- MPO (3D photo)
- MP3
- FLAC

* Only when the server is another DIGA. (⇒ 74)

• Depending on the server, the contents other than stated above can be played back.

HDD and media information

Recording mode

Recording Mode	DR	HG/HX/HE/HL/HM	XP/SP/LP/EP/FR
Feature	Programmes can be recorded in a nearly perfect broadcasted state.	Recording can be done with reduced recording volume in HD quality.	Recording can be done with reduced recording volume in SD quality.
Quality	Quality as the broadcast	High definition* ¹	Standard definition
Recordable media			
Multiple audio	Record all multiple audio	Record only one audio	
Subtitles / Teletext	Can be recorded	Can be recorded (only one subtitle or teletext)* ²	
Surround audio	Surround audio as the broadcast	Surround audio produced by conversion of broadcast audio format	Stereo audio

*¹ The SD quality programme can not be converted to HD quality.

*² You cannot select during play whether it appears or disappears.

Approximate recording times

Refer to “Recording modes and approximate recording times”. (⇒ 119)

- **FR (Flexible Recording Mode)**

The unit automatically selects the best possible recording rate between XP and EP (8 hours).

Notes

About extension of files

File format	Extension					
JPEG	“.JPG”	“.jpg”				
MPO (3D photo)	“.MPO”	“.mpo”				
MP3	“.MP3”	“.mp3”				
DivX	“.DIVX”	“.divx”	“.AVI”	“.avi”		
Subtitle text files*	“.SRT”	“.srt”	“.SUB”	“.sub”	“.TXT”	“.txt”
MKV	“.MKV”	“.mkv”				
Subtitle text files*	“.SRT”	“.srt”	“.SSA”	“.ssa”	“.ASS”	“.ass”
	“.sub”	“.TXT”	“.txt”			
MPEG2	“.MPG”	“.mpg”	“.MPEG”	“.mpeg”	“.M2TS”	“.m2ts”
	“.mts”	“.TS”	“.ts”			
MP4	“.MP4”	“.mp4”	“.MOV”	“.mov”		

* The video file and subtitle text files are inside the same folder, and the file names are the same except for the file extensions.

- Some files may not be played back even if they have these extensions.

Notes for the disc

• Disc recorded on another device

- It may be necessary to finalize the disc, create Top Menu or close the session on the equipment used for recording to play on this unit.
- **DVD-RW** Recorded in DVD Video Recording (DVD-VR) format
 - This unit can play back and copy to HDD.
 - This unit does not support editing or recording.
 - It is possible to record and edit with DVD-Video (DVD-V) format by formatting discs with this unit.
- Recording may not be possible to discs which were used for recording on other equipment.

• Play on other players

- **BD-RE** **BD-R** When these discs cannot be played back on other Blu-ray Disc players, etc. (e.g., title recorded with HE-AAC audio format), convert the recording mode to play them back. (⇒ 51, File Conversion)
- **DVD-R** **DVD-RW** **+R** **+RW** Finalisation is needed. (⇒ 79)
- **+RW** If the disc failed to play on other equipment, we recommend you create a Top Menu (⇒ 79).

• Regarding 8 cm Disc

This unit cannot record or edit the 8 cm disc. Only playback or copy to the HDD is possible.

• Discs that cannot be played

- DVD-RAM that cannot be removed from their cartridges
- 2.6 and 5.2 GB DVD-RAM, 12 cm
- HD DVD
- Super Video CD, Super Audio CD, Video CD
- DVD-Audio
- WMA discs, DivX Plus HD discs
- CD-ROM, Photo CD, PD, etc.



- Operation and sound quality of CDs that do not conform to CD-DA specifications (copy control CDs, etc.) cannot be guaranteed.

HDD and media information

Notes for the USB devices

- This unit does not guarantee connection with all USB devices.
- This unit supports USB 2.0 High Speed.
- Although this unit can use USB 3.0 devices as USB 2.0 devices, in certain cases USB 3.0 devices cannot be used due to differing connector shape, larger current ratings, etc. (Use of USB 2.0 devices is recommended.)
- USB memories support FAT12, FAT16 and FAT32 file systems.
- USB memories support DivX and MKV files less than 4 GB.

Notes for the SD cards

• Compatible SD card

- SD Memory Card
(from 8 MB to 2 GB, FAT12 and FAT16 formats)
- SDHC Memory Card
(from 4 GB to 32 GB, FAT32 format)
- SDXC Memory Card
(48 GB, 64 GB, exFAT format)

• Using miniSD card or microSD card

Mini-type and micro-type cards can also be used, but must be used with adaptor cards (optional).

To format an SD card

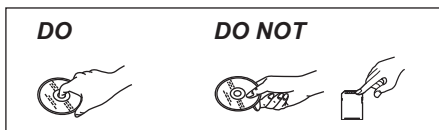
Refer to "Format Disc/Format Card". (⇒ 78)



- Usable memory is slightly less than the card capacity.
- If the SD card is formatted on other equipment, the time necessary for recording may be longer or the card may not be able to be used on this unit. In these cases, format the card on this unit.
- SDHC Memory Cards and SDXC Memory Cards can be used in equipment that is compatible with the appropriate cards. (SDHC Memory Cards can also be used in equipment compatible with SDXC Memory Cards.)

Media handling

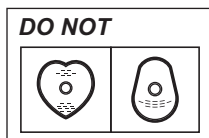
- Do not touch the recorded surface of the discs or the terminal surface of the SD cards.



- If there is dirt or condensation on the disc, wipe with a damp cloth and then wipe dry.



- Do not attach labels or stickers to discs.
- Do not use disc cleaning sprays, benzine, thinner, static electricity prevention liquids or any other solvent.
- Do not use ballpoint pens or other hard writing implements, when writing on the label side of the disc.
- Do not drop, stack, or impact discs.
- Do not place objects on discs.
- Do not use the following discs:
 - Discs with exposed adhesive from removed stickers or labels (rental discs, etc.).
 - Discs that are badly warped or cracked.
 - Irregularly shaped discs.



- Do not expose the terminals of the SD card to water, garbage or other strange things.
- Do not place in the following areas:
 - In hot places, such as under the direct sunlight.
 - In very dusty or humid areas.
 - Locations susceptible to significant difference in temperature (condensation can occur).
 - Where static electricity or electromagnetic waves occur.

Unit care

HDD/USB HDD handling care

- **The HDD is a high precision device**
The HDD is a high precision recording instrument and is easily susceptible to damage. Therefore, be careful of the following points while the unit is turned on, especially during operation, otherwise the HDD and the recorded content may be damaged:
 - Do not subject the unit to any vibration and shock.
 - Do not remove the AC mains lead from the household mains socket.
- **The HDD is a temporary storage device**
 - The HDD is not an everlasting storage device. It is recommended to save the recorded content on a disc or to keep the original data or CDs that they were copied from.
 - If you notice a problem with the HDD such as repetitive strange sounds, immediately save (backup) all content and request service. If you continue using the HDD with a problem, the unit or the recorded content will be damaged.
- **If the HDD or USB HDD is damaged, the recorded content cannot be recovered.**

Setup precautions

- **Place the unit on a surface that is flat and not subject to vibration or impact.**
- **Do not place on anything that generates heat like a Set Top Box, etc.**
- **Place in an area where condensation does not occur. Conditions where condensation may occur**
 - When there is an extreme change in temperature (e.g., when subjected to an air conditioner or when cooled air directly impacts the unit).
 - When there is high humidity or a lot of steam in the room.

In the above situation, **without turning the unit on**, let the unit adjust to the room temperature and wait 2–3 hours until condensation is gone.

- **Do not block the cooling fan on the rear of the unit.**
- **The unit may breakdown if cigarette smoke or bug spray/vapour, etc. gets inside the unit.**

When moving the unit

Before moving the unit, ensure the disc tray is empty.

- 1 Switch the unit to standby mode. (Wait until “BYE” disappears from the display.)
- 2 Remove the AC mains lead from the household mains socket.
- 3 Move only after the unit has come to a complete stop (approx. 3 minutes) in order to avoid subjecting to vibration and shock. (Even after the unit is switched to standby mode, the HDD continues operating for a short time.)

Cleaning

- **This unit**
 - Wipe with a soft, dry cloth.
 - Never use alcohol, paint thinner or benzine to clean this unit.
 - Before using chemically treated cloth, carefully read the instructions that came with the cloth.
- **This unit's lens**
 - Use the **Lens cleaner** (optional) to clean the unit's lens.

Lens cleaner: RP-CL720AE

- This lens cleaner may not be available for sale in all countries, e.g. not available in Germany, please consult your Panasonic dealer for advice.

When requesting this unit for repair

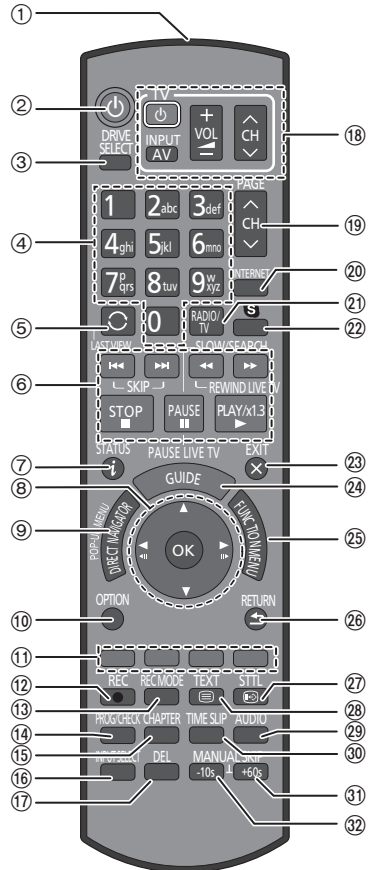
The registration of the USB HDD may be cancelled in the process of repairing this unit. You can use the USB HDD again by re-registering, but all recorded content already on the USB HDD will be lost. In such cases, the recorded content (data) cannot be recovered.

Control reference guide

Instructions for operations are generally described using the remote control.

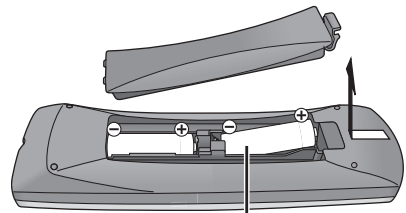
Remote control

- ① Transmit the remote control signal
 - Point it at remote control signal sensor on this unit. (⇒ 13)
- ② Switch the unit from on to standby mode or vice versa
- ③ Select drive (HDD, BD, SD or USB)
- ④ Select channels and title numbers, etc./Enter numbers or characters
- ⑤ Switch to the previously watched channel (⇒ 27)
- ⑥ Basic operations for recording and play, REWIND LIVE TV/PAUSE LIVE TV (⇒ 30)
- ⑦ Show Information (⇒ 28, 40, 44)
- ⑧ Selection/OK, Frame-by-frame (⇒ 45)
- ⑨ Show DIRECT NAVIGATOR, Top Menu, Pop-up Menu (⇒ 39)
- ⑩ Show OPTION menu (⇒ 49, 64, 69)
- ⑪ Colour buttons (Use in accordance with instruction on the screen.)
- ⑫ Start recording (⇒ 31, 70)
- ⑬ Select a conversion mode/recording mode (⇒ 31, 70)
- ⑭ Show the Timer Recording screen (⇒ 36)
- ⑮ Create chapter (⇒ 45)
- ⑯ Input select (⇒ 27, 70)
- ⑰ To delete unwanted recorded titles, timer programmes, photos or music (⇒ 48)
- ⑱ TV operation buttons (⇒ 21)
- ⑲ Channel select (⇒ 27)/Change pages in the DIRECT NAVIGATOR screen etc.
- ⑳ Show the VIERA Connect screen (⇒ 77)
- ㉑ Switching to the radio channel list (⇒ 27)
- ㉒ Start up a video communication (⇒ 77)
- ㉓ Exit the menu screen
- ㉔ Show the TV Guide screen (⇒ 28)
- ㉕ Show the FUNCTION MENU screen (⇒ 26)
- ㉖ Return to previous screen
- ㉗ Show subtitles (⇒ 29, 46)
- ㉘ Show Teletext (⇒ 29, 46)
- ㉙ Select audio (⇒ 29, 46)
- ㉚ Skip the specified time (⇒ 45)
- ㉛ Skip approx. 1 minute forward (⇒ 45)
- ㉜ Skip approx. 10 seconds backward (⇒ 45)



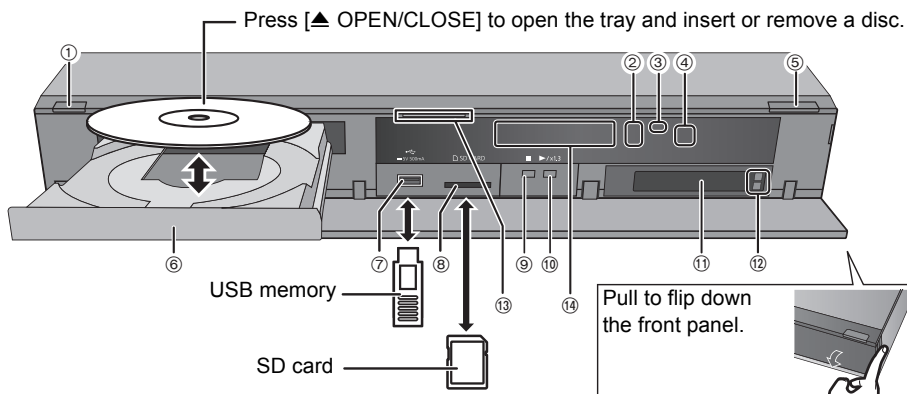
Insert batteries

Insert so the poles (+ and -) match those in the remote control.



R6/LR6, AA
(Alkaline or manganese batteries)

Main unit



① Standby/on switch (⏻/⏻)

Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

② Recording indicator

- The indicator will light up while recording.
- The indicator will blink while recording is paused and before recording starts.

③ CALL LED

- The LED will light up when this unit receives incoming call etc. of the video communication. (⇒ 77)

④ Remote control signal sensor

- Angle: Approx. 20° up and down, 30° left and right
- Distance: Within approx. 7 m in front of the unit

⑤ Open/close disc tray

⑥ Disc tray

⑦ USB port

⑧ SD card slot

- When removing the SD card, press on the centre of the card and pull it straight out.

⑨ Stop

⑩ Start play

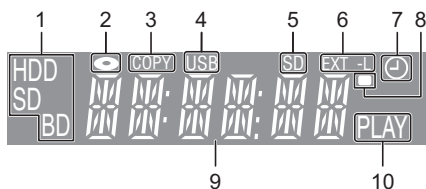
⑪ CI (Common Interface) slot (⇒ 14)

⑫ CI module eject button (⇒ 14)

⑬ **BCT820** Blue LED

- It is possible to set the LED to turn on/off. (⇒ 95, Blue LED)

⑭ Display



1 Drive (HDD, BD or SD) indicator

2 Disc indicator

3 Copying indicator

4 USB port indicator

5 SD card slot indicator

6 EXT LINK indicator

7 Timer recording indicator

- This indicator lights up when the timer recording standby is activated.

8 Remote control signal indicator

9 Main display section indicator

- Current time
- Playback counter
- Various messages (⇒ 112)

10 Playback indicator



• While writing to/reading from the media, do not switch the unit to standby mode or remove the media. Such action may result in loss of the media contents.

• When inserting the media, ensure that it is facing the right way up.

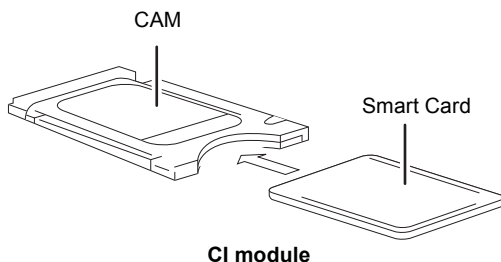
CI module

An appropriate CI module is required to view or record the encrypted broadcast.

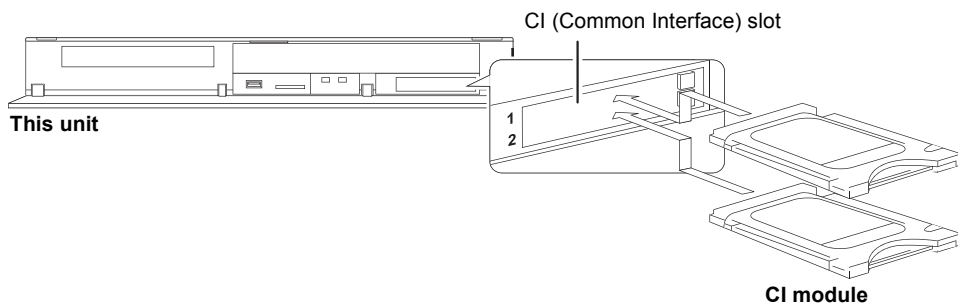
You need a CI module, CAM (Conditional Access Module) together with a certified Smart Card, and a subscription with the corresponding broadcaster.

- If not viewing/recording an encrypted broadcast, you do not need to insert the CI module.

1 Insert the certified Smart Card into the CAM (both optional).



2 Insert the CI module into the CI (Common Interface) slot of this unit.



TV service encryption is automatically cancelled and the service can be viewed or recorded. (The recording might be prohibited by broadcasters.)

- Depending on the CI module, a PIN may be demanded. If prompted to enter a PIN code, enter the set PIN code with the number buttons.

Notes for recording of an encrypted broadcast (⇒ 33)



- You can insert one or two different CAMs with Smart Cards into this unit.
- Be sure to insert the CI module horizontally into the slot.
- Insert the CAM and the Smart Card with the correct direction.
- When removing the CI module, press the CI module eject button and pull it straight out.
- For more details, see the manual of the CAM and Smart Card, or consult the dealer.
- The Common Interface supports the modules according to DVB Specification and CI Plus Specification.
- Turn off the unit before you insert or remove the CI module.


About CI Plus compatible broadcast

“CI Plus” is a technical specification that imposes copy protection on the broadcasted programmes.

- **All CI Plus protected programmes are encrypted.**
It may take some time to display the encrypted programme.

■ Retention limit

There are some titles for which the playback will be disabled after a predetermined time.
(e.g., Permitted playback period is 90 minutes after recording.)

- When the programme is imposed a limit on the playable period, the  icon will appear on the DIRECT NAVIGATOR screen after recording. (⇒ 39)
- These titles cannot be copied to the USB HDD or disc. (⇒ below, Copying is prohibited)

■ CI Plus copy protection

When the CI Plus compatible broadcast is recorded, the title may be copy protected.

- There are following types of the copy protection depending on the broadcast:

Copying not restricted

- Depending on the programme, you can copy only to USB HDD*, BD-RE, BD-R, or DVD-RAM (CPRM compatible discs only).

* The original title will be deleted.

One generation copy is permitted

- You can copy to USB HDD, BD-RE, BD-R or DVD-RAM (CPRM compatible discs) only once.
The original title will be deleted.
- You cannot copy from the copied BD-RE, BD-R or DVD-RAM (CPRM compatible discs) to HDD or another disc.

Copying is prohibited

- You cannot copy to the USB HDD or disc.

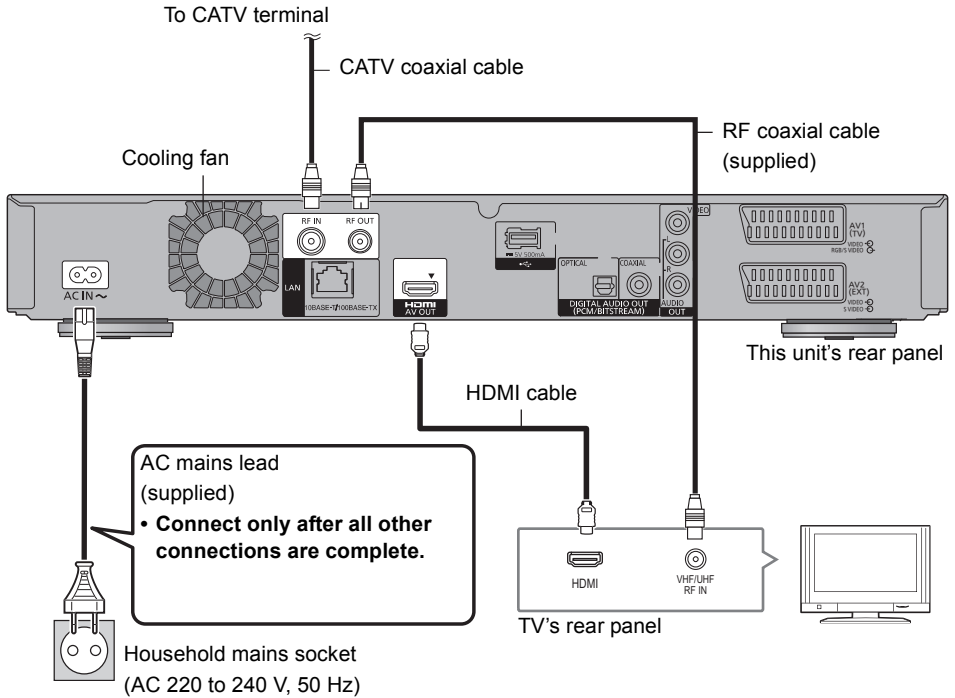
For details, refer to your CAM's operating instructions or consult your dealer.

Connection

Basic connections

3D programmes can be played back when this unit is connected to a 3D compatible TV.

- Before connection, turn off all equipment and read the appropriate operating instructions.



If the TV does not have the HDMI terminal

Connect the TV with the 21-pin Scart cable or the Audio/Video cable. (⇒ 19)

To connect and register the USB HDD (optional)

Refer to “Registering the external HDD (USB HDD)”. (⇒ 80)

To connect the Communication Camera (optional)

Refer to “VIERA Connect (Enjoying Internet Service)”. (⇒ 77)

About HDMI cable

- Use the High Speed HDMI cables. Non-HDMI-compliant cables cannot be utilized.
- When outputting 1080p signal, please use HDMI Cables 5.0 meters or less.
- Recommended Panasonic HDMI cable part number:
RP-CDHS15 (1.5 m), RP-CDHS30 (3.0 m), RP-CDHS50 (5.0 m), etc.

When the unit is not to be used for a long time

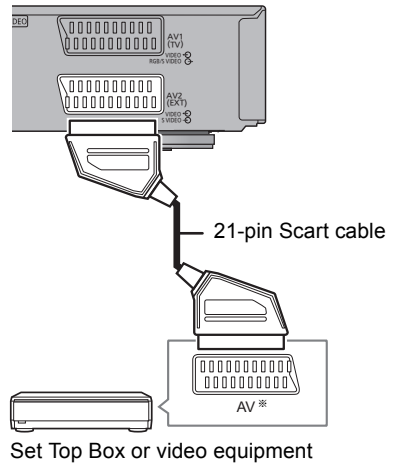
To save power, unplug it from the household mains socket. This unit consumes a small amount of power, even when the unit is in standby mode.

[approx. 0.2 W (“Power Save in Standby” is activated and “RF OUT (CATV Signal)” is set to “Off”)]



- The HDMI connection supports VIERA Link “HDAVI Control” (⇒ 82). However, to perform PAUSE LIVE TV (⇒ 30) and Direct TV Recording (⇒ 82) for broadcasts that cannot be received by this unit, you need to connect a 21-pin Scart cable. (⇒ 19)
- You cannot connect this unit to DVI devices that are incompatible with HDCP. Depending on the device, images may not display properly or at all when connecting with a DVI/HDMI switching cable. (Audio cannot be output.)
- If you are connecting to a TV that is only compatible with 2 channel audio output, audio with 3 channels or more will be down mixed and output as 2 channels, even if connecting with an HDMI cable. (Some discs cannot be down mixed.)

Connect the Set Top Box or video equipment



- * A 21-pin Adaptor is required for AUDIO/VIDEO terminal.

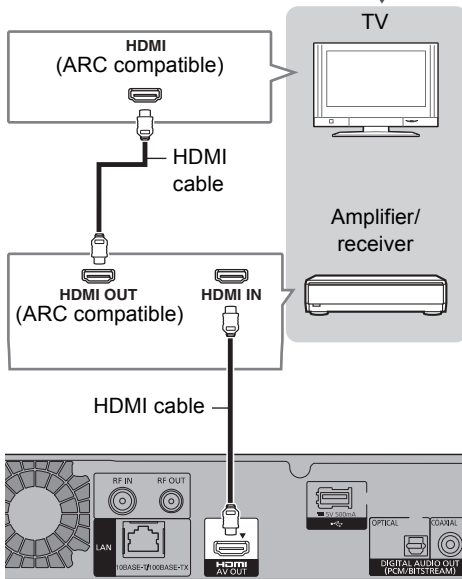
Connection

Amplifier/receiver connections

HDMI terminal

3D programmes can be played back when this unit is connected to a 3D compatible amplifier/receiver and a 3D compatible TV.

- You will not be able to view 3D programmes with this connection if your amplifier/receiver is not 3D compatible.

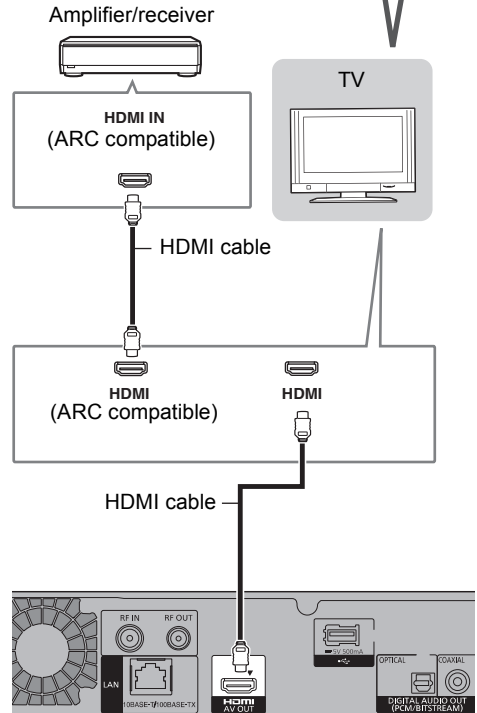


- VIERA Link function is possible by connecting to a TV or amplifier/receiver compatible with VIERA Link.
- When using a TV or an amplifier/receiver that does not display "ARC compatible" on the HDMI terminal, it is necessary to connect the TV and the amplifier/receiver with a digital audio cable to enjoy the TV audio on the amplifier/receiver.

■ Amplifier/receiver not compatible with 3D

3D programmes can be played back when this unit is connected to a 3D compatible TV.

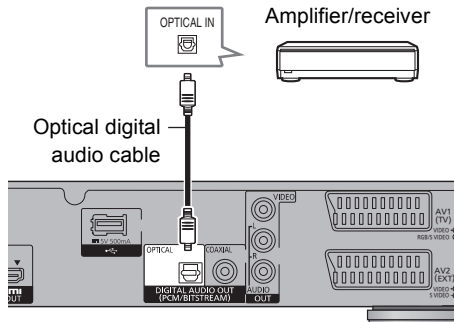
- This connection only supports up to 5.1ch.



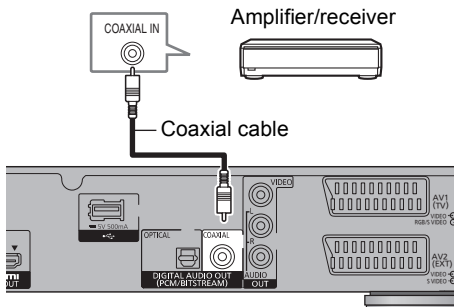
- VIERA Link function is possible by connecting to a TV or amplifier/receiver compatible with VIERA Link.
- When using a TV or an amplifier/receiver that does not display "ARC compatible" on the HDMI terminal, it is necessary to connect the TV and the amplifier/receiver with a digital audio cable to enjoy the TV audio on the amplifier/receiver.

DIGITAL AUDIO OUT terminal

■ Using Optical digital audio cable



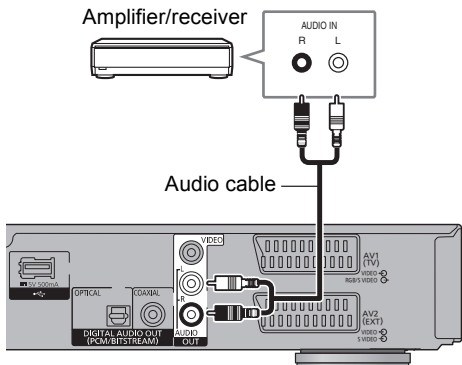
■ Using Coaxial cable



- When you do not want the audio to be output from the TV, set "HDMI Audio Output" to "Off" (⇒ 86, 96).

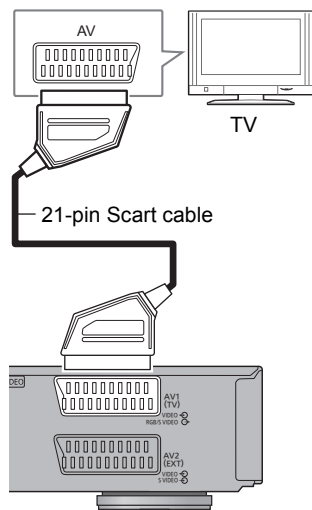
AUDIO OUT terminal

- Connect to terminals of the same colour.



Other TV connections

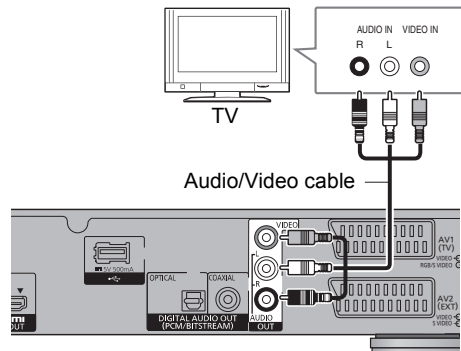
21-pin Scart terminal



- Set according to the connected TV. (⇒ 97, AV1 Output)
- The 21-pin Scart cable connection with the Q Link compatible TV supports "Q Link" (⇒ 82).
- 3D video playback is not possible with this connection.

AUDIO/VIDEO OUT terminals

- Connect to terminals of the same colour.



- 3D video playback is not possible with this connection.
- Do not connect video signals through a video recorder. Due to copy guard protection the picture may not be displayed properly.

Connection

Network connection

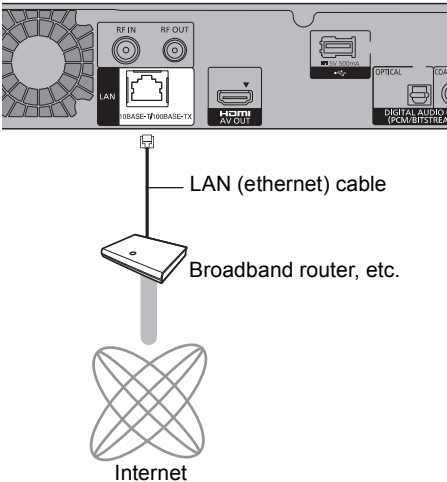
Following functions will be available when this unit is connected to the network.

- Smart Home Networking (DLNA) (⇒ 74)
- VIERA Connect (Enjoying Internet Service) (⇒ 77)
- BD-Live functions with Internet (⇒ 43)
- Automatically acquiring the information of the CD (⇒ 66)
- Updating the software (firmware) of this unit from Internet (⇒ 102)
- Hybrid Broadcast Broadband TV (⇒ 29)

For details about connection method, refer to the instructions supplied with the connected equipment.

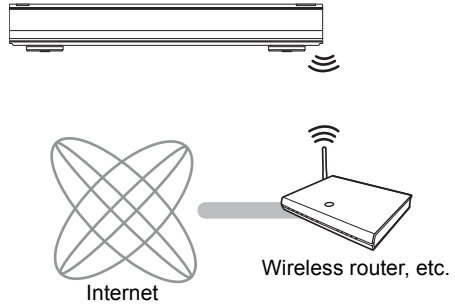
After you make the LAN cable/Wireless LAN connection, the network setting is needed. (⇒ 24, Easy Network Setting)

LAN cable connection



- Use category 5 or above straight LAN cables (STP) when connecting to peripheral devices.
- Inserting any cable other than a LAN cable in the LAN terminal can damage the unit.

Wireless LAN connection



- For up-to-date compatibility information on your Wireless router refer to <http://panasonic.jp/support/global/cs/> (This site is in English only.)
- The unit is not compatible with public wireless LAN services.

■ Precautions of Wireless LAN connection

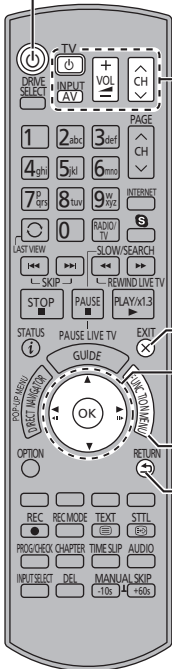
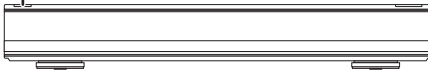
The following limits are in place regarding the usage of this unit. You must be aware of these limits before using this unit. Panasonic will in no way be responsible for any incidental damage which may arise due to a failure to obey these limits, or to any condition of use or disuse of this unit.

- **Data transmitted and received over radio waves may be intercepted and monitored.**
- **This unit contains delicate electronic components.**

Please use this unit in the manner in which it was intended and follow the following points:

- Do not expose this unit to high temperatures or direct sunlight.
- Do not bend, or subject this unit to strong impacts.
- Keep this unit away from moisture.
- Do not disassemble or alter this unit in any way.

Settings



TV operation buttons
(⇒ right)

To exit the screen

Select and enter buttons

FUNCTION MENU (⇒ 26)

To return to the previous
screen

TV operation buttons

The TV can be operated from the TV operation buttons of the remote control.

- Perform the setting if you cannot operate the TV with the TV operation buttons.

While pressing [TV ⏻], enter the code with the number buttons.

Manufacturer and Code No.

Brand	Code	Brand	Code
Panasonic	01/02/03/04	NEC	36
AIWA	35	NOBLEX	33
AKAI	27/30	NOKIA	25/26/27/60/61
BEKO	05/71/72/73/74	NORDMENDE	10
BENQ	58/59	OLEVIA	45
BRANDT	10/15	ONWA	30/39/70
BUSH	05	ORION	05
CENTREX	66	PEONY	49/69
CURTIS	05	PHILCO	41/48/64
DAEWOO	64/65	PHILIPS	05/06/46
DESMET	05	PHONOLA	05
DUAL	05	PIONEER	37/38
ELEMIS	05	PROVIEW	52
FERGUSON	10/34	PYE	05
FINLUX	61	RADIOLA	05
FISHER	21	SABA	10
FUJITSU	53	SALORA	26
FUNAI	63/67	SAMSUNG	32/42/43/65/68
GOLDSTAR	05/50/51	SANSUI	05
GOODMANS	05	SANYO	21/54/55/56
GRADIENTE	36	SCHNEIDER	05/29/30
GRUNDIG	09	SEG	05/69/75/76/77/78
HITACHI	05/22/23/40/41	SELECO	05/25
IRRADIO	30	SHARP	18
ITT	25	SIEMENS	09
JVC	17/30/39/70	SINUDYNE	05
KDS	52	SONY	08
KOLIN	45	TCL	31/33/66/67/69
KONKA	62	TELEFUNKEN	10/11/12/13/14
LG	05/50/51	TEVION	52
LOEWE	07/46	THOMSON	10/15/44
MAG	52	TOSHIBA	16/57
METZ	05/28/79	WHITE	05
mitsubishi	05/19/20/47	WESTINGHOUSE	
MIVAR	24	YAMAHA	18/41

- If the brand of your TV is not listed or the code number is invalid for the TV, this remote control is not compatible with your TV.



- If your TV brand has more than one code listed, select the one that allows correct operation.

Settings

Easy Setting

- 1** Turn on the TV, then select the appropriate AV input to suit the connections to this unit.
- 2** Press [⏻] on the remote control or [⏻/I] on this unit.
 - The Easy Setting will start at the initial power on.
- 3** Follow the on-screen instructions and make the following settings.
 - Language
 - Country
- 4** Select the channel number allocation, then press [OK].
 - For German and Austria:
Normally set to "Preset Channel Number".
 - For Switzerland:
Normally set to "Operator's Channel Number (LCN)".



- To change channel allocation, restart Auto Setup in Setup menu and change channel number allocation selection. (⇒ 89)

- 5** Select "Start Auto Setup", then press [OK].
 - Frequency and Network ID settings may be necessary depending on the cable provider. For details, consult the cable provider.

- **Frequency**

- **Auto**

- The preset frequency will be automatically used.

- **Manual**

- Enter the frequency specified by your cable provider with number buttons.

- **Network ID**

- **Auto**

- The preset Network ID will be automatically used.

- **Manual**

- Enter the Network ID specified by your cable provider with number buttons.

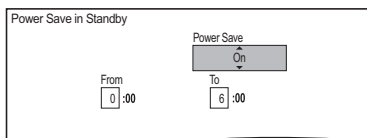
Auto Setup starts.

(This operation may take some time.)
e.g.,

Auto Setup			
Progress		0%	100%
This will take about 3 minutes.			
No.	Channel Name	Type	Quality
Free TV: 0	Pay TV: 0	Radio: 0	
Searching			

- 6** When tuning is completed, press [OK].
Clock will be set automatically.
If the clock setting screen appears, set the time manually (⇒ 100, Clock).

- 7** Set “Power Save” to “On”, “On Timer” or “Off”, then press [OK].



• **On***

It will go into the Power Save in Standby mode.

• **On Timer***

Set the start and stop time and then press [OK].

- “Power Save in Standby” is activated when the set time comes.

• **Off**

It is possible to start quickly from standby mode. (Quick Start mode)

- If you use Home Network function (⇒ 99), select “Off”. This function is not available with other settings.

- * “Unit’s Display” is fixed to “Automatic” in the Setup menu. (⇒ 95)
Video from AV2 input cannot be viewed with this unit in standby mode.

- 8** Select the item to match the type of TV connected.
For details, refer to “TV Aspect”. (⇒ 96)

When “Easy Setting has been completed.” appears, Easy Setting is complete.

- Select “Yes” to proceed to “Easy Network Setting”. (⇒ 24)
- Select “No” to finish the Easy Setting.

To stop partway

Press [RETURN ⊖].

To restart setup

- 1 Press [FUNCTION MENU]. (⇒ 21)
- 2 Select “Setup” in “Others”, then press [OK].
- 3 Select “Auto Setup” in “DVB Tuning”, then press [OK]. (⇒ 89)

To confirm that channels have been tuned correctly

Refer to “Using Channel List”. (⇒ 27)



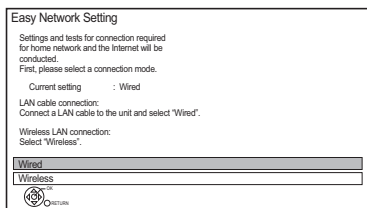
- If tuning is cancelled partway through, it may not be possible to receive the channels. Restart setup again.

Settings

Easy Network Setting

After completing “Easy Setting”, you can continue with “Easy Network Setting”.

- 1 Select “Wired” or “Wireless”, then press [OK].



- 2 Follow the on-screen instructions and make the following confirmation and settings.

“Wired” connection:

- Home Network Connection Check
- Home Network function
- Internet Connection Test

“Wireless” connection:

- Before beginning wireless connection setup
Obtain your Network name (SSID).
An SSID (Service Set IDentification) is a name used by wireless LAN to identify a particular network. Transmission is possible if the SSID matches for both devices.
- Wireless Settings
- Home Network Connection Check
- Home Network function
- Internet Connection Test

- 3 When “Easy Network Setting is finished.” appears.
Press [OK].

Connection method to wireless access point

Search for wireless network:

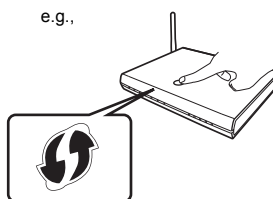
- 1 Select “Search for wireless network”, then press [OK].
 - 2 The available wireless networks will be displayed. Select your network name and press [OK].
 - If your Network name is not displayed search again by pressing the red button on the remote control.
 - Stealth SSID will not be displayed. Enter manually by using “Wireless Settings”. (⇒ 86, 98)
- If your wireless network is encrypted, Encryption Key Input Screen will be displayed.
Input the encryption key of your network.

WPS (PUSH button):

If your Wireless router supports WPS (PUSH button), you can easily perform the settings by pressing WPS button on it.

WPS (Wi-Fi Protected Setup™) is a standard that facilitates settings relating to the connection and security of wireless LAN devices.

- 1 Select “WPS (PUSH button)”, then press [OK].
- 2 Press WPS button or corresponding button of Wireless router until the lamp starts flashing.



- Wi-Fi Protected Setup™-compatible Wireless router may have the mark.
 - For details, refer to the operating instruction of Wireless router.
- 3 Press [OK].

When you experience problems

Refer to “When you experience problems with Easy Network Setting”. (⇒ 113)

To restart Easy Network Setting

- 1 Press [FUNCTION MENU]. (⇒ 21)
- 2 Select “Setup” in “Others”, then press [OK].
- 3 Select “Easy Network Setting” in “Network”, then press [OK].

To redo settings individually

If “Easy Network Setting” did not work properly or when you change the settings individually, perform the following steps:

- 1 Press [FUNCTION MENU]. (⇒ 21)
- 2 Select “Setup” in “Others”, then press [OK].
- 3 Select “Network Settings” in “Network”, then press [OK].
- 4 Refer to “Network Settings”. (⇒ 98)

Check security before using Home Network function

If you set “Home Network function” to “On”, all connected devices on the same network can access this unit. Ensure that the router for your home network has adequate security system to prevent unauthorized access.

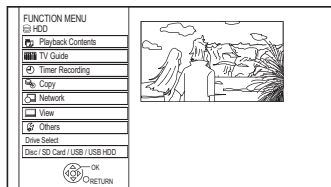


- Refer to the operating instructions of the hub or router.
- Home Network function setting can be set only when you selected “Off” for “Power Save in Standby” in “Easy Setting”. (⇒ 23, step 7)
Even if you set “Home Network function” to “Off”, it is possible to set to “On” later. (⇒ 86, 99)
- Do not use this unit to connect to any wireless network for which you do not have usage rights.
During automatic searches in a wireless network environment, wireless networks (SSID) for which you do not have usage rights may be displayed; however, using these networks may be regarded as illegal access.
- After performing network settings on this unit, the settings (encryption level, etc.) of the Wireless router might change.
When you have trouble getting online on your PC, perform the network settings on your PC in accordance with the settings of Wireless router.
- Please be aware that connecting to a network without encryption may result in the content of the communication being illegitimately viewed by a third party, or the leaking of data such as personal or secret information.

FUNCTION MENU screen

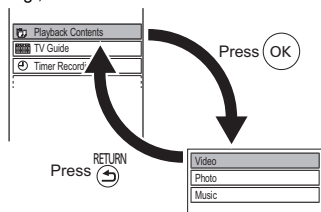
You can easily access the desired functions, such as playback, timer recording, the unit's settings etc. via the FUNCTION MENU.

1 Press [FUNCTION MENU].



2 Select the item, then press [OK]

e.g.,



FUNCTION MENU list

FUNCTION MENU

- Playback Contents
 - Video (⇒ 39)
 - Video (AVCHD) (⇒ 43)
 - Video (MP4) (⇒ 42)
 - Photo (⇒ 62)
 - Music (⇒ 66)
 - Top Menu (⇒ 42)
 - Menu (⇒ 42)
- TV Guide (⇒ 28)
- Timer Recording (⇒ 36)
- Copy
 - Copy Video (⇒ 56)
 - Copy Video (AVCHD) to DVD-R (⇒ 61)
- Network
 - Home Network (DLNA Client) (⇒ 75)
 - Home Network (Media Renderer) (⇒ 76)
 - Network Service (⇒ 77)
- View (⇒ 27)
 - “View” is displayed when this unit is connected with the TV that supports “HDAVI Control 2” or later. (⇒ 82)
- Others
 - Ext Link Standby (⇒ 71)
 - Playlists (⇒ 42)
 - Flexible Recording via AV input (⇒ 70)
 - Copy Video (AVCHD) (⇒ 72)
 - Copy Video (MPEG2) (⇒ 73)
 - Copy New Photos (⇒ 65)
 - Blu-ray Disc Management (⇒ 78)
 - DVD Management (⇒ 78)
 - SD Card Management (⇒ 78)
 - BD-Video Data Management (⇒ 43)
 - Setup (⇒ 86)
 - You can change the unit's settings of DVB Tuning, Sound, Display, Connection, Network etc. in the Setup menu.
- Drive Select
 - HDD
 - Blu-ray Disc / DVD
 - SD Card
 - USB Device
 - USB HDD



- Selectable items will change depending on the type and status of the media.

Watching broadcasts

Instructions for operations are generally described using the remote control. (⇒ 12)

1 Press [INPUT SELECT] and select "TV", then press [OK].

2 Press [CH ^ v] to select the channel.

- You can also select the channel by the following operations
 - Using number buttons.
 - Using Channel List (⇒ right)
 - Using TV Guide system (⇒ 28)
 - Using channel information (⇒ 28)

To switch to the channel you have previously watched

Press [LAST VIEW .

- This function will work only for the channels you have watched for more than 10 seconds.

To switch to the radio channels or to the all channels

Press [RADIO/TV].



- Selection of channel is made easy by creating a Favourite of the channels. (⇒ 88, Favourites Edit)
- When you are watching the 3D programme, subtitles and TV Guide, etc., may not display correctly depending on the settings. (⇒ 46, 47, 3D Type, Signal Format)

About the PIN for parental control

If you have locked channels (⇒ 90, Child Lock List) or set a ratings level (⇒ 90, Parental Rating), you may be asked to enter the PIN. In that case, enter the 4-digit PIN with the number buttons by following the on-screen instructions.

- **Make a note of the PIN you have decided on in case you forget it.**
- PIN can be changed via "PIN Entry". (⇒ 100)

If encrypted channels do not appear

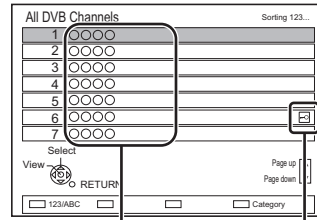
To watch an encrypted broadcast, insert the CI module into the CI slot. (⇒ 14)

- Depending on the CI module, a PIN may be demanded. If prompted to enter a PIN code, enter the set PIN code with the number buttons.
- Set according to the CI module. (⇒ 86, 97, Common Interface)

Using Channel List

You can select from the list of channel names.

1 Press [OK].



Channel names

Encrypted channel

- To sort the channel, press the red button.
- To change the category, press the blue button.

2 Select the channel, then press [OK].

To skip unwanted channels

The channel is skipped next time you select the channel.

- 1 While watching the broadcast to skip, press [DEL].
- 2 Press [OK].



- You can select the skipped channel with the number buttons.
- When you want to restore the skipped channel, edit the channel list. (⇒ 86, 89)

To edit the channel list

Refer to "Channel List". (⇒ 89)

Watching broadcasts

Using TV Guide system

- 1 Press [GUIDE].

TV Guide		SUN 01.01.2012 8:05		Category: All DVB Channels	
8:00 - 8:45		Skiffel workman		①	
SUN 01.01	8:00	8:30	9:30	10:00	P
1	OOOO	Skiffel workman	Penguin		
2	OOOO	Kamen	House dog	WRT	
3	OOOO	Vacation	Hunting		
4	OOOO	Pampas grass	News	Top run	
5	OOOO	News	Com Shopping	Area 91	
6	OOOO	Venus	Moon		
7	OOOO	Construction	Hippopotamus		
8	OOOO	Great river	Mr. Otter	Bodge	

TV Guide screen appears.

- 2 Select the programme, then press [OK].
- 3 Select "View", then press [OK].

Page up/down

Press [CH ^ v].

To view a programme list for another day

Press the green button (Previous) or the yellow button (Next).

To see programme information

Press [STATUS ①].

To retrieve the programme data for the area where data have not been acquired

Select the area, then press [STATUS ①].

- Some broadcasters may not send the programme data. You cannot retrieve the data from them.

To set a timer Recording using the TV Guide System

Refer to "Timer recording". (⇒ 35)

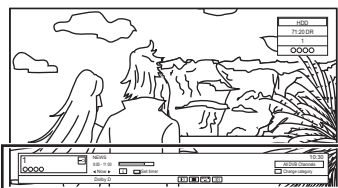


- If you make access to Rovi Guide via VIERA Connect, you can use an additional TV Guide which can search programmes by keywords and can display the detailed information, etc. (current as of July, 2012). (⇒ 77)

Using channel information

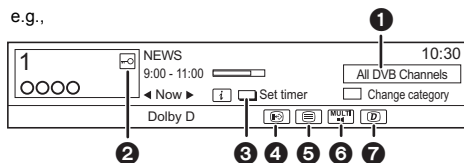
While watching a programme

Press [STATUS ①].



Channel information appears.

e.g.,



- 1 Current Category
- 2 Encrypted broadcast
- 3 Set timer (⇒ 37)
- 4 Subtitle
- 5 Teletext
- 6 Multiple audio/Sub Channel
- 7 Data service (Hybrid Broadcast Broadband TV) (⇒ 29)

To show detailed information

Press [STATUS ①] again.

To hide the information screen

Press [EXIT ⊗].

To change Category

Press the blue button.

• To register your favourite channels

- 1 Press [OPTION].
- 2 Select "Digital TV Menu", then press [OK].
- 3 Select "Favourites Edit", then press [OK].
- 4 Refer to "Favourites Edit". (⇒ 88)

To switch between the current programme and the next programme


Press [◀, ▶].


To switch to another channel

Press [▲, ▼], then press [OK].

Operations while watching broadcast


To show subtitle

When “” appears in channel information (⇒ 28)

Press [STTL ].

- Press again to hide subtitle.

To change subtitle language

- 1 Press [OPTION].
- 2 Select “Subtitle Language” in “Digital TV Menu”, then press [OK].
- 3 Select the desired language.
 - Press [EXIT ] to exit the screen.



- Some subtitle contents can be displayed using Teletext. (⇒ right)

Switching audio

Press [AUDIO].

- Audio will switch according to the contents of the programme every time it is pressed.


To use data service (Hybrid Broadcast Broadband TV)

You can enjoy the interactive data services for digital broadcasting.

To use Hybrid Broadcast Broadband TV application, perform network connection and settings. (⇒ 20, 24)

When notification message is displayed:
Follow the on-screen instructions.


When the Teletext is included in data service:



When [TEXT ] is pressed, the Teletext of data service will be displayed.



- Operation buttons: [▲, ▼, ◀, ▶], [OK], number buttons or colour buttons, etc.
- Operations may vary depending on the broadcaster.
- On-screen instructions may not correspond to the remote control buttons.
- It may take some time to show the data service.
- Not all the data services are available depending on the broadcaster.
- Some functions of the data service may be deactivated during recording.

To show the Teletext

When “” appears in channel information (⇒ 28)

- 1 Press [TEXT ].
 - When the Teletext of data service is displayed, press [TEXT ] again.
- 2 Use [▲, ▼, ◀, ▶], number buttons or colour buttons, etc. according to on-screen instructions.



- You can change the display mode. (⇒ 95, Teletext)

Aspect

You can switch the screen mode.

Refer to “Switching the aspect ratio of the screen”. (⇒ 104)

To select the contents in the broadcast

When a programme includes audio signals etc., you can select signals.

- 1 Press [OPTION].
- 2 Select “Digital TV Menu”, then press [OK].
- 3 Select “Multi Audio” or “Sub Channel”, then press [OK].
- 4 Select the item.

Watching broadcasts

REWIND LIVE TV/PAUSE LIVE TV

This unit temporarily saves a live TV programme you are watching with this unit's tuner on HDD.

REWIND LIVE TV

You can rewind live TV programme to the point where temporary save has started (up to 1.5 hours).

- REWIND LIVE TV does not work when watching a programme via external input.

PAUSE LIVE TV

You can pause live TV programme and restart watching from the paused position.

- 1 While watching TV
REWIND LIVE TV:
Press [SLOW/SEARCH ◀◀] to rewind.

PAUSE LIVE TV:

Press [PAUSE ■■] to pause.

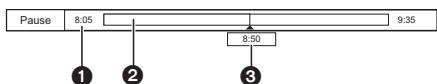
- The maximum amount of the temporary save is 1.5 hours.

- 2 When you want to resume:
Press [PLAY/×1.3 ▶].
 - You can perform search or Quick View, etc.
 - If temporary save stops (⇒ right), playback will be performed by that point.

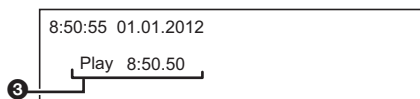
Display information

While pausing or rewinding a broadcast:

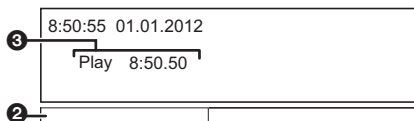
Press [STATUS ⓘ].



- Press [STATUS ⓘ] again.



While pausing a programme via external input:
Press [STATUS ⓘ].



- 1 The time that you can rewind the live programme.
- 2 The amount of time temporarily saved on HDD.
- 3 The time of the current playback position.

To stop REWIND LIVE TV or PAUSE LIVE TV

- 1 Press [STOP ■].
- 2 Select "Yes", then press [OK].

To hide the display information

Press [EXIT ⊗].



- The unit cannot rewind and play more than 1.5 hours prior to the current time.
- Temporary save stops in the following cases:
 - When switching to other channels or other screen
 - When recording of the watching programme is started
 - When two programmes simultaneous recording is started
 - When performing PAUSE LIVE TV or REWIND LIVE TV for more than 8 hours (This may vary depending on the HDD free space.)
- These functions do not work in the following cases:
 - When the clock is not set
 - When setting clock manually (Copy protected title (Copying is prohibited) only) (⇒ 15)
 - While recording two programmes simultaneously
 - While copying
 - While watching a programme being recorded
 - When a radio programme is selected
 - While watching an encrypted programme
 - REWIND LIVE TV:
 - When "REWIND LIVE TV" is set to "Off" (⇒ 92)
 - PAUSE LIVE TV:
 - When a timer recording via external input is started while watching a programme via external input
- PAUSE LIVE TV:

You can operate this unit with the TV remote control by using VIERA Link (⇒ 82). Refer to the TV operating instructions.
- PAUSE LIVE TV:

When you connect the TV with a HDMI cable and a 21-pin Scart cable, it is possible to pause programmes that cannot be received with the tuner of this unit.

Recording TV programmes

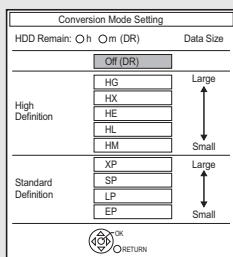


- This operation will only record to built-in HDD.
- This unit can record two programmes being broadcasted at the same time.
- About CI Plus restriction (⇒ 15)
- Notes for recording of an encrypted broadcast (⇒ 33)

1 Select the channel to record.

2 Press [REC MODE] and select the conversion mode, then press [OK].

- This unit will record the programmes in DR mode once, and then automatically convert to the selected recording mode while this unit is in standby.
- Recording mode (⇒ 8)



- The conversion mode set here is used as an initial value for the next recording.

3 Press [REC ●].

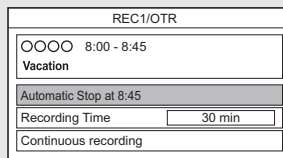
Recording starts.

- "REC1" or "REC2" will light on the unit's display.

4 Select "Automatic Stop", then press [OK].

• One touch recording (OTR)

Recording stops automatically when the programme ends.



- You can also select "Recording Time" or "Continuous recording". (⇒ below)

To set the recording time

- 1 Select "Recording Time" or "Continuous recording" in step 4 (⇒ above).

Recording Time:

You can set the length of recording time from 30 minutes to 4 hours.

- You can select the recording time with [◀, ▶].

Continuous recording:

The recording is continued until you press [STOP ■].

- 2 Press [OK].

Recording TV programmes

To convert the recording mode after recording in DR mode

Refer to "File Conversion". (⇒ 51)

To confirm whether the conversion is completed

Refer to "To confirm whether the conversion is completed". (⇒ 52)

To cancel a conversion

Refer to "To cancel a "During standby" conversion". (⇒ 52)



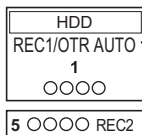
- One recording will terminate when simultaneous recording is being done and timer recording starts.
- When the programme recorded in DR mode is converted, teletext will not be recorded.
- Data service will not be recorded.
- Following contents or media cannot be played back while recording.
 - DivX and MKV file
 - photo
 - USB memory
- Copying cannot be performed while recording.
- When "Automatic Standby after OTR" is set to "On" (⇒ 99), this unit is turned to standby mode if this unit is not operated for approximately 5 minutes after completing "Automatic Stop" or "Recording Time".
- When a programme is recorded in encrypted form, conversion will not start until decryption has finished. (⇒ 33)
- The title before conversion (the title recorded in DR mode) will be deleted once the conversion is completed.
- Conversion will take about the same time as the recorded duration.
- When the HDD does not have enough remaining space, conversion will not start.
- Conversion is stopped when this unit is turned on. Conversion will start from the beginning again once the unit is switched to standby mode.
- The conversion will not start if the timer recording is scheduled within the time required for the conversion.
- When converted, audio content and subtitle will be converted with the same settings as at the start of recording.

Operation during Recording

To check the recording programme

Press [STATUS ⓘ].

e.g., While recording two programmes simultaneously



Recording programme displayed on the TV

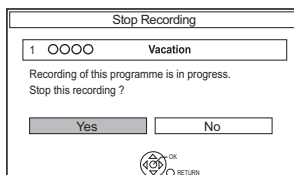
Recording programme not displayed on the TV

To stop recording

Press [STOP ■].

When recording one programme:

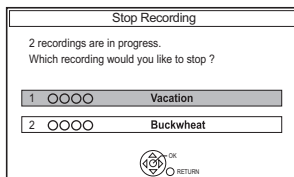
If the following screen appears



Select "Yes", then press [OK].

When recording two programmes:

If the following screen appears



- 1 Select the programme, then press [OK].
- 2 Select "Yes", then press [OK].

To pause recording

After displaying the recording programme, press [PAUSE ■■■].

- Press again to restart recording.
(A title is not split into separate titles.)



- Timer recording programme cannot be paused.

To record two programmes simultaneously

While recording, perform steps 1–4 on page 31.

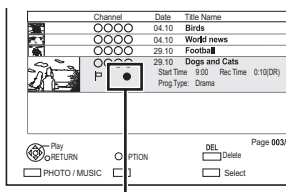


- Channel or input can only be switched between the recording programmes.

Simultaneous rec and play

You can play the recording title from the beginning or the titles previously recorded to the HDD.

- 1 Press [DIRECT NAVIGATOR].
 - If the DIRECT NAVIGATOR screen of photo or music is displayed, press the red button, then select "VIDEO".



● is displayed on the recording programme.

- 2 Select the title, then press [OK].

Notes for recording of an encrypted broadcast

This unit allows you to record/view/play an encrypted programme by decryption using a supporting CI module.

Recording of encrypted broadcast

The recording of encrypted broadcasts differs according to the "Recording for Encrypted Channel" (⇒ 92) settings as follows.

	Supporting CI module is inserted	Supporting CI module is not inserted
Automatic	Record (Decrypted)*	Record (Encrypted)
Decrypt Recording	Record (Decrypted)	Recording impossible
Encrypt Recording	Record (Encrypted)	Record (Encrypted)

* Depending on the specifications of the CI module, the broadcast may be recorded in the encrypted form. (⇒ below)

2 encrypted programmes simultaneous recording/viewing/playing

Two programmes (e.g., "A" and "B") which need the same CI module for decryption will be recorded/viewed/played as follows:

- When "Automatic" is selected

Programme	"A"	"B"
While recording programme "A", start recording programme "B".	Record (Decrypted)	Record (Encrypted)
While viewing/playing programme "A", start timer recording programme "B".	Viewing/playing possible	Record (Encrypted)
While recording programme "A", view/play programme "B".	Record (Decrypted)	Viewing/playing impossible

Recording TV programmes


- When “Decrypt Recording” is selected

Programme	“A”	“B”
While recording programme “A”, start recording programme “B”.	Record (Decrypted)	Recording impossible
While viewing/playing programme “A”, start timer recording programme “B”.	Viewing/playing impossible	Record (Decrypted)
While recording programme “A”, view/play programme “B”.	Record (Decrypted)	Viewing/playing impossible

- When “Encrypt Recording” is selected

Programme	“A”	“B”
While recording programme “A”, start recording programme “B”.	Record (Encrypted)	Record (Encrypted)
While viewing/playing programme “A”, start timer recording programme “B”.	Viewing/playing possible	Record (Encrypted)
While recording programme “A”, view/play programme “B”.	Record (Encrypted)	Viewing/playing possible

Encrypted titles

Programmes recorded in encrypted form () have the following restrictions:

- The encrypted title can be played back, but it does not mean that it is decrypted and saved in the decrypted form.
- Depending on the programme, it may not be possible to play back/decrypt after recording.
- There are restrictions on the playback and editing of encrypted programmes.
- To copy an encrypted programme, decryption must be performed.

Decryption

Decryption is performed when the unit is turned off. It will take about the same time as the recorded duration.





“COPY” on the unit’s display remains lighted during decryption.

It is also possible to decrypt manually

Refer to “File Decryption”. (⇒ 53)



- To decrypt, insert the CI module into the CI slot (⇒ 14). During decryption, do not remove the CI module from this unit.
- The title before decryption will be deleted once decryption is completed.
- When the HDD does not have enough remaining space, decryption will not start.
- This function is stopped when this unit is turned on. Decryption will start from the beginning again once the unit is turned off.
- The decryption will not start if the timer recording is scheduled within the time required for the decryption.
- When a decryption fails, the screen icon () is changed to “  ”.

Timer recording



- This operation will only record to built-in HDD.
- This unit can record two programmes being broadcasted at the same time.
- About CI Plus restriction (⇒ 15)
- Notes for recording of an encrypted broadcast (⇒ 33)

Preparation

If you want to change the recording mode: Press [REC MODE] and select the recording mode, then press [OK].

1 Press [GUIDE].

TV Guide screen appears.

TV Guide		SUN 01.01.2012 8:05		Category: All DVB Channels	
8:00 - 9:45	Skull workman				
1 0000	Skull workman		Penguin		
2 0000	Kitten	House dog		WH	
3 0000	Vacation	Hunting			
4 0000	Pampas grass	News	Top run		
5 0000	News	Com/Shopping	Area 91		
6 0000	Venus		Moon		
7 0000	Construction		Hippopotamus		
8 0000	Great river	Mr. Otter	Dodge		

Timer Rec. +24 hours Category

2 Select the programme, then press the red button.

The timer icon “⊖” (red) is displayed.

- If on-screen instructions are displayed, follow them.

To use TV Guide system

Refer to “Using TV Guide system”. (⇒ 28)

To edit the timer recording on the TV Guide screen

- 1 Select the programme to edit, then press the red button.
- 2 Select “Timer Rec Edit”, then press [OK].
- 3 Go to step 3 on page 36.

To cancel a timer recording on the TV Guide screen

- 1 Select the programme to cancel, then press the red button.
- 2 Select “Timer Rec Cancel”, then press [OK]. (“⊖” disappears)

Operation during Recording

Refer to “Operation during Recording”. (⇒ 32)



- Some broadcasters may not send programme information. When programme information is not displayed correctly, use manual timer recording. (⇒ 36)
- The receipt of the TV Guide data via Set Top Box is not possible.
- When timer recording from the external equipment, use manual timer recording. (⇒ 36)
- You can set the start and finish time to make the timer recording work successfully. (⇒ 86, 92, Timer Record Start Buffer, Timer Record Stop Buffer)

To select the programmes of a specific category

- 1 On the TV Guide screen: Press the blue button.
- 2 Select the item, then press [OK].

To return to the previous TV Guide list

Select “All DVB Channels” in step 2.

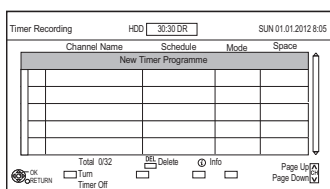


- Category may not be assigned correctly depending on the programme information.

Timer recording

Manually programming timer recording

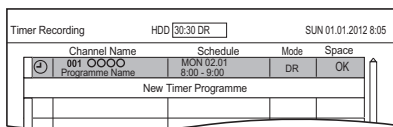
1 Press [PROG/CHECK].



2 Select "New Timer Programme", then press [OK].

3 Select the items and change the items. (⇒ right, Timer recording options)

4 Press [OK].
The timer programme is stored.



To confirm and edit the timer programme

Refer to "To confirm and edit a timer programme". (⇒ 38)

Operation during Recording

Refer to "Operation during Recording". (⇒ 32)

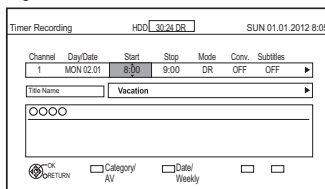


- When recording from the external equipment, "Mode" (recording mode) is XP, SP, LP, EP or FR.

Timer recording options

Select the items and change the items.

e.g.,



Channel

- You can select Category/AV with the red button.

Day/Date

- You can select "Date" or "Weekly" by pressing the green button.

Auto Renewal Recording

(Only daily/weekly timer recording)

The unit will record the new programme over the old one.

Press the yellow button.

"Renew : ON" is displayed.

Start/Stop

- Press and hold [▲, ▼] to alter in 15-minute increments.

Mode/Conv.

Refer to step 2. (⇒ 31)

Subtitles


(Only when item other than "OFF" is selected in "Conv.")

Title Name

- Select "Title Name", then press [OK].
- Refer to "Entering text!". (⇒ 104)





Timer recording from channel information

You can make timer recording of the current or next programme.


- 1 While watching a programme
Press [STATUS ].

e.g.,



- 2 Display the channel information of a programme to record.
 - Switch the programme with [, ].
 - Switch the channel with [, ].
- 3 Press the yellow button.
- 4 Go to step 3 on page 36.

Notes on timer recording

- You can enter up to 32 programmes within a month in advance. (Each daily or weekly programme is counted as one programme.)
- When the programme recorded in DR mode is converted, the audio content and subtitle language will be selected according to the following settings:
 - "Multi Audio" of "Preferred Language" (⇒ 90)
 - "Subtitles" of "Preferred Language" (⇒ 90)
 - Audio for HG / HX / HE / HL / HM Recording (⇒ 95)
- When the programme recorded in DR mode is converted, teletext will not be recorded.
- Data service will not be recorded.
- (Only when recording broadcast in other than DR mode)
This unit will record in the DR mode once, and then convert to the selected mode automatically during standby. If the title has not been decrypted, conversion will start after decryption.
- Even if you switch the unit to standby mode during the timer recording, the recording is continued.
- When you programme successive timer recordings to start, about last 1 minute of earlier programme will not be recorded.
- Timer recording will not start while:
 - copying a title in high speed mode [with finalising or creating Top Menu ()]
 - copying a title in normal speed mode
 - converting a title in "File Conversion" (Only when "Now" is selected)
 - copying HD Video (AVCHD) from USB device or SD card
 - copying photos/music
 - formatting
 - finalising/creating Top Menu

Timer recording

To confirm and edit a timer programme

1 Press [PROG/CHECK].

e.g.,

Timer Recording HDD [30:30 DR] SUN 01.01.2012 8:05

Channel Name	Schedule	Mode	Space
World news	SAT 07:01 11:50-11:45	DR	OK
Football	SAT 07:01 10:00-11:50	→HG	OK
Star	SAT 07:01 11:30-1:00	DR	⊗ I
Dogs and Cats	SUN 01.01 8:00-10:45	DR	⊗

New Timer Programme

Total 3/32 [DEL] Delete [i] Info [Page Up] [A] Page Up
 [RETURN] Turn Off [] [] [] [Page Down] [V] Page Down

2 Select the programme, then perform the operations.

To deactivate a timer programme

Press the red button.

- The timer icon “⊗” will change from red to grey.
- Press the red button again to activate timer recording standby. (The timer icon “⊗” will change to red.)

To delete a timer programme

Press [DEL].

To edit a timer programme

- 1 Press [OK].
- 2 Change the timer recording options.
 - Refer to “Timer recording options”. (⇒ 36)
- 3 Press [OK].

To show programme information

Press [STATUS [i]].

To exit the timer recording list

Press [EXIT ⊗].

Screen icons

⊗ Red: Timer recording standby is activated.
 Grey: Timer recording standby is deactivated.

● Currently recording programme

⊗ A part or all of the programme will not be recorded since the programme is overlapping.

⊗ The HDD is full.

⊗ Copy-protected programme
 It was not recorded.

⊗ The recording of the programme was not completed because of some reason.

⊗ Auto Renewal Recording is set (⇒ 36).

⊗ Displayed if timer recording of two encrypted programmes is overlapping (When “Recording for Encrypted Channel” is set to “Decrypt Recording” only)
 A part or all of the programme will not be recorded since the encrypted programme is overlapping.

OK Displayed if the recording can fit in the remaining space

--> Daily or weekly timer programme is set.

(Date)

! It may not be possible to record because:

- there is not enough space left.
- the number of possible titles has reached its maximum. (⇒ 117)
- programmes are deactivated, etc.

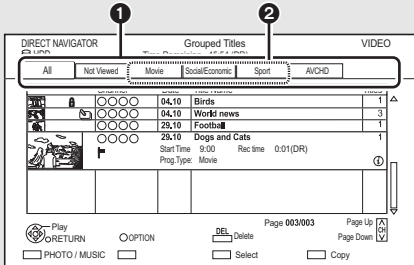
Playing titles on the HDD



1 Press [DRIVE SELECT] to select “HDD”, then press [DIRECT NAVIGATOR].

- If the DIRECT NAVIGATOR screen of photo or music is displayed, press the red button, then select “VIDEO”.

e.g.,



1 Tab (⇒ 40)

2 Programme type

- **[USB HDD]** When connecting registered USB HDD, “USB HDD” tab and registration number appears. Select “USB HDD” tab.

e.g.,

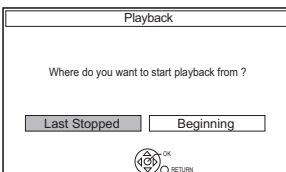


2 Select the title, then press [OK].

Playback starts.

Resume play function

If the following screen appears, select the point to start playback.








DIRECT NAVIGATOR (VIDEO) screen

Screen icons

- Currently recording programme
- Protected title
- Title was not recorded due to recording protection
- Title cannot be played (When data is damaged etc.)
- Title is copy protected (One generation copy is permitted) (⇒ 15)
- Title is imposed a limit on the playable period. (⇒ 15)
 - Playback period limit can be checked in the information of that title. (⇒ 40)
- The icon turns grey after the playback period has passed.
 - Title cannot be edited (except deleting) or copied.
 - When the title has not been played or not been decrypted, it will not be displayed.
- Encrypted title
- Title has failed to be decrypted
 - Press [STATUS ⓘ] to show the reason of the failure.
- Grouped titles
- Title has not yet been played
- Title is recorded using a different encoding system from that of the unit.
- Change the “TV System” (⇒ 86, 96).
- Radio programme

Playing titles on the HDD

	<p>3D contents</p> <ul style="list-style-type: none"> This icon will not display even with 3D programmes when a broadcast programme is recorded.
	Recorded in 1080/50p contents
	Recorded in 1080/60p contents
	Title is restricted by Child Lock List or Parental Rating (⇒ 90).
	Recording did not complete as the timer recording has started.

Tab

Titles will be categorised automatically. You can quickly find the recorded titles by selecting the tab.

To select the tab

Press [◀, ▶].

To change the displayed programme type tab

- 1 Select the programme type, then press the green button.
- 2 Select the item, then press [OK].

To change the programme type of title

Refer to “Changing programme type of title”. (⇒ 51)

Switching to the PHOTO or MUSIC screen

- 1 Press the red button.
- 2 Select “PHOTO” or “MUSIC”, then press [OK].

Showing Information

Select the title, then press [STATUS ⓘ].

Switching the appearance

- 1 Press [OPTION].
- 2 Select “Grouped Titles” or “All Titles”, then press [OK].


Grouped Titles:

Two or more titles recorded in the daily/weekly timer recording mode are bundled and displayed as one item.


All Titles:

Displays all titles.

Playing back grouped titles

- 1 On the Grouped Titles screen: Select the item marked with .
- 2 **When playing all titles:** Press [PLAY/× 1.3 ▶].



- This function cannot be used if the group includes any encrypted title (.

When playing the individual title:

Press [OK] and select the title, then press [OK].

Editing the grouped titles

- 1 Select the title or the group, then press the yellow button.
 - A check mark is displayed. Repeat this step.
 - Press the yellow button again to cancel.
 - If you perform "Remove", select the title in the group.
- 2 Press [OPTION].
- 3 Select the item, then press [OK].

Create Group:

Selected titles are bundled to form a group. Select "Create", then press [OK].

Release Grouping:

All the titles in the group are released. Select "Release", then press [OK].

Remove:

Selected titles are removed from the group. Select "Remove", then press [OK].

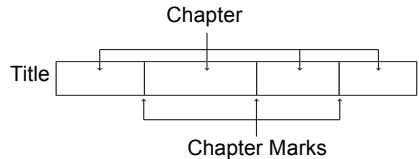
Changing the group name

- 1 Select the group, then press [OPTION].
- 2 Select "Edit", then press [OK].
- 3 Select "Enter Title Name", then press [OK].
- 4 Refer to "Entering text". (⇒ 104)

Playback from Chapter View

Regarding chapters

You can divide a title into multiple chapters. Each section between the division points (Chapter Marks) becomes a chapter.



Chapter Creation

HDD

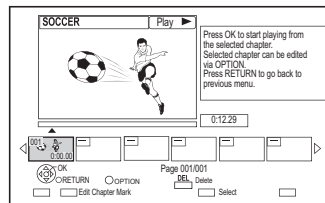
This unit can create chapters automatically while recording broadcasting. (⇒ 92)



- If the title is recorded in the encrypted form, the chapter will be created only after the title is decrypted.

- 1 Select the title, then press [OPTION].
- 2 Select "Chapter View", then press [OK].

e.g., **HDD**



- 3 Select the chapter, then press [OK].

To edit the chapter in Chapter View

Refer to "Editing chapters". (⇒ 53)

Playing titles on the media



1 Insert the media.

Depending on the type of the media, play starts from the specified position, or the screen appears.

- AVCHD: If the menu screen is not displayed
Press [PLAY/× 1.3 ▶].

2 When the DIRECT NAVIGATOR screen or menu screen etc., appears:

Select the item or title, then press [OK].

- Repeat this step if necessary.

Playback starts.

To play back the playlist created on other equipment

- 1 Press [FUNCTION MENU].
- 2 Select "Playlists" in "Others", then press [OK].
- 3 Select the playlist, then press [OK].

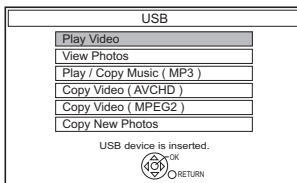


- **BD-V** You cannot play back while recording from external equipment. Also, playback stops when the timer recording starts from external equipment.
- Some DivX and MKV files may not be played back, depending on the video resolution and frame rate condition.

Menu screen

Selecting screen for each operation is displayed when the media is inserted, and you can access the operation screen easily.

e.g., **USB**



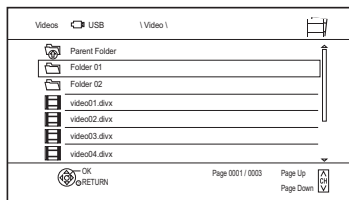
- Display items differ depending on what is recorded in each media.

If the menu screen is not displayed, display it by performing the following operation.

- 1 While stopped
Press [OPTION].
- 2 Select "Drive Select", then press [OK].
- 3 Select the media, then press [OK].

Video list screen

e.g.,



Screen icons:



Folder



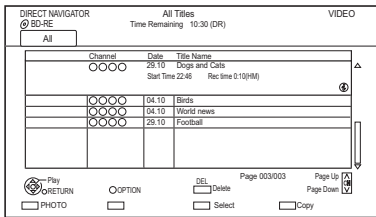
Titles



Move to the parent folder

DIRECT NAVIGATOR screen

e.g.,



Switching to the PHOTO screen

Press the red button.

The screen switches to "PHOTO".

Showing Information

Select the title, then press [STATUS (i)].

Playback from Chapter View

- 1 Select the title, then press [OPTION].
- 2 Select "Chapter View", then press [OK].
- 3 Select the chapter, then press [OK].

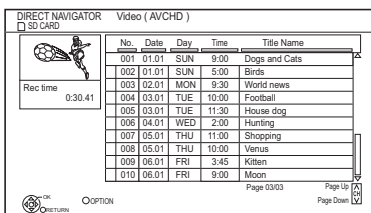
• Regarding chapters

Refer to "Regarding chapters". (⇒ 41)

DIRECT NAVIGATOR (AVCHD) screen

SD

e.g.,



Showing Information

- 1 Select the title, then press [OPTION].
- 2 Select "Information", then press [OK].

About screen icons on the DIRECT NAVIGATOR

Refer to "Screen icons". (⇒ 39)

Notes for BD-Live discs

BD-V

BD-Live allows you to enjoy more functions such as subtitles, exclusive images and online games by connecting this unit to the Internet.

Preparation

- 1 Perform network connection and settings. (⇒ 20, 24)
- 2 Insert a disc.

For the playback method, refer to the instructions for the disc.

Delete BD-Video data

If you no longer need BD-Live data recorded on the built-in HDD, you can delete data with the following operation.

- 1 Press [FUNCTION MENU].
- 2 Select "BD-Video Data Management" in "Others", then press [OK].
- 3 Select "Delete BD-Video data", then press [OK].
- 4 Select "Yes", then press [OK].
- 5 Select "Start", then press [OK].
- 6 Press [OK].



- The usable functions and the operating method may vary with each disc, please refer to the instructions on the disc.
- You can restrict Internet access when BD-Live functions are used (⇒ 86, 91, BD-Live).

Operation during play



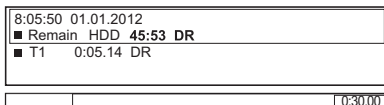
- Depending on the media and the type of file, some operations may not be possible.
- Depending on the media, it may take time for the menu screen, pictures, sound, etc. to start.
- Discs continue to rotate while menus are displayed. Press [STOP ■] when you have finished playback to protect the unit's motor, your TV screen, etc.
- Titles that are copy protected (Copying is prohibited) cannot be viewed going back in time more than the allowed playback period. (⇒ 15)

General operations

Status messages

Press [STATUS ⓘ] twice.

e.g.,



Stop

Press [STOP ■].

Resume play function

Press [PLAY/× 1.3 ▶] to restart from the stopped position.

- The resume play function does not work depending on the disc.

- Stopped position

[HDD] [USB HDD], AVCHD ([SD]):

Stopped position for each title is memorized.

Discs:

Only previous stopped position is memorized.

The position may be cleared if the tray is opened or the unit is switched to standby mode.

Quick View

Press and hold [PLAY/× 1.3 ▶].

- Press again to return to normal speed.



- **DivX, MKV, MP4 and MPEG2 ([USB]):** Quick View is not effective.
- Quick View is not effective when playing back the DVD-RW disc.
- Quick View may not work when recording in XP or FR mode.
- Quick View cannot be used on encrypted titles ([Ⓜ]).

Search

Press [SLOW/SEARCH ◀◀] or [SLOW/SEARCH ▶▶].

- Press [PLAY/× 1.3 ▶] to restart play.



- The speed increases up to 5 steps.
([+R] [+RW]: Up to 3 steps)
- **DivX, MKV, MP4 and MPEG2 ([USB]):** Audio is not heard during all levels search.

Pause

Press [PAUSE ■■].

- Press [PLAY/× 1.3 ▶] to restart play.

Slow-motion

While paused, press [SLOW/SEARCH ◀◀] or [SLOW/SEARCH ▶▶].

- Press [PLAY/× 1.3 ▶] to restart play.



- The speed increases up to 5 steps.
- **DivX, MKV, MP4 and MPEG2 ([USB]):** Slow-motion is not effective.
- **BD-V, AVCHD ([DVD-R] [SD]):** Forward direction [SLOW/SEARCH ▶▶] only.
- Slow-motion cannot be used on encrypted titles ([Ⓜ]).

Frame-by-frame

While paused, press [**◀**] (**◀|||**) or [**▶**] (**|||▶**).

- Each press shows the next frame.
- Press and hold to change in succession forward or backward.
- Press [PLAY/× 1.3 ▶] to restart play.



- **DivX, MKV, MP4 and MPEG2 (USB)**: Frame-by-frame is not effective.
- **BD-V, AVCHD (DVD-R SD)**: Forward direction [**▶**] (**|||▶**) only.
- Frame-by-frame cannot be used on encrypted titles (**Ⓜ**).

Manual Skip

Skip forward 1 minute:

Press [MANUAL SKIP +60s].

Skip backward 10 seconds:

Press [MANUAL SKIP -10s].



- **DivX and MKV**: Manual Skip is not effective.

Skipping the specified time

- 1 Press [TIME SLIP].
- 2 Select the time with [**▲**, **▼**].
 - Press and hold [**▲**, **▼**] to change the time by 10-minute.
- 3 Press [OK].
 - Play skips the specified time.



- **BD-V DVD-V, DivX, MKV, AVCHD, MP4 and MPEG2 (USB)**: [TIME SLIP] is not effective.

To display menu

BD-V DVD-V

- 1 Press [OPTION].
- 2 Select "Playback Menu", then press [OK].
- 3 Select "Top Menu", "Pop-up Menu" or "Menu", then press [OK].

Skipping the title or chapter

Press [SKIP |◀◀] or [SKIP ▶▶].



- **HDD USB HDD**: It will not skip the title. But the titles in the grouped titles will be skipped. (⇒ 40)
- [SKIP ▶▶] is not effective for encrypted titles (**Ⓜ**).

To create Chapter Marks

HDD USB HDD BD-RE BD-R RAM

During the playback or pause
Press [CHAPTER].

To delete the Chapter Mark

HDD USB HDD BD-RE BD-R RAM

- 1 While paused
Press [SKIP |◀◀] or [SKIP ▶▶] and skip to the location you want to delete.
- 2 Press [CHAPTER].
- 3 Select "Yes", then press [OK].

Operation during play


Changing audio

Press [AUDIO].

- It will switch depending on the contents recorded every time it is pressed.

Switching subtitles

HDD **USB HDD** **BD-RE** **BD-R** :

- 1 Press [STTL ].
 - 2 Select "On" or "Off".
- If you want to switch the subtitle language, select it in the Disc menu (⇒ 84).

BD-V **DVD-V**, **DivX** and **MKV**:

Display with "Subtitles" in the Disc menu (⇒ 84).



- **DivX and MKV**: If the subtitles text are not displayed correctly, try changing the language settings (⇒ 91, Subtitle Text).

Displaying the Teletext

HDD **USB HDD** **BD-RE** **BD-R** :

Press [TEXT ].



- Teletext display mode is TOP (FLOF) only.
- Some functions may not work.
- Teletext cannot be displayed when the subtitles are set to ON.

Aspect

You can switch the screen mode.

Refer to "Switching the aspect ratio of the screen". (⇒ 104)

3D video playback

Preparation

Connect 3D compatible TV to this unit. (⇒ 16)

- Perform the necessary preparations for the TV.

Play back following the instructions displayed on the screen.

Preparatory 3D settings

Perform the following settings as necessary.

3D BD-Video Playback

It is also possible to play back 3D discs in 2D (conventional video). (⇒ 86, 91)

3D Type

If 3D video cannot be played back in 3D, you may be able to play it in 3D by changing the setting. (⇒ 86, 96)

3D AVCHD Output

If 2D AVCHD video is recognised as 3D video and cannot be played back correctly, you may be able to play it by changing the setting. (⇒ 86, 96)

3D Playback Message

Hide the 3D viewing warning screen. (⇒ 86, 96)

Graphic Display Level

Adjust the 3D position for the playback menu or message screen etc. (⇒ 84)

3D settings during playback

Change this setting when the screen is not correctly displayed for 3D compatible programmes.

- 1 Press [OPTION].
- 2 Select "3D Settings", then press [OK].
- 3 Select the item, then press [OK].

Signal Format

- **Original**
Keep original picture format.
- **Side by side**
3D picture format comprising of left and right screens.
- **2D to 3D**
Converts 2D pictures to 3D effect while playing.

3D Picture Mode

- **Normal**
Normal 3D effects.
- **Soft**
Soft 3D effects.
 - This function cannot be enabled when "Signal Format" is set to "2D to 3D".
- **Manual Settings**
Set 3D effect manually.
 - **Distance**
Set the amount of depth perception.
 - **Screen Type**
Selects how the screen appears during 3D playback (flat or round).
 - **Frame Width**
Set the amount of feathering at the edge of screen.
 - **Frame Colour**
Set the colour of feathering at the edge of screen.







- Depending on the contents, displayed items are different.
- This unit only guarantees the playback of the Frame Sequential and the Side-by-Side (Half) programme types.
- Please refrain from viewing 3D images if you do not feel well or are experiencing visual fatigue.
In the event that you experience dizziness, nausea, or other discomfort while viewing 3D images, discontinue use and rest your eyes.
- Depending on the connected TV, the video being played back might switch to 2D video due to changes in resolution etc. Check the 3D setting on the TV.
- 3D video might not output the way it is set in "HDMI Video Format" (⇒ 96) and "24p Output" (⇒ 96).
- It may display as Side-by-Side when playback of the 3D video is started.

Deleting recorded titles

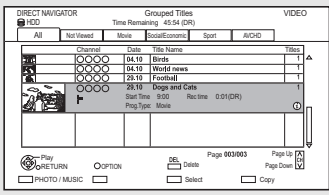
Once deleted, recorded content cannot be restored to its original state. Make certain before proceeding.



- If the disc is protected, release the protection. (⇒ 78, Disc Protection)

1 On the DIRECT NAVIGATOR screen:
Select the title.



2 Press [DEL].

3 Select "Delete", then press [OK].

Deleting during play

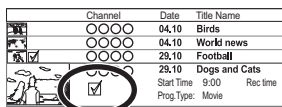
- 1 Press [DEL] while playing.
- 2 Select "Delete", then press [OK].

Available disc space after deleting

- **HDD** **USB HDD** **BD-RE** **RAM**
The space deleted becomes available for recording.
- **BD-R** **DVD-R** **+R**
Available space does not increase even after the contents are deleted.
- **DVD-RW** **+RW**
Available recording space increases only when the last recorded title is deleted.

Multiple deleting

Select the title, then press the yellow button in step 1.



A check mark is displayed. Repeat this step.

- Press the yellow button again to cancel.

Editing recorded titles

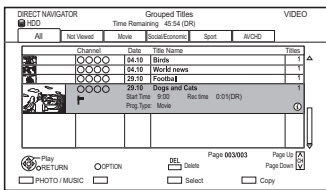
Once deleted, divided or partially deleted, recorded content cannot be restored to its original state. Make certain before proceeding.

- With titles that are copy protected (Copying is prohibited), you cannot perform editing other than Delete. (⇒ 15)

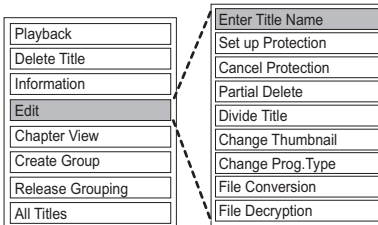


- Depending on the media and the type of file, some operations may not be possible.

- 1 On the DIRECT NAVIGATOR screen:
Select the title.



- 2 Press [OPTION].
- 3 Select the item, then press [OK].
e.g.,



- "Edit" has several functions.

Multiple editing

Select the title, then press the yellow button in step 1.

A check mark is displayed. Repeat this step.

- Press the yellow button again to cancel.

Deleting

- 1 Select "Delete Title", then press [OK].
- 2 Select "Delete", then press [OK].

Entering title name





- 1 Select "Enter Title Name" in "Edit", then press [OK].
- 2 Refer to "Entering text". (⇒ 104)


Editing recorded titles

Setting protection


HDD **USB HDD** **BD-RE** **BD-R** **RAM** **+R** **+RW**

Protection setting prevents the title from accidental deletion.

All	Not Viewed	Movie	Social/Economic
	○○○○	04.10	Birds
	○○○○	04.10	World news
	○○○○	29.10	Football
	○○○○	29.10	Dogs and Cats
		Start Time: 9:00	Rec time
		Prog.Type: Movie	

- 1 Select "Set up Protection" or "Cancel Protection" in "Edit", then press [OK].
 - 2 Select "Yes", then press [OK].
-  appears when setting the protection.




- This function cannot be used on encrypted titles ().

Partial deleting

HDD **USB HDD** **BD-RE** **BD-R** **RAM**

- 1 Select "Partial Delete" in "Edit", then press [OK].
- 2 Press [OK] at the start point and end point to delete.
 - You can find the desired point by using play, search, etc. (⇒ 44)
- 3 Select "Continue", then press [OK].
 - Select "Next", then press [OK] to delete other sections. Up to 20 sections can be set. (⇒ go to step 2)
- 4 Select "Delete", then press [OK].
 - Chapter Mark is generated in the scene that was partially deleted.
- 5 Press [RETURN ⊕].



- This function cannot be used on encrypted titles ().

Dividing title

HDD **USB HDD** **BD-RE** **BD-R** **RAM**

- 1 Select "Divide Title" in "Edit", then press [OK].
- 2 Press [OK] at the point to divide the title.
 - You can find the desired point by using play, search, etc. (⇒ 44)
- 3 Select "Continue", then press [OK].
- 4 Select "Divide", then press [OK].

To confirm the division point

After performing step 2.

Select "Preview", then press [OK].


- The unit plays 10 seconds before and after the division point.

To change the division point

After performing step 2.

Restart play and select "Divide", then press [OK] at the division point.



- **HDD** **USB HDD** Divided titles will become a group of titles.
- This function cannot be used on encrypted titles ().

Changing thumbnail

HDD **USB HDD** **RAM** **DVD-R** **DVD-RW** **+R** **+RW**


- 1 Select "Change Thumbnail" in "Edit", then press [OK].
- 2 Press [OK] at the point to use as a thumbnail.
 - You can find the desired point by using play, search, etc. (⇒ 44)
- 3 Select "Finish", then press [OK].

To change the point

After performing step 2.

Restart play and select "Change", then press [OK] at the point to change.

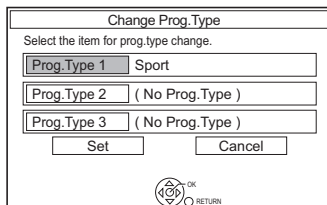


- It is possible to change the image displayed on the Top Menu after finalising or creating Top Menu.
- This function cannot be used on encrypted titles ().

Changing programme type of title

HDD

Programme type information in the title can be edited.



- 1 Select "Change Prog.Type" in "Edit", then press [OK].
- 2 Select the item to change a programme type, then press [OK].
- 3 Select the programme type, then press [OK].
- 4 Select "Set", then press [OK].

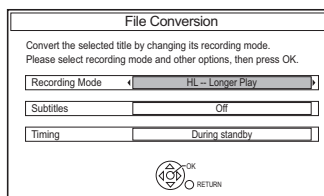
File Conversion

HDD **USB HDD**

File Conversion is a function to convert the recording mode of the title in DR mode and AVCHD contents. The size of the converted title will be small regularly. It will take about the same time as the recorded duration.

- 1 Select "File Conversion" in "Edit", then press [OK].

e.g.,



- 2 Set the conversion options, then press [OK].


Recording Mode (⇒ 8):

- **USB HDD** You cannot select XP, SP, LP and EP mode.

Subtitles:

- **Automatic**
Subtitles will be recorded if they are included in the title, and will not be recorded if they are not included.
- **Off**
Subtitle will not be recorded.

Timing:

- **Now**
Conversion begins immediately after step 4.
 - Timer recording will not be performed during conversion.
 - If an encrypted title () is included, "Now" cannot be selected.
- **During standby**
Conversion will be performed after the unit is switched to standby mode.

Editing recorded titles

3 Select the item, then press [OK].

Convert & Delete:

The original title will be deleted to save HDD capacity after conversion.

Convert Only:

The original title remains after conversion.

- The original title will be deleted after File Conversion, if the selected title is indicated

with . (⇒ 15)

4 **“Now” conversion:**


Select “Start”, then press [OK].

“During standby” conversion:

Press [OK].

- Conversion will be performed after the unit is switched to standby mode.

“COPY” or “CONV” on the unit’s display remains lighted during conversion.

- If the title is encrypted () , conversion will start after decryption.

To cancel a “During standby” conversion

After performing steps 1–3 (⇒ 49)

- 1 Select “File Conversion” in “Edit”, then press [OK].
- 2 Select “Yes”, then press [OK].



- To use “File Conversion”, the HDD needs enough storage capacity.
- The size of converted title might increase depending on the title.
- Teletext will not be recorded.
- File Conversion is stopped when this unit is turned on during performing “During standby” conversion. Conversion will start from the beginning again once the unit is switched to standby mode.
- When converted, the audio content and subtitle language will be selected according to the following settings:
 - “Multi Audio” of “Preferred Language” (⇒ 90)
 - “Subtitles” of “Preferred Language” (⇒ 90)
 - Audio for HG / HX / HE / HL / HM Recording (⇒ 95)
- When converted, 3D information may not be retained.
- In titles with the Auto Renewal Recording function (⇒ 36) set, a programme may be unintentionally converted while in “During standby”.

To cancel a “Now” conversion

Press and hold [RETURN ⊖] for more than 3 seconds.

To confirm whether the conversion is completed

Press [DIRECT NAVIGATOR].


e.g.,

Channel	Date	Title Name	Titles
○○○○	04/10	Birds	1
○○○○	04/10	World news	1
○○○○	29/10	Football	1
○○○○	29/10	Dogs and Cats	1
	Start Time: 9:00	Rec'd: 0:01(DR→HL)	
	Prog.Type: Movie		

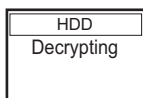
When “○○ → ○○ (Recording mode for conversion)” is displayed, the conversion has not finished.

File Decryption



HDD

Encrypted titles () can be decrypted manually.

- 1 Select "File Decryption" in "Edit", then press [OK].
- 2 Select whether to delete the original title or not, then press [OK].
 - **Yes**
The original title will be deleted to save HDD capacity after decryption.
 - **No**
The original title remains after decryption.
- 3 Select "Start", then press [OK].
Decryption starts.



"Decrypting" appears during decryption.

- When a title that is copy protected (One generation copy is permitted) is selected, the original title will be deleted after decryption. (⇒ 15)
- When a decryption fails, the screen icon () is changed to "  ".

To cancel the decryption

Press and hold [RETURN ☺] for more than 3 seconds.



- For decryption, the CI module that supports the programme is necessary.
- Depending on the programme, playback/decryption may not be possible.
- During decryption, do not remove the CI module from this unit.

Editing chapters

HDD | USB HDD | BD-RE | BD-R | RAM

- 1 Select "Chapter View", then press [OK].
- 2 Perform the editing operations.

Edit Chapter Mark:

Select the point where you want to start a new chapter while viewing the title.

- 1 Press the green button.
- 2 Press [OK] at the point you want to divide.
 - Repeat this step.
- 3 Press [RETURN ☺] to go to Chapter View screen.

To delete the chapter:

- 1 Select the chapter, then press [DEL].

Multiple editing

Select the chapter, then press the yellow button.

A check mark is displayed. Repeat this step.

- Press the yellow button again to cancel.
- 2 Select "Delete", then press [OK].


To combine chapters (Delete chapter mark):

- 1 Select the chapter, then press [OPTION].
- 2 Select "Combine Chapters", then press [OK].
- 3 Select "Combine", then press [OK].
The selected chapter is combined to the next chapter.

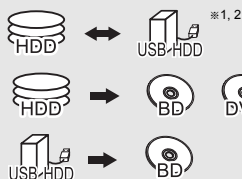
Playback from Chapter View

Refer to "Playback from Chapter View". (⇒ 41)



- The maximum number of chapters:
(Depends on the state of recording.)
HDD | USB HDD: Approx. 1000 per title
BD-RE | BD-R | RAM: Approx. 1000 per disc
- **HDD | USB HDD** When the title has the maximum number of chapters, you cannot perform the Resume play function (⇒ 39) or the "Changing thumbnail" (⇒ 51) with the title.
- This function cannot be used on encrypted titles ().

Copying titles



- ※1 The title in the source media will be deleted.
- ※2 The recording mode cannot be changed.

- About CI Plus restriction (⇒ 15)

1 Insert or connect the media.

2 Press [DRIVE SELECT] to select “HDD”, then press [DIRECT NAVIGATOR].

- If the DIRECT NAVIGATOR screen of photo or music is displayed, press the red button, then select “VIDEO”.

3 Select the title, then press the yellow button.

A check mark is displayed. Repeat this step.

Channel	Date	Title Name
	○○○○ 04.10	Birds
	○○○○ 04.10	World news
	○○○○ 29.10	Football
	○○○○ 29.10	Dogs and Cats
	Start Time 9:00	Rec time
	Prog.Type: Movie	

- Press the yellow button again to cancel.

4 Press the blue button.

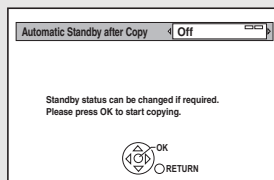
5 Set the copy direction, then press [OK].

6 Select “Yes”, then press [OK].

- If you select “No”, you can change the selection. (⇒ 55)

7 Set other settings, then press [OK].

e.g.,



(⇒ 55, Setting the copying options)

8 Select “Yes”, then press [OK].

To register the external HDD (USB HDD)

Refer to “Registering the USB HDD”. (⇒ 81)

To copy HD Video (AVCHD) to the DVD-R in High Definition

Refer to “Copying HD Video (AVCHD) to the DVD-R in High Definition”. (⇒ 61)

Release the disc protection

Refer to “Disc Protection”. (⇒ 78)

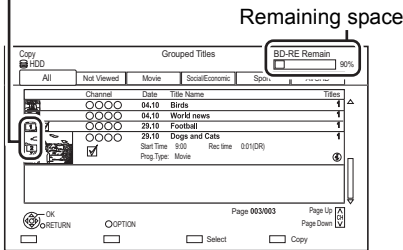


- Encrypted titles () cannot be copied. (⇒ 33)
- If you wish to choose the audio language, select the language from “Multi Audio” of “Preferred Language” before copying (⇒ 90).
- Simultaneous operation is not possible while copying with finalising or creating Top Menu. However, the titles on the HDD can be played back while high speed copying without finalising or creating Top Menu.

To change the selection

- 1 Select "No", then press [OK] in step 6 (⇒ 54).
e.g., [HDD] → [BD-RE]

The order of copying



- 2 **To change the selected titles:**
Select the title, then press the yellow button.
Repeat this step to select titles.

To change the picture quality:

[HDD] → [BD-RE] [BD-R] [RAM] [DVD-R] [DVD-RW] [+R] [+RW]

- 1 Select the title, then press [OPTION].
 - 2 Select "Conversion Select", then press [OK].
 - 3 Select the picture quality, then press [OK].
Repeat steps if necessary.
- 3 Press the blue button.
 - 4 Go to step 6. (⇒ 54)

Screen icons



Titles that will be copied to the disc in normal speed



Titles that cannot be copied

Setting the copying options

- 1 Select the item in step 7 (⇒ 54).
- 2 Press [◀, ▶] to change the settings.

• Automatic Standby after Copy

On:

This unit is turned to standby mode when it is not operated for approximately 5 minutes after completing copy.

• Subtitles

Automatic:

Subtitles will be recorded if they are included in the title.



- If you wish to choose the subtitle, select the language from "Subtitles" of "Preferred Language" before copying (⇒ 90).

• Finalise

On:

[DVD-R] [DVD-RW] [+R] The discs become play-only and you can also play them on other DVD equipment.

• Create Top Menu

On:

[+RW] You can play the disc on other DVD equipment.



- You can perform "Finalise" or "Create Top Menu" later. (⇒ 79)

About screen icons on the DIRECT NAVIGATOR

Refer to "Screen icons". (⇒ 39)

Copying titles

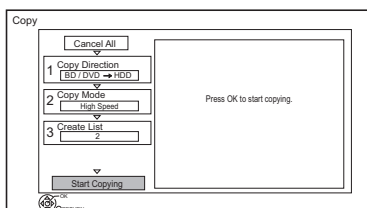
Copying from media other than HDD with DIRECT NAVIGATOR

BD-RE BD-R RAM +RW → HDD

- 1** Insert a disc.
The menu screen appears. (⇒ 42)
- 2** Select "Play Video", then press [OK].
- 3** Select the title, then press the yellow button.
A check mark is displayed. Repeat this step.

Channel	Date	Title Name
○○○○	04.10	Birds
○○○○	04.10	World news
○○○○	29.10	Football
○○○○	29.10	Dogs and Cats
	Start Time 9:00	Rec time 0:30 [C]

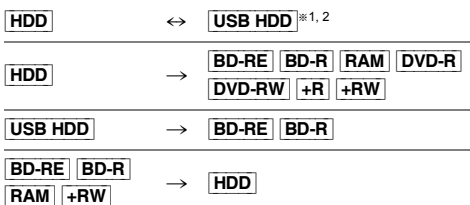
- 4** Press the blue button.



• To change the detailed settings for copy, refer to "Copying titles with copying list". (⇒ right)

- 5** Select "Start Copying", then press [OK].
- 6** Select "Yes", then press [OK].

Copying titles with copying list



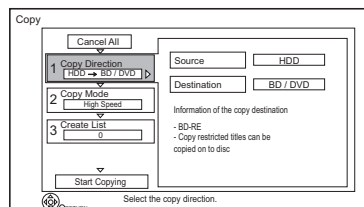
- ※1 The title in the source media will be deleted.
- ※2 The recording mode cannot be changed.

- 1** HDD ↔ USB HDD:
 - 1 Press [FUNCTION MENU].
 - 2 Select "Copy Video" in "Copy", then press [OK].

Except "HDD ↔ USB HDD":

- 1 Insert a disc.
The menu screen appears. (⇒ 42)
- 2 Select "Copy", then press [OK].

- 2** Set the copy direction.
 - 1 Select "Copy Direction", then press [▶] (right).
 - 2 Set "Source" and "Destination".
 - 3 Press [◀].



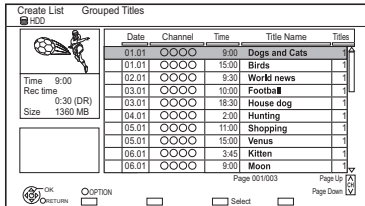
- 3** Set the recording mode (⇒ 8).
 - 1 Select "Copy Mode", then press [▶] (right).
 - 2 Set "Recording Mode".
 - 3 Press [◀].

4 Register titles for copy.

- 1 Select "Create List", then press [▶] (right).
- 2 Select "New item", then press [OK].
- 3 Select the title, then press the yellow button.

Repeat this step to select titles.

e.g., **HDD**



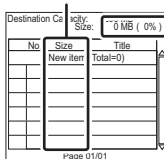
- To change the appearance of the list or show information of the title
 - 1 Press [OPTION].
 - 2 Select the item, then press [OK].



- The titles will be copied in the order of the copying list. If you want to specify the order, edit the copying list after the titles are selected. (⇒ 58, Editing the copying list)

- 4 Press [OK].
- 5 Press [◀].

Data size of each registered title

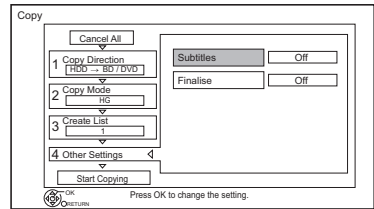


Size:
Data size recorded to the copy destination

5 Make other settings.

- 1 Select "Other Settings", then press [▶] (right).

e.g.,



- This screen does not appear depending on the copying mode. (⇒ go to step 6)
- 2 Select the copying option, then press [OK]. (⇒ 55, Setting the copying options)
 - 3 Press [◀].

6 Select "Start Copying", then press [OK].

7 Select "Yes", then press [OK].

To cancel all registered copying settings and lists

After performing step 1

- 1 Select "Cancel All", then press [OK].
- 2 Select "Yes", then press [OK].

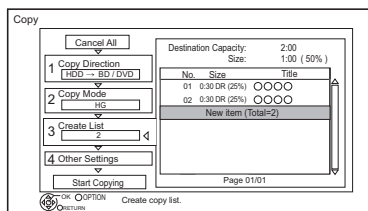


- Encrypted titles (Ⓜ) cannot be copied. (⇒ 33)
- If you wish to choose the audio language and subtitle language, select the language from "Multi Audio" of "Preferred Language" before copying (⇒ 90).
- Titles in the grouped titles and other titles cannot be registered simultaneously.

Copying titles

Editing the copying list

- 1 Select the title after step 4-4 (⇒ 57).



- 2 Press [OPTION].
- 3 Select the item, then press [OK].

Delete All:

All titles that you registered to copy are deleted.

Select “Yes”, then press [OK].

Add:

Add new items to the copying list.

- 1 Select the titles with the yellow button.
- 2 Press [OK].

Delete:

Selected titles are deleted.

- Select the title, then press the yellow button before step 2.

Repeat this step to select titles.

Select “Yes”, then press [OK].

Move:

Change the order of items on the copying list.

- Select the title to move before step 2.
- Select the destination, then press [OK].



- When copying at normal speed, the total data size will change according to the recording mode.
- The total data size shown may be larger than the sum of the data sizes for each registered item.

Screen icons



Titles that cannot be copied in high speed mode



Titles that cannot be copied



Title contains photos
• Photos cannot be copied.



(NTSC) Title recorded using a different encoding system from that of the unit.



(PAL) Titles displaying these marks cannot be selected.

About other screen icons























Refer to “Screen icons”. (⇒ 39)

Notes for copying

Notes for high speed copy

High Speed Copying is the process of copying a title to disc in high speed while maintaining the original record mode and recording length. If any conversion is required during the copy process, the copying will be done at normal speed.

- The following recording mode and media combinations support high speed copying.

Original title's recording mode	Media
DR	 ↔ 
HG	 ↔ 
HX	 ↔ 
HE	 ↔ 
HL	 → 
HM	 → 
XP	 → 
SP	 ↔ 
LP	 ↔ 
EP	 * → 
FR	 * → 

* DVD-RAM only

- Converting the recording mode will result in a normal speed copy.
- High speed copy is possible only when there is enough recording capacity on the destination media.



- It is impossible to copy at high speed in the following cases:

- **HDD** → **BD-RE** **BD-R** :
 - Copying radio programmes
- **HDD** → **DVD-R** **DVD-RW** **+R** **+RW** :
 - Copy including a title that was recorded to HDD with "Rec for High Speed Copy" set to "Off" (⇒ 92)
 - Titles that contain many deleted segments
 - Titles (SD Video) that have been copied to the HDD from an SD card or a Panasonic video camera, etc. (⇒ 73)
- **HDD** → **+R** **+RW** :
 - Titles recorded in "EP" mode and "FR (recordings 5 hours or longer)" mode
 - Titles recorded in 16:9 aspect
- **HDD** → **DVD-R** **DVD-RW** :
 - Titles recorded via AV input in 16:9 aspect using "EP" mode or "FR (recordings 5 hours or longer)" mode

Notes for normal speed copy

- **DVD-R** **DVD-RW** **+R** **+RW** You cannot copy to the disc in the following cases.
 - When there is not enough free space on the HDD.
 - When the number of titles recorded to the HDD and the number of titles to be copied to the disc is greater than 999 in total.
- **DVD-R** **DVD-RW** **+R** **+RW** If copy is cancelled during the step while temporarily copying to the HDD, then nothing will be copied.
- **BD-R** **DVD-R** **DVD-RW** **+R** **+RW** Even if the title was not copied to the disc, the amount of remaining writable disc space becomes less.
- When copying title recorded in 1080/50p or 1080/60p, it cannot copy in progressive.

Notes for copying to the USB HDD

You cannot copy the following titles.

- Protected titles
- HD Video (AVCHD)
- SD Video (MPEG2)

Copying titles

Notes for copying to the DVD-RAM

When copying to DVD-RAM using “8 hours” mode, play may not be possible on DVD players that are compatible with DVD-RAM. Use “6 hours” mode if playback may be on other equipment. (⇒ 92, Recording time in EP mode)

Notes for copying 3D programmes

- It may not display correctly in 3D when a copied 3D programme is played back. In such a case, change the “Signal Format” during the playback of the title. (⇒ 47)
- 3D information may not be copied.
- If you want to copy 3D AVCHD video to the disc in 3D, use BD-R or BD-RE and copying speed must be high speed.

About maintaining the chapter mark

- The position of the chapter might shift slightly.
- Maximum number of chapters on the disc is limited.
 - **BD-RE** **BD-R** **RAM** **DVD-R** **DVD-RW** :
Approx. 1000
 - **+R** **+RW** : Approx. 254
(Depends on the state of recording.)

Copying a finalised disc

DVD-V → **HDD**

While playing a disc, the content being played is copied to the HDD according to the set time.

- 1 Press [FUNCTION MENU].
- 2 Select “Copy Video” in “Copy”, then press [OK].
- 3 Set “Copy Mode”.
 - 1 Select “Copy Mode”, then press [▶] (right).
 - 2 Press [OK], then select the recording mode (XP/SP/LP/EP).
 - 3 Press [◀].

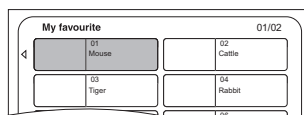
- 4 Set “Copy Time”.
 - 1 Select “Copy Time”, then press [▶] (right).
 - 2 Select “Time Setting”, then press [OK].
 - 3 Select “On” or “Off”.

On:
Set the copying time.

 - Set a few minutes longer than the source title, in order to include the operation time before play begins.

Off:
Copying all the content on the disc.
- 4 Press [◀].

- 5 Select “Start Copying”, then press [OK].
- 6 Select “Yes”, then press [OK].
 - When the Top Menu is displayed: Select the title you want to start copying, then press [OK].



After the last title on the disc has finished playing the Top Menu is recorded until the set time is reached.

To stop copying

Press [STOP ■].

- You can also press and hold [RETURN ⊕] for 3 seconds.
- If stopped partway, copying will be up to that point.



- Operations and on-screen displays during copy are also recorded.
- Almost all DVD-Video on sale have been treated to prevent illegal copying, and cannot be copied.
- If play does not begin automatically press [PLAY/×1.3 ▶] to start.

Copying Title Playing


HDD → **BD-RE** **BD-R** **RAM** **DVD-R** **DVD-RW** **+R**
+RW

- 1** Play back the title to copy.
 - Multiple audio, subtitle and Teletext displayed during playback will be copied.
 - Select the multiple audio with “Multi Audio” in the Disc menu (⇒ 84)
 - Select the subtitles with “Subtitle Language” in the Disc menu. (⇒ 84)
- 2** Press [OPTION].
- 3** Select “Copy Title Playing”, then press [OK].
- 4** Select “Start”, then press [OK].
Copying will start from the beginning of the title regardless of the playing position.

To stop copying

Press and hold [RETURN ⊕] for 3 seconds.



- Encrypted titles () cannot be copied.
- You can record to or play HDD while high speed copying. Press [OK] to exit the screen display.
- Press [STATUS ⓘ] to confirm the current progress.

• Speed and recording mode when copying

The high speed copy is performed if available. Refer to “Notes for copying”. (⇒ 59)



- When copying the titles in DR, HG, HX, HE, HL or HM modes and the copy destination does not have enough space, one from HG, HX, HE, HL or HM modes will be selected to match the available space.
- **RAM** **DVD-R** **DVD-RW** **+R** **+RW** When copying the titles in DR, HG, HX, HE, HL or HM modes, copy will be performed at normal speed in FR mode.
- When copying the titles in XP, SP, LP, EP or FR modes and the copy destination does not have enough space, copy will be performed at normal speed in FR mode.

Copying HD Video (AVCHD) to the DVD-R in High Definition

You can copy HD Video (AVCHD) recorded on HDD to a DVD-R in High Definition quality.

HDD → **DVD-R**

- 1** Insert an unformatted DVD-R or DVD-R DL. The menu screen appears. (⇒ 42)
- 2** Select “Copy Video (AVCHD) to Disc”, then press [OK].
- 3** Go to step 4 on page 57, “Copying titles with copying list”.

To copy HD Video (AVCHD) from other equipment

Refer to “Copying HD Video (AVCHD)”. (⇒ 72)



- This function can only be used for unformatted disc.
- When a disc is named, formatting will be automatically performed. Therefore, do not name a disc before this operation. (⇒ 78, Disc Name)
- Discs will be automatically finalised after copy.
- You can choose the thumbnail image of the Top Menu before using this function. (⇒ 51, Changing thumbnail)
- The following HD Videos (AVCHD) cannot be copied to the disc in high definition.
 - Exceeding 18 Mbps
 - 1080/50p or 1080/60p
 - Without the AVCHD information (video recorded with certain non-Panasonic equipment, video copied to the HDD after copying it to BD-R or BD-RE once, etc.)
- 3D video will become 2D.

Playing photos



*1 **BD-RE** only

*2 **RAM** **DVD-R** only

- In order to play back 3D photo (MPO), this unit should be connected to a Full HD 3D compatible TV.

1 **HDD**

- 1 Press **[FUNCTION MENU]**.
- 2 Select **"Photo"** in **"Playback Contents"**, then press **[OK]**.

BD-RE **RAM** **DVD-R** **CD** **SD** **USB**

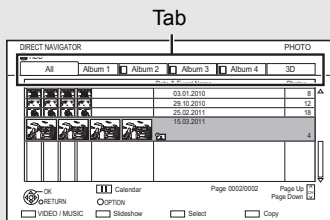
- 1 Insert the media.

The menu screen appears. (⇒ 42)

- 2 Select **"View Photos"**, then press **[OK]**.

2 Select the event, then press **[OK]**.

e.g., **HDD**



- **To select the tab**
Press **[◀, ▶]**.
- **Start Slideshow**
Refer to "Slideshow settings". (⇒ 63)
- **Switching to the Calendar screen (HDD)**
Press **[PAUSE ■■]**.

3 Select the photo, then press **[OK]**.

- Press **[◀, ▶]** to display the previous or next photo.

To exit the Calendar screen

Press **[PAUSE ■■]**.

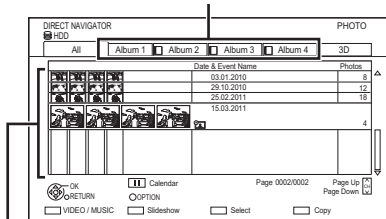


- When there are many files and/or folders, some files may not be displayed or be playable. (⇒ 117)

DIRECT NAVIGATOR (PHOTO) screen

e.g., **HDD**

Album (⇒ below)



Event

It is displayed for each recording date.

- It is displayed for each folder for media other than HDD.

Screen icons



(Tab)

Album

Placing photos in albums of your choice makes it easier to find them. (⇒ 64)

3D

(Tab)

3D photos (MPO) are automatically sorted. Select from this tab to play back in 3D. (It will play back in 2D when selected from other tabs.)



Photo protected



New photo which is stored and not viewed

Switching to the VIDEO or MUSIC screens

HDD:

- 1 On the DIRECT NAVIGATOR screen:
Press the red button.
- 2 Select "VIDEO" or "MUSIC", then press [OK].

BD-RE RAM:

On the DIRECT NAVIGATOR screen:
Press the red button.

Photo play option

- 1 While displaying a photo:
Press [OPTION].
- 2 Select the item, then press [OK].

Aspect

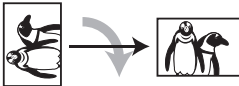
You can switch the screen mode. (⇒ 104)

Graphic Display Level

You can change the 3D position of the screen display, etc., during the 3D photo playback.

Photo Menu

- **Start Slideshow**
You can start a slideshow.
- **Rotate RIGHT/Rotate LEFT**
e.g.,





- The information of the rotated photos will not be stored depending on the media.
- This function is not available during the 3D photo playback.
- **Information**
Information (shooting date etc.) is shown.

Slideshow settings

- 1 On the DIRECT NAVIGATOR screen:
Press the green button.

Slideshow	
Start Slideshow	
Interval	Normal
Transition Effect	Fade
Repeat Play	On
Music Selection	No background music
Background Music	No List
Random BGM	Off

- 2 Select the item, then press [OK].

Start Slideshow

You can start a slideshow.

Interval

You can set up the time until the next photo is to display.

Transition Effect*

Effect for the next photo to display can be set.

Repeat Play

You can set up to play back repeatedly.

Music Selection*

You can select background music on (either from HDD or USB) or off.

Background Music*

You can select background music from HDD (My Favourites or Playlists) or USB (Folder).

Random BGM*

You can play back the BGM (Background Music) in random order.

* This function is not available during the 3D photo playback.

To pause the Slideshow

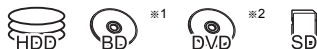
Press [PAUSE ■■].

- Press [PAUSE ■■] again to restart.

To stop the Slideshow

Press [RETURN ☺].

Editing photos

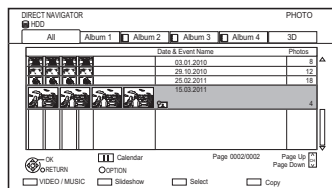


※1 **BD-RE** only

※2 **RAM** only

1 On the DIRECT NAVIGATOR screen:

e.g., **HDD**



To edit the event:

Select the event.

To edit the photo:

1 Select the event, then press [OK].

2 Select the photo to edit.

• **To select multiple events or photos**

Press the yellow button when selecting the event or photo.

A check mark is displayed. Repeat this step.

• Press the yellow button again to cancel.

2 Press [OPTION].

• Selectable items will change depending on the media and the type of file.

3 Select the item, then press [OK].

Edit

• **Add to Album**

HDD

1 Select the destination album, then press [OK].

2 Press [OK].

• **Combine Events**

HDD

Select "Yes", then press [OK].

• **Remove from Album**

HDD

Select "Yes", then press [OK].

• **Enter Album Name**

HDD

Refer to "Entering text". (⇒ 104)

• **Enter Event Name**

Refer to "Entering text". (⇒ 104)

Delete Photos

Select "Yes", then press [OK].

Set up Protection

BD-RE **RAM** **SD**

Select "Yes", then press [OK].

appears when the protection is set.

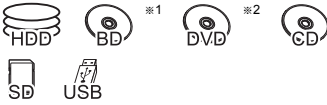
• Even if the protection is set, the photo may be deleted by another unit.

Cancel Protection

BD-RE **RAM** **SD**

Select "Yes", then press [OK].

Copying photos



- *1 **BD-RE** only
- *2 **RAM** **DVD-R** only

Selecting and copying the photos



- On the DIRECT NAVIGATOR screen:
To copy the event:
Select the event, then press the blue button.

To copy the photo:

- Select the event, then press [OK].
- Select the photos to copy, then press the blue button.

• To select multiple events or photos

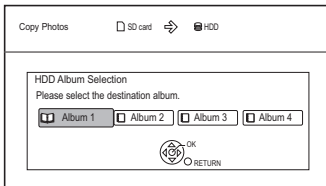
Press the yellow button when selecting the event or photo.

A check mark is displayed. Repeat this step.

- Press the yellow button again to cancel.

- Select the copying destination, then press [OK].

- When copying to HDD:
Select “Yes” or “No”, then press [OK].
• If you select “Yes”:
Select the album, then press [OK].
e.g., **SD**



- You can categorise and manage the events and photos on the HDD by copying to the album. (⇒ 62)

- Select “Yes”, then press [OK].
Copying starts.

To stop copying

Press and hold [RETURN] for 3 seconds.



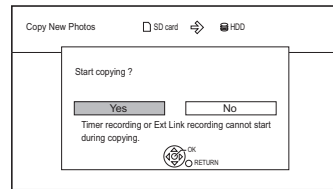
- The name of the copied photos will be changed.
- If the number of files/folders to be copied exceeds the maximum (⇒ 117), copying will stop partway through.

Copying automatically



Newly added photos will automatically be copied to the HDD.

- Insert the media.
The menu screen appears. (⇒ 42)
- Select “Copy New Photos”, then press [OK].
e.g., **SD**



- Select “Yes”, then press [OK].
Copying starts.
- Once the copy is completed, select “Yes” or “No”, then press [OK].

To stop copying

Press and hold [RETURN] for 3 seconds.



- Photos without shooting date will be categorised using the creation date.
- If the space on the destination drive runs out or the number of files/folders to be copied exceeds the maximum (⇒ 117), copying will stop partway through.
- The name of the copied photos will be changed.

Playing music



* **DVD-R** only

Music CD:

Insert the disc.

If connected to the network, the unit starts accessing the Gracenote® Database and searches for the information. (⇒ 20, 24)

- If search results indicate that multiple informations were found:
Select the appropriate information of the CD, then press [OK].

Playback will automatically start.

MP3:

1 Insert the media.

The menu screen appears. (⇒ 42)

- **DVD-R** **CD** Playback will automatically start if only MP3 is recorded.

2 Select "Play / Copy Music (MP3)", then press [OK].

Playback will start.

- Using the tree screen to find a folder
 - 1 Press [OPTION].
 - 2 Select "Select Folder", then press [OK].
 - 3 Select the folder, then press [OK].

To play other music (track)

Select the item, then press [OK].

e.g., **CD** (MP3)

DIRECT NAVIGATOR		Track List	
Ⓢ CD (MP3)		○○○○	
	No.	Track Name	
Ⓢ	0001	○○○○	
	0002	○○○○	
	0003	○○○○	
	0004	○○○○	
	0005	○○○○	



- The track/artist name will be displayed if the information is contained in ID3 tag of the MP3 file.
- If there is a large amount of photo data etc. within a MP3 file, play may not be possible.
- If there are music CDs with very similar information, then the incorrect information may be obtained. If no suggestions are found, enter the music CD information manually after recording to the HDD has completed.

Copying music to HDD

Music CD → **HDD**

DVD-R **CD** **USB** → **HDD (MP3)**

After performing steps 1–2 (⇒ left)

- 1 Press the blue button.
- 2 Select "Copy", then press [OK].

To stop copying

Press and hold [RETURN ⊕] for 3 seconds.

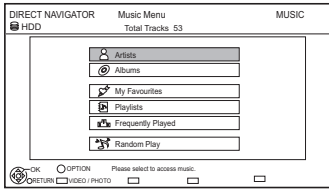


- While copying, no other operations can be performed. Timer recordings will not proceed.
- Music CD: All tracks in the CD will be recorded.
- MP3: All tracks in the folder will be recorded.
- Tracks recorded to HDD in one operation will be regarded as one album.

Playing music recorded on HDD

HDD

- 1 Press [FUNCTION MENU].
- 2 Select "Music" in "Playback Contents", then press [OK].



- 3 Select the item, then press [OK].



Artists

- 1 Press [◀, ▶] to select the initial of the artist.
- 2 Select the name of the artist, then press [OK].
- 3 Select the album, then press [OK].
- 4 Select the track, then press [OK].



Albums

- 1 Press [◀, ▶] to select the initial of the album.
- 2 Select the album, then press [OK].
- 3 Select the track, then press [OK].



My Favourites

Tracks registered in "My Favourites".

Select the track, then press [OK].

- Registering a track to the "My Favourites". (Up to 99 tracks)

While the track list screen is displayed:

Select the track, then press the green button.



Playlists

- 1 Select the playlist, then press [OK].
- 2 Select the track, then press [OK].



Frequently Played

Tracks most often played recently (up to 30 tracks).

Select the track, then press [OK].



Random Play

Random playback of all tracks.

Playback starts.

Switching to the VIDEO or PHOTO screens

- 1 On the DIRECT NAVIGATOR (Music Menu) screen:
Press the red button.
- 2 Select "VIDEO" or "PHOTO", then press [OK].

Showing Track Information

On the track list screen:

- 1 Select the track, then press [OPTION].
- 2 Select "Information", then press [OK].

Playing music

Operations during music play

HDD **DVD-R** **CD** **USB**

Stop

Press [STOP ■].

Pause

Press [PAUSE ■■].

- Press [PLAY/×1.3 ▶] to restart play.

Search

Press [SLOW/SEARCH ◀◀] or [SLOW/SEARCH ▶▶].

- Press [PLAY/×1.3 ▶] to restart play.

Skip

Press [SKIP ◀◀] or [SKIP ▶▶].

Repeat Play/Random

Refer to “Repeat Play” or “Random” in Play menu (⇒ 84).

Sound Effects

Refer to “Sound Effects” in Sound menu (⇒ 85).

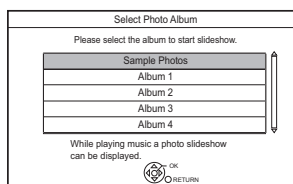
Displaying photos (Slideshow)

Photos stored on the “Album” of the HDD can be played back as slideshow during playback of the music.

While playing the music

Press the red button.

- To change the photos to display
 - 1 While slideshow playing
Press [OPTION].
 - 2 Select “Select Photo Album”, then press [OK].
 - 3 Select the album, then press [OK].
e.g.,



To end the slideshow

Press [RETURN ☺].

How to create the photo album

Refer to “Add to Album”. (⇒ 64)

To play music continuously even if the Power off link works

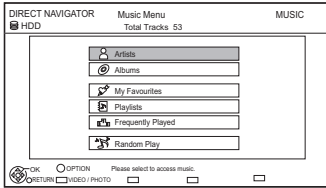
Refer to “Playing music continuously even after turning off power to the TV”. (⇒ 82)

Editing music/playlist

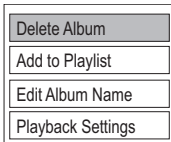


- 1 On the DIRECT NAVIGATOR screen:
Press [OPTION].

e.g.,



- 2 Select the item, then press [OK].
e.g., while selecting an Album



- Editing operations will change depending on the screen.

Delete All Tracks

- 1 If the confirmation screen appears:
Select "Yes", then press [OK].
- 2 Select "Delete", then press [OK].

Delete Album

Select "Delete", then press [OK].

Delete

Select "Delete", then press [OK].

Edit Album Name/Edit Track Name/Edit Artist Name/Edit Playlist Name

Refer to "Entering text" on page 104.

Remove All Tracks

- Select "Remove", then press [OK].
- Tracks themselves are not deleted from the HDD.

Clear My Favourites/Clear Frequently Played

- Select "Clear", then press [OK].
- Tracks themselves are not deleted from the HDD.

Remove

- Select "Remove", then press [OK].
- Tracks themselves are not deleted from the HDD.

Add to Playlist

You can register your favourite albums and tracks into 10 preset playlists.

Select the playlist, then press [OK].

- New playlist cannot be added.
- Up to 999 tracks can be registered to each playlist.

Recording from external equipment



Preparation

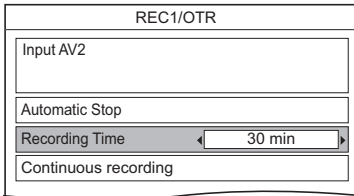
Connect the Set Top Box or video equipment (⇒ 17)

Manual Recording

HDD

Recording mode: XP, SP, LP, EP

- 1** Press [INPUT SELECT] and select the input channel, then press [OK].
e.g., If you have connected to AV2 input terminals, select "AV2".
- 2** Press [REC MODE] to select the recording mode.
- 3** Select the channel on the Set Top Box or start play on the video equipment.
- 4** Press [REC ●].
Recording starts.
- 5** Set the time to record. (⇒ 31)



To stop recording

Press [STOP ■].



- Following contents or media cannot be played back while recording from external equipment.
 - BD-Video
 - DivX, MKV and AVCHD file
 - photo
 - SD card
 - USB memory

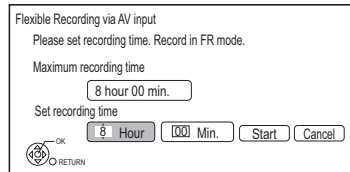
Flexible Recording via AV input

HDD **BD-RE** **BD-R** **RAM**
DVD-R* **DVD-RW** **+R*** **+RW**

* This function is not available with DVD-R DL and +R DL.

Recording mode: FR

- 1** Press [DRIVE SELECT] to select the recording drive.
- 2** Press [INPUT SELECT] and select the input channel, then press [OK].
e.g., If you have connected to AV2 input terminals, select "AV2".
- 3** Press [FUNCTION MENU].
- 4** Select "Flexible Recording via AV input" in "Others", then press [OK].



- 5** Set the recording time.
- 6** Start play on the other equipment.
- 7** Select "Start", then press [OK].

To stop recording partway

Press [STOP ■].

To show the remaining time

Press [STATUS ⓘ].



- Simultaneous operation is not possible while Flexible Recording via AV input to the disc is working.

Linked timer recording (SKY Digital STB, etc.)—EXT LINK

HDD

Recording mode: XP, SP, LP, EP

- Connect the equipment with AV2 input terminal using a 21-pin Scart cable (⇒ 17).
- Set "AV2 Input" and "Ext Link" (⇒ 97).
- Make timer programming on the external equipment.

- 1** Press [FUNCTION MENU].
- 2** Select "Ext Link Standby" in "Others", then press [OK].
 - "EXT-L" lights on the unit's display.

To cancel the External link

- 1 Turn on this unit.
- 2 Press [FUNCTION MENU].
- 3 Select "Ext Link Standby" in "Others", then press [OK] to stop recording or to cancel linked timer recording standby. ("EXT-L" disappears.)

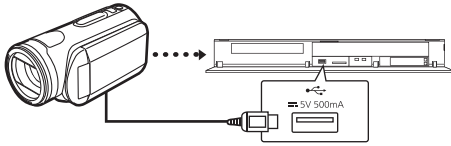


- It will be recorded in standard definition quality even if the programme is in high definition.
- During Ext Link Standby mode or recording, you cannot select external input other than AV2.
- This function does not work when "TV System" is set to "NTSC" (⇒ 96).
- This function does not work while recording two programmes simultaneously with timer recording.
- The beginnings of recordings may not be recorded correctly in some cases.
- Programmes are recorded as one title on this unit when the end time of the earlier timer recording and the start time of the later timer recording are close to each other. To divide the titles, refer to "Dividing title" (⇒ 50).

Copying the HD Video or the SD Video



e.g., Connecting to the Panasonic video camera

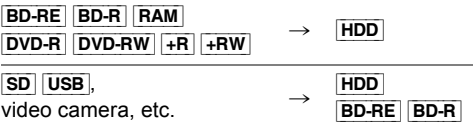


USB connection cable
(optional)



- If you connect a Panasonic product with a USB connection cable, setup screen may be displayed on the connected equipment. For details, refer to the instructions for the connected equipment.

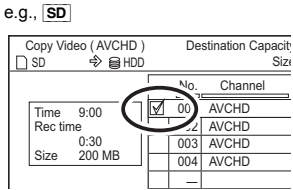
Copying HD Video (AVCHD)



- The original file must be in the AVCHD standard.

- 1** Connect the video camera or insert the media.
The menu screen appears. (⇒ 42)
 - Make the video camera ready for data transfer.
- 2** Select "Copy Video (AVCHD)", then press [OK].
- 3** When copying from an SD card or video equipment:
Select "Copy to HDD" or "Copy to Blu-ray Disc", then press [OK].

- 4** Select the title, then press the yellow button.
A check mark is displayed. Repeat this step.



- Press the yellow button again to cancel.
(All the recordings on the same date become a title.)

- 5** Press [OK].
- 6** Select "Start", then press [OK].
It will automatically format the unformatted disc, such as a new disc.
 - It may take time for the copying to start.

To stop copying

Press and hold [RETURN ☺] for 3 seconds.

To copy to the DVD-R in High Definition

Refer to "Copying HD Video (AVCHD) to the DVD-R in High Definition". (⇒ 61)



- An AVCHD title with 100 or more scenes will be divided into titles every 99th scene and copied.

Screen icons

- N (NTSC)** Title recorded using a different encoding system from that of the unit.
- P (PAL)**
 - Titles displaying these marks cannot be selected.

Copying SD Video (MPEG2)

SD **USB**, video camera, etc. → **HDD** **RAM**

- The original file must be in the SD-Video standard.

- 1** Connect the video camera or insert the media.
 - Make the video camera ready for data transfer.

The menu screen appears. (⇒ 42)

- 2** Select “Copy Video (MPEG2)”, then press [OK].
 - To change the copy destination and the titles to copy (⇒ 56, Copying titles with copying list)

- 3** Select “Start Copying”, then press [OK].

- 4** Select “Yes”, then press [OK] to start copying.

To stop copying

Press and hold [RETURN ☺] for 3 seconds.

Smart Home Networking (DLNA)

Smart Home Networking (DLNA) allows you to watch the contents on Server equipment connected on the same network from Client equipment.

This unit can be used both as Server and Client. Additionally, if used as Client, this unit can also be used as Media Renderer, which can be controlled by a Smartphone, etc.

Preparation

- Network connection (⇒ 20, 24)
- Perform Home Network settings of the DLNA compatible equipment.

For more details, refer to the following website and the operating instructions for each item of equipment.

<http://panasonic.jp/support/global/cs/>
(This site is in English only.)



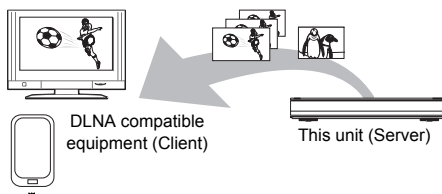
- Some video cannot be played back depending on the equipment, the condition of this unit, or the file type.
- Ensure that the router for your home network has adequate security system to prevent unauthorized access.

Using this unit as Server

You can enjoy the video and photos saved on the HDD of this unit on DLNA (Client) compatible equipment connected via a network.

You can also watch broadcasts received by this unit on a smartphone, etc.

- The titles with access restriction (e.g., copy restriction) signals sent from broadcasters are not available for this function.
- You cannot play back music from the playback equipment (Client).



For details regarding the connection and operation of equipment connected via a network, refer to their respective operating instructions.

- * DLNA function compatible software should be installed. For more details, refer to the Panasonic website. (⇒ left)

Preparation

- When DLNA (Server) Function is deactivated, make the settings. (⇒ 86, 99, Home Network Settings)

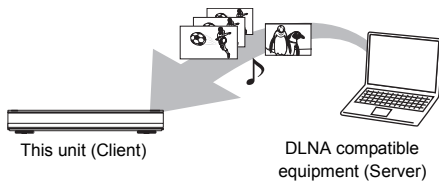
- 1** Operate the playback equipment (Client) to display the list of contents on this unit.
 - Refer to their respective operating instructions.
- 2** Select the item, then press [OK].



- The DLNA compatible device that is to be connected to the unit should be connected to the same hub or broadband router as the unit.
- Files not on the HDD cannot be played back.
- Playing back 3D video recorded on this unit may not work properly.
- 3D photos copied to this unit cannot be played back in 3D.
- Editing is not possible.

Using this unit as Client

You can share videos, photos and music stored in the DLNA Certified media server (such as a PC with Windows 7 installed etc.) connected via a network with this unit.



- 1** Press [FUNCTION MENU].
 - 2** Select "Home Network (DLNA Client)" in "Network", then press [OK].
A list of equipment connected via the network is displayed.
 - This list can be updated by pressing the red button.
 - 3** Select the equipment, then press [OK].
 - 4** Select the item, then press [OK].
 - Menu structure will be different depending on the equipment. Select the contents by repeating the operation.
 - Convenient functions can be used by pressing [OPTION] depending on the contents.
- Control Panel**
Control Panel is displayed once the playback starts.
Operation can be performed with [▲, ▼, ◀, ▶], [OK] and [EXIT ⊗].
- Press [OK] if the Control Panel is not displayed.
 - Press [RETURN ⊖] to hide the Control Panel.



- You may not be able to use the Control Panel even if you use the Panasonic DLNA compatible equipment.
- Depending on the contents and the connected equipment, playback may not be possible.
- Playlist of Windows Media® Player can play back only the contents that are stored in the libraries.
- While playing back the 3D programme, you cannot set "3D Settings". (⇒ 47)
- Items displayed in grey on the display cannot be played back by this unit.
- Depending on the performance of the connected PC, video frames may be dropped during playback, or video may not be played back at all. (⇒ 111)

Support format of DLNA client

Video

Container	Video codec	Audio codec	Example of file extension
AVCHD	H.264	Dolby® Digital	.mts
MP4	H.264	AAC	.mp4
MOV	H.264	AAC	.mov
Recorded programmes (XP/SP/LP/EP/FR)	MPEG2	Dolby® Digital Linear PCM	.mpg .mpeg
Recorded programmes (DR/HG/HX/HE/HL/HM)	MPEG2 H.264	MPEG HE-AAC Dolby® Digital	.m2ts .ts

Photo

Format	Example of file extension
JPEG	.jpg

Audio

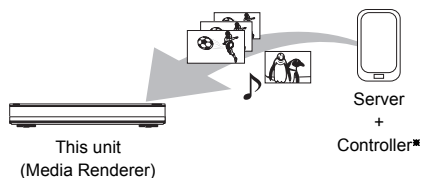
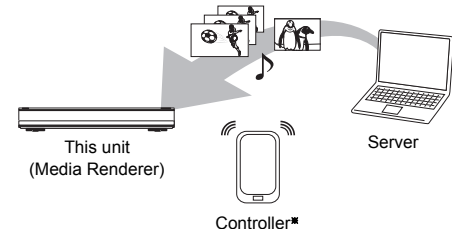
Audio codec	Example of file extension
MP3	.mp3
FLAC	.flac
Linear PCM	

Smart Home Networking (DLNA)

Using this unit as Media Renderer

This unit will work as Media Renderer, which allows you to play back the contents on DLNA Server by operating a Digital Media Controller (a smartphone, etc.).

Possible applications:



* Digital Media Controller compatible software should be installed.

Following steps are necessary to use this unit as Media Renderer.

- 1** Press [FUNCTION MENU].
- 2** Select "Home Network (Media Renderer)" in "Network", then press [OK].
- 3** Operate the Digital Media Controller compatible equipment.

To exit from Home Network (Media Renderer) screen

Press [RETURN ⊖].

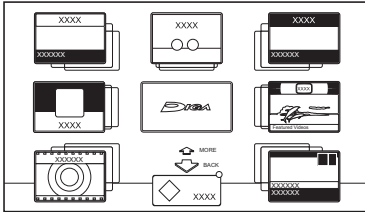


- Depending on the contents and the connected equipment, playback may not be possible.
- Items displayed in grey on the display cannot be played back by this unit.
- This unit can be played back via connected equipment only when controlled using Digital Media Controller.
- Depending on the performance of the connected PC, video frames may be dropped during playback, or video may not be played back at all. (⇒ 111)

VIERA Connect (Enjoying Internet Service)

VIERA Connect allows you to access some specific websites supported by Panasonic, and enjoy Internet contents such as photos, videos, etc. from VIERA Connect home screen. This unit has no full browser function and all features of websites may not be available.

e.g.,



VIERA Connect Home screen

- Images are for illustration purpose, contents may change without notice.

Preparation

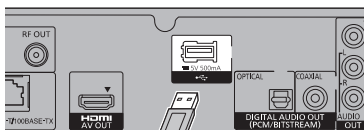
- Network connection (⇒ 20, 24)

To enjoy video communication (e.g., Skype™)

- Connect this unit with optional Communication Camera (TY-CC20W or TY-CC10W). Depending on the area, this optional camera may not be available. Please consult your local Panasonic dealer for advice.

e.g.,

This unit's rear panel



— Communication Camera
TY-CC20W or TY-CC10W

- For operating method refer to the following website.
<http://panasonic.jp/support/global/cs/>
(This site is in English only.)
- Cannot be used while recording, copying, or playing BD-Video.

1 Press [INTERNET].

The message is displayed. Please read it carefully and then press [OK].

- The video communication service can be accessed directly by pressing [G] button.

2 Select the item, then press [OK].

- Operable buttons:

[▲, ▼, ◀, ▶], [OK], [RETURN ⊕], colour buttons and number buttons.

To exit from VIERA Connect

Press [EXIT ⊗].



- When playing content from a disc, SD card or USB device VIERA Connect cannot be accessed.
- In the following cases, settings are possible using "Network Service Settings" (⇒ 86, 98)
 - When restricting the use of VIERA Connect.
 - When the audio is distorted.
- If using slow Internet connection, the video may not be displayed correctly. A high-speed Internet service with a speed of at least 6 Mbps is recommended.
- Be sure to update the software (firmware) when a software (firmware) update notice is displayed on the screen. If the software (firmware) is not updated, you will not be able to use the VIERA Connect function.
- The services through VIERA Connect are operated by their respective service providers, and service may be discontinued either temporarily or permanently without notice. Therefore, Panasonic will make no warranty for the content or the continuity of the services.
- All features of websites or content of the service may not be available.
- Some contents may be inappropriate for some viewers.
- Some contents of VIERA Connect may only be available for specific countries and may be presented in specific languages.
- If timer recording starts, VIERA Connect will stop.

Media management



- 1 Press [FUNCTION MENU].
- 2 Select "Others", then press [OK].
- 3 Select the item, then press [OK].
 - Selectable items will change depending on the selected drive.

Disc Name

BD-RE **BD-R** **RAM** **DVD-R** **DVD-RW** **+R** **+RW**

This function is to name a disc.
Refer to "Entering text". (⇒ 104)

- The disc name is displayed in the Blu-ray Disc Management/DVD Management window.
- **DVD-R** **DVD-RW** **+R** With a finalised disc, the name is displayed on the Top Menu.
- **+RW** The disc name is displayed only if you play the disc on other equipment after creating Top Menu.



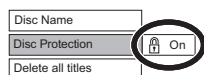
- Do not perform this operation before copying HD Video (AVCHD) to DVD-R or DVD-R DL. (⇒ 61)

Disc Protection

BD-RE **BD-R** **RAM**

Select "Yes", then press [OK].

e.g.,



- To release the protection
Repeat the same steps.
 - The screen icon will be switched to "Off".

Delete all titles

BD-RE **BD-R** **RAM**

- 1 Select "Yes", then press [OK].
- 2 Select "Start", then press [OK].
A message appears when finished.
- 3 Press [OK].



- Photo data (JPEG/MPO) or computer data cannot be deleted.

Format Disc/Format Card

BD-RE **RAM** **DVD-RW** **+RW** **SD**

BD-R **+R** (New disc only)

Formatting deletes all contents (including computer data), and they cannot be restored. Check carefully before proceeding.

- 1 Select "Yes", then press [OK].
- 2 Select "Start", then press [OK].
- 3 Press [OK].

RAM To stop formatting

Press [RETURN ⊕].

- You can cancel formatting if it takes more than 2 minutes. The disc must be reformatted if you do this.



- The contents are deleted when you format a disc or card even if you have set protection.
- **RAM** Formatting normally takes a few minutes; however, it may take up to a maximum of 70 minutes.
- **Do not disconnect the AC mains lead while formatting.** This can render the disc or the card unusable.
- When a disc or card has been formatted using this unit, it may not be possible to use it on any other equipment.
- It will become DVD Video format when a DVD-RW recorded in DVD Video Recording format is formatted with this unit.

Top Menu

DVD-R **DVD-RW** **+R** **+RW**

You can select the background for DVD-Video Top Menu.

Select the background, then press [OK].



- You can change thumbnails displayed in the Top Menu. (⇒ 51, Changing thumbnail)

Auto-Play Select

DVD-R **DVD-RW** **+R** **+RW**

You can select whether to show the Top Menu after finalising or creating Top Menu.

Select "Top Menu" or "Title 1", then press [OK].

Top Menu:

The Top Menu appears first.

Title 1:

The disc content is played without displaying the Top Menu.

Finalise

DVD-R **DVD-RW** **+R** (You can play the disc on compatible DVD players by finalising it on the unit.)

BD-R (Finalising BD-R prevents accidental recording or editing.)

- 1 Select "Yes", then press [OK].
- 2 Select "Start", then press [OK].
- 3 Press [OK].

After finalising

- **BD-R** **DVD-R** **+R** The disc becomes play-only and you can no longer record or edit.
- **DVD-RW** You can record and edit the disc after formatting.



- You cannot cancel finalising.
- Finalising takes up to 15 minutes (Up to 60 minutes in case of DVD-R DL and +R DL).
- **Do not disconnect the AC mains lead while finalising.** This can render the disc unusable.
- Depending on the disc, it may take longer than displayed on the confirmation screen (approximately four times longer).
- You cannot finalise discs recorded on other manufacturer's equipment.
- **DVD-R** **DVD-RW** **+R** If you finalise discs recorded on Panasonic equipment other than this unit, the background selected as "Top Menu" may not be displayed.
- Discs finalised on this unit may not be playable on other players due to the condition of the recording.

Create Top Menu

+RW

You can create Top Menu for displaying on other equipment.

Make selections from "Top Menu" and "Auto-Play Select" before creating Top Menu.

- 1 Select "Yes", then press [OK].
- 2 Select "Start", then press [OK].
- 3 Press [OK].



- You cannot use the Top Menu for playing on this unit.
- The created menu is deleted when you record or edit the disc.

Registering the external HDD (USB HDD)

If you connect and register a USB HDD, you can move the titles in the built-in HDD to the USB HDD, thus saving the capacity in the built-in HDD.

If you use a USB HDD with this unit, the USB HDD must first be registered on this unit.

- Registering of a USB HDD will format the USB HDD and all the content already recorded will be deleted.
- Up to eight USB HDDs can be registered on this unit.
- Registered USB HDDs cannot be used with devices other than this unit.

Regarding the external HDD (USB HDD)

Please use a confirmed USB HDD.

For the latest information on confirmed USB HDDs, please check the following website.

<http://panasonic.jp/support/global/cs/>

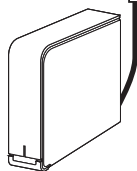
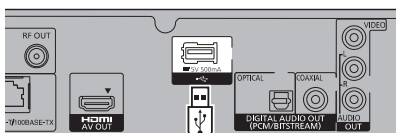
- Certain non-confirmed USB HDDs cannot be used with this unit.
- If a problem occurs with the USB HDD, please contact the manufacturer of the device.

Connecting the USB HDD

Connect this unit with optional USB HDD.

e.g.,

This unit's rear panel



USB HDD

- Only one USB HDD can be connected at the same time.
- Do not connect additional HDDs using a USB hub.
- For details about connection method, refer to the instructions supplied with the USB HDD.

Disconnecting the USB HDD

Please use the following procedure to disconnect. Disconnecting without following this procedure may result in the loss of recorded content from the USB HDD or the internal HDD.

- 1 Press [FUNCTION MENU].
- 2 Select "Setup" in "Others", then press [OK].
- 3 Select "Settings for USB HDD" in "HDD / Disc / USB HDD", then press [OK].
- 4 Select "USB HDD Disconnection", then press [OK].
- 5 Select "Yes", then press [OK].
- 6 Disconnect the USB HDD from this unit.

Registering the USB HDD

- If the registering screen appears when connecting the USB HDD, go to step 5.

- 1** Press [FUNCTION MENU].
- 2** Select "Setup" in "Others", then press [OK].
- 3** Select "Settings for USB HDD" in "HDD / Disc / USB HDD", then press [OK].
- 4** Select "USB HDD Registration", then press [OK].
- 5** Select "Yes", then press [OK].
 - If you have already registered eight USB HDDs, it will be necessary to delete one or more of them before registering a new USB HDD.

The message screen appears:

 - 1 Select "Yes", then press [OK].
 - 2 Select the USB HDD to cancel, then press [OK].

The confirmation screen appears.

 - 3 Select "Yes", then press [OK].
- 6** When the registering is complete, message screen appears.
Press [OK].
- 7** The confirmation screen appears.
Press [OK].

To cancel all USB HDD registrations

Refer to "Cancellation of all USB HDD Registrations". (⇒ 93)



- If you register a USB HDD, all the content already recorded on the USB HDD will be deleted.
- It is not possible to play back the content on the USB HDD whose registration has been cancelled.
- You can check the registration number of the USB HDD on the DIRECT NAVIGATOR. (⇒ 39)

VIERA Link/Q Link functions

What is VIERA Link “HDAVI Control”?

VIERA Link “HDAVI Control” is a convenient function which will link the operations of this unit and a Panasonic TV (VIERA) or an amplifier/receiver. You can use this function by connecting the equipment with the HDMI cable. See the operating instructions for connected equipment.

What is Q Link?

Q Link is a convenient function which will link the operations of this unit and a Panasonic TV (VIERA). You can use this function by connecting the equipment with a fully wired 21-pin Scart cable.

Automatic input switching/ Power on link

VIERA Link Q Link

When the following operations are performed, the input channel of the TV will be automatically switched and the screen of this unit will be displayed. Additionally when the TV is off, the TV will automatically turn on.

- When play starts on this unit
- When an action that uses DIRECT NAVIGATOR or FUNCTION MENU etc, is performed

Power off link

VIERA Link Q Link

When you set the TV to standby mode, this unit is also automatically set to standby mode.

- Power off link function does not work when recording, copying etc.

Playing music continuously even after turning off power to the TV

VIERA Link

The following operations make it possible to keep the power of the unit on and to play music continuously.

When the unit is directly connected to an amplifier/receiver.

- 1 While playing music
Press [OPTION].
- 2 Select “TV Power Off”, then press [OK].

- Sound may be discontinued for several seconds when the power to the TV is turned off.
- This function is available with the TV that supports “HDAVI Control 2” or later.

PAUSE LIVE TV

VIERA Link

You can operate this unit with the TV remote control.

Refer to “PAUSE LIVE TV”. (⇔ 30)

- This function is available with the TV that supports “HDAVI Control 3” or later.

Direct TV Recording

VIERA Link Q Link

This function allows you to immediately start recording the programme that you are viewing on the TV.

Refer to the TV operating instructions for operation.

- This function is available with the TV that supports “HDAVI Control 3” or later.

Easy control only with VIERA remote control

VIERA Link

You can operate this unit using the TV remote control.

Refer to the operating instructions of the TV about the buttons that you can use.

- This function is available with the TV that supports "HDAVI Control 2" or later.



- This unit supports "HDAVI Control 5" function. "HDAVI Control 5" is the newest standard (current as of November, 2011) for Panasonic HDAVI Control compatible equipment. This standard is compatible with Panasonic's conventional HDAVI equipment. Please refer to individual manuals for other manufacturers' equipment supporting VIERA Link function.
- VIERA Link "HDAVI Control", based on the control functions provided by HDMI which is an industry standard known as HDMI CEC (Consumer Electronics Control), is a unique function that we have developed and added. As such, its operation with other manufacturers' equipment that supports HDMI CEC cannot be guaranteed.
- These functions may not work normally depending on the equipment condition.
- Use the remote control supplied with this unit if you cannot operate this unit using buttons on the TV remote control.
- The operation of this unit may be interrupted when you press certain buttons on the TV remote control.

Playback menu

A variety of operations and settings such as changing the subtitles and audio languages can be performed during playback of video or music. Also, picture and sound quality can be set to your personal taste.

- 1 Press [OPTION].
- 2 Select "Playback Settings" in "Playback Menu" or select "Playback Settings", then press [OK].

e.g.,

Disc	Soundtrack	1 ENG	<input checked="" type="checkbox"/> Digital	2/0 ch
Play	Subtitles	Off		1 ENG
Picture	Angle			1
Sound				
Other				

Menu
Item
Setting

- 3 Select the menu, then press [▶] (right).
- 4 Select the item, then press [▶] (right).
- 5 Select the setting.
 - Some items can be changed by pressing [OK].

Depending on the condition of the unit (playing, stopped, etc.) and media contents, there may be some items which cannot be selected or for which the effects do not work properly.

To clear the Playback menu

Press [RETURN ⊕].

Disc

Video

The original video recording method (MPEG-4 AVC etc.) appears.

Signal Type

• Primary Video

- Video

The original video recording method appears.

- Soundtrack

Select the type of audio or language.

• Secondary Video

- Video

Select on/off of images.

The original video recording method appears.

- Soundtrack

Select on/off of audio and the language.

Soundtrack*

Show or change the soundtrack.

Subtitles*

Turn the subtitle on/off, and change the language depending on the media.

Multi Audio

Switch in the case of multiple audio.

Subtitle Language

Select the subtitle language in the case of multiple languages.

Subtitle Style

Select the subtitle style recorded on the disc.

Angle*

Change the number to select an angle.

Audio Channel

Change audio (LR/L/R) during playback.

* With some discs, you may only be able to make changes using the menus on the disc.

Play

Repeat Play

Select the item which you want to repeat.

Random

Select whether to play random or not.

Graphic Display Level

You can change the 3D position of the playback settings display, etc., during the 3D playback.

Picture

Mode

Select the picture quality mode during play.

• Normal

Default setting.

- **Soft**

Soft picture with fewer video artifacts.

- **Fine**

Details are sharper.

- **Cinema**

Mellows movies, enhances detail in dark scenes.

- **Cartoon**

A mode suitable for viewing animations.

Advanced Settings

- **HD optimizer**

This will compensate the mosaic noise in the video and haze around the characters precisely.

- **Chroma Process**

The high-resolution processing of HDMI chroma signals produces a high-resolution picture with rich picture quality.

- **Detail Clarity**

The picture becomes sharp and detailed.

- **Super Resolution**

Standard picture quality video is corrected to sharp and crisp picture quality when it is output as 1080i/1080p from the HDMI terminal.

Progressive

Select the method of conversion for progressive output to suit the type of title being played.

- **Auto**

Automatically detects the film and video content, and appropriately converts it.

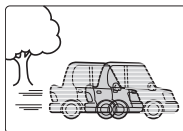
- **Video**

Select this setting when the content is distorted if "Auto" is selected.

- **Film**

Select this if the edges of the film content appear jagged or rough when "Auto" is selected.

However, if the video content is distorted as shown in the illustration to the right, then select "Auto".



Sound

Sound Effects

- This function is effective when "Digital Audio Output" is set to "PCM". (⇒ 94)
- **Re-master 1/Re-master 2**
Sound becomes more natural by adding higher frequency signals not recorded on the track.

Dialogue Enhancer

The volume of the centre channel is raised to make dialogue easier to hear.

Other

Position

Change the position where this menu screen appears on your TV.

Audio attribute

LPCM/ <input type="checkbox"/> Digital/ <input type="checkbox"/> Digital+/ <input type="checkbox"/> TrueHD/ DTS/DTS-HD/MPEG:	Signal type
k (kHz):	Sampling frequency
b (bit):	Number of bits
ch (channel):	Number of channels

Language

ENG: English	CHI: Chinese
FRA: French	KOR: Korean
DEU: German	MAL: Malay
ITA: Italian	VIE: Vietnamese
ESP: Spanish	THA: Thai
NLD: Dutch	POL: Polish
SVE: Swedish	CES: Czech
NOR: Norwegian	SLK: Slovak
DAN: Danish	HUN: Hungarian
POR: Portuguese	FIN: Finnish
RUS: Russian	*: Others
JPN: Japanese	



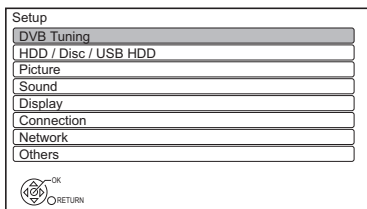
- The menu is not displayed when playing photos.

Changing the unit's settings (Setup)

You can change the unit's settings of DVB Tuning, Sound, Display, Connection, Network etc. in the menu.

Common procedures

- 1 Press [FUNCTION MENU].
- 2 Select "Setup" in "Others", then press [OK].



- 3 Select the menu, then press [OK].
- 4 Select the item, then make the setting. (⇒ right)
 - Follow the instructions on the screen if further operations are necessary.
 - Depending on the connection or the status of this unit some items cannot be selected or changed.

To return to the previous screen

Press [RETURN ⊙].

Menu list

The locations of the setting items are as follows. For details on each setting item, please refer to the following pages.

DVB Tuning

- Favourites Edit (⇒ 88)
- Channel List (⇒ 89)
- Auto Setup (⇒ 89)
- Manual Tuning (⇒ 90)
- Update Channel List (⇒ 90)
- Child Lock (⇒ 90)
 - Child Lock List (⇒ 90)
 - Parental Rating (⇒ 90)
- Signal Condition (⇒ 90)
- Preferred Language (⇒ 90)
- New Channel Message (⇒ 90)

HDD / Disc / USB HDD

- Settings for Playback (⇒ 91)
 - 3D BD-Video Playback (⇒ 91)
 - Soundtrack (⇒ 91)
 - Subtitles (⇒ 91)
 - Menu (⇒ 91)
 - Play Video (AVCHD) on BD-RE / BD-R (⇒ 91)
 - BD-Live (⇒ 91)
 - BD-Video Parental Control (⇒ 91)
 - DVD-Video Parental Control (⇒ 91)
 - Subtitle Text (⇒ 91)
- Settings for Recording (⇒ 92)
 - Timer Record Start Buffer (⇒ 92)
 - Timer Record Stop Buffer (⇒ 92)
 - REWIND LIVE TV (⇒ 92)
 - Recording for Encrypted Channel (⇒ 92)
 - Aspect for Recording (⇒ 92)
 - Chapter Creation (⇒ 92)
 - Rec for High Speed Copy (⇒ 92)
 - BD / DVD Speed for High Speed Copy (⇒ 92)
 - Recording time in EP mode (⇒ 92)
- HDD Management (⇒ 93)
 - Delete all titles (⇒ 93)
 - Delete all photos (⇒ 93)
 - Format HDD (⇒ 93)
- Settings for USB HDD (⇒ 93)
 - USB HDD Registration (⇒ 93)
 - USB HDD Disconnection (⇒ 93)
 - USB HDD Management (⇒ 93)
 - Delete all titles (⇒ 93)
 - Format USB HDD (⇒ 93)
 - Cancellation of all USB HDD Registrations (⇒ 93)

Picture

- Still Mode (⇒ 93)
- Seamless Play (⇒ 93)
- NTSC Video Output (⇒ 93)

Sound

- Dynamic Range Compression (⇒ 94)
- Downmix (⇒ 94)
- Bilingual Audio Selection (⇒ 94)
- Digital Audio Output (⇒ 94)
 - PCM Down Conversion (⇒ 94)
 - Dolby D / Dolby D + / Dolby TrueHD (⇒ 94)
 - DTS / DTS-HD (⇒ 94)
 - MPEG (⇒ 94)
 - BD-Video Secondary Audio (⇒ 94)
- Audio Delay (⇒ 95)
- Audio for HG / HX / HE / HL / HM Recording (⇒ 95)

Display

- Language (⇒ 95)
- On-Screen Information (⇒ 95)
- Unit's Display (⇒ 95)
- Screen Saver (⇒ 95)
- Teletext (⇒ 95)
- Blue LED (⇒ 95)

Connection

- 3D Settings (⇒ 96)
 - 3D Type (⇒ 96)
 - 3D AVCHD Output (⇒ 96)
 - 3D Playback Message (⇒ 96)
- TV Aspect (⇒ 96)
- Aspect for 4:3 Video (⇒ 96)
- TV System (⇒ 96)
- HDMI Connection (⇒ 96)
 - HDMI Video Format (⇒ 96)
 - 24p Output (⇒ 96)
 - Deep Colour Output (⇒ 96)
 - HDMI Audio Output (⇒ 96)
 - 7.1ch Audio Reformatting (⇒ 97)
 - Contents Type Flag (⇒ 97)
 - VIERA Link (⇒ 97)
- AV1 Output (⇒ 97)
- AV2 Settings (⇒ 97)
 - AV2 Input (⇒ 97)
 - Ext Link (⇒ 97)
- Common Interface (⇒ 97)

Network

- Easy Network Setting (⇒ 98)
- Network Settings (⇒ 98)
 - LAN Connection Mode (⇒ 98)
 - Wireless Settings (⇒ 98)
 - Connection Setting (⇒ 98)
 - Double Speed Mode Setting (2.4GHz) (⇒ 98)
 - IP Address / DNS Settings (⇒ 98)
 - Proxy Server Settings (⇒ 98)
 - Network Service Settings (⇒ 98)
 - Lock (⇒ 98)
 - Automatic Volume Control (⇒ 98)
 - Home Network Settings (⇒ 99)
 - Home Network function (⇒ 99)
 - Setting device name (⇒ 99)
 - Registration type for remote devices (⇒ 99)
 - Remote device list (⇒ 99)

Others

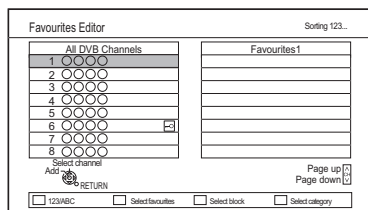
- Standby Settings (⇒ 99)
 - Power Save in Standby (⇒ 99)
 - Automatic Standby (⇒ 99)
 - Automatic Standby after OTR (⇒ 99)
 - Automatic Standby after Copy (⇒ 100)
 - RF OUT (CATV Signal) (⇒ 100)
- Remote Control (⇒ 100)
- Clock (⇒ 100)
- PIN Entry (⇒ 100)
- System Update (⇒ 100)
 - Software Update in Standby (⇒ 100)
 - Software Update Now (Broadcast) (⇒ 101)
 - Software Update Now (Internet) (⇒ 101)
 - Software Licence (⇒ 101)
- System Information (⇒ 101)
- DivX Registration (⇒ 101)
- Initialize (⇒ 101)
 - Shipping Condition (⇒ 101)
 - Default Settings (⇒ 101)

Changing the unit's settings (Setup)

DVB Tuning

Favourites Edit

You can create four favourites of channels for making viewing and recording easier.



After editing as follows, save the Favourites.

Press [RETURN ⊞], then press [OK].

- To delete channels:
Select the channel in the “Favourites” column, then press [OK].
 - Yellow: Delete all channels.

- To change the name of the Favourites list:
 - 1 Press the red button in the “Favourites” column.
 - 2 Press [▲, ▼, ◀, ▶] to select a character, then press [OK].
Repeat this step to enter other characters.
 - Red: Delete a character.
 - Blue: Delete all characters.
 - 3 Press [RETURN ⊞].

- To select the other Favourites list:
Press the green button.

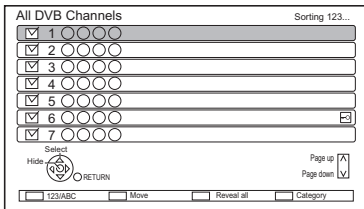
- To add channels to the Favourites list:
Select the channel in the “All DVB Channels” column, then press [OK]. Repeat this step.
 - Red: Change the sorting mode.
 - Yellow: Add continuous block of channels to the list at once.
 - Press [▲, ▼] to make the block, then press [OK].
 - Blue: Select the Category.

- To change the order of the channels list:
 - 1 Select the channel in the “Favourites” column to move, then press the green button.
 - 2 Select the new position, then press the green button.

Channel List

You can edit the channel list.

e.g.,



- To hide/reveal channels
 - 1 Select the channel.
 - 2 Press [OK].
 - The check mark is removed/displayed.
 - Red: Change the sorting mode.
 - Yellow: Reveal all channels.
 - Blue: Change the Category.
- To change the channel number assignment
 - 1 Select the channel to change, then press the green button.
 - 2 Enter the channel number to reassign with the number buttons.
 - 3 Press [OK].

Auto Setup

You can restart the Auto Setup. (⇒ 22)

- 1 Select “Yes”, then press [OK].
 - If the country selection screen appears: Select the country, then press [OK].
- 2 Select the channel number allocation, then press [OK].
- 3 Select the items and change the items. (For details, consult the cable provider.)

Search Mode

- Free Channels
 - Search for free channels only.
- All Channels
 - Search for all channels.

Scan Mode

- Quick:
 - Scans the suitable frequency for the selected country.
- Full:
 - Scans the whole frequency range.

Frequency/Symbol Rate/Network ID

Normally set to “Auto”.

If “Auto” is not displayed or if necessary, enter the value specified by your cable provider with number buttons.

- 4 Select “Start scan”, then press [OK].



- The timer recording programmes are cancelled.

Changing the unit's settings (Setup)

Manual Tuning

You can add new channels manually.

- 1 Adjust the frequency, symbol rate and service ID. (For details, consult the cable provider.)
 - Adjust the frequency by checking the signal strength and signal quality displays.
- 2 Select "Start scan", then press [OK].
 - The set channel is displayed in the table.

Update Channel List

You can update the channel list to the latest one.

Child Lock

- PIN is required to change. (⇒ 27)

Child Lock List

You can restrict the viewing of channels and playback of titles. You can lock each channel or AV input.

- 1 Select the channel or AV input to lock.
- 2 Press [OK].

G is displayed.

- Press [OK] again to cancel.
- Green: Lock all channels.
- Yellow: Unlock all channels.

Parental Rating

You can restrict the viewing and recording of channels unsuitable to children.

Set a ratings level to limit broadcast viewing and playback.

- Follow the on-screen instructions.

Signal Condition

You can check the quality and strength of signals.

Press [CH ^ v] to select the channel.

Signal Condition	
Channel Name	○○○○
Signal Quality	100%
Signal Strength	100%
Bit Error Rate	○○○○○
Network Name	○○○○
Parameter	○○○MHz ○○○AM ○○○SS

Channel Up [▲]
Channel Down [▼]

- Signal Quality:
Red bar: Bad
Yellow bar: Poor
Green bar: Good



- When the signal is too strong (red bar), reduce the CATV signal. (For details, consult your dealer or the cable provider.)
- When the signal is weak, check that the current broadcast channel is correctly broadcasting.

Preferred Language

Select the language for multi broadcast.

If the selected language is not available, the original language will be selected.

New Channel Message

Set whether to obtain the information automatically when a new DVB channel is added.

HDD / Disc / USB HDD

Settings for Playback

3D BD-Video Playback

Select the playback method of 3D compatible video software.

Soundtrack

Select the audio language.

- If "Original" is selected, the original language of each disc will be selected.
- Enter a code with the number buttons when you select "Other ****".
(⇒ 101, Language code list)

Subtitles

Select the language for subtitle.

- If "Automatic" is selected and the language selected for "Soundtrack" is not available, subtitles of that language will automatically appear if available on that disc.
- Enter a code with the number buttons when you select "Other ****".
(⇒ 101, Language code list)

Menu

Select the language for disc menus.

- Enter a code with the number buttons when you select "Other ****".
(⇒ 101, Language code list)

Play Video (AVCHD) on BD-RE / BD-R

When playing a disc which contains the following two video formats;

- High Definition video (AVCHD) recorded by the Panasonic video camera, etc.,
- High Definition quality video recorded on this unit,

select which video to play back.

- On:
Play the High Definition video (AVCHD)
- Off:
Play the High Definition quality title

BD-Live

You can restrict Internet access when BD-Live functions are used.

- If "On (Limit)" is selected, Internet access is permitted only for BD-Live contents which have content owner certificates.

BD-Video Parental Control

Set an age limit of BD-Video play.

- PIN is required to change. (⇒ 27)

DVD-Video Parental Control

Set a rating level to limit DVD-Video play.

- PIN is required to change. (⇒ 27)

Subtitle Text

Select the language for DivX and MKV subtitles text.

- This item is displayed only after playing back a DivX or MKV file with subtitle text.

Changing the unit's settings (Setup)

Settings for Recording

Timer Record Start Buffer

This function sets the timer recording to start earlier than the TV Guide time.

Timer Record Stop Buffer

This function sets the timer recording to stop later than the TV Guide time.

REWIND LIVE TV

Turn on/off the REWIND LIVE TV function.

- When "Automatic Standby" is set to "Off" (⇒ 99), "On" cannot be selected.

Recording for Encrypted Channel

Limitation for record/view/play of the encrypted programme will change. (⇒ 33)

Aspect for Recording

Sets the aspect ratio when recording or copying except in DR mode.

- If "Automatic" is selected, the title will be recorded with the original aspect ratio at the time when recording started (including when recording started at a commercial, etc.).
- In the following cases, the programme will be recorded with the original aspect ratio.
 - **BD-RE** **BD-R** When the recording mode is set to "XP", "SP", "LP", "EP" or "FR"
 - **HDD** **RAM** When the recording mode is set to "XP", "SP", "LP", "EP" or "FR" with the "Rec for High Speed Copy" set to "Off"
- In the following cases, aspect is fixed to 4:3.
 - **DVD-R** **DVD-RW** When the recording mode is set to "EP" or "FR (recordings 5 hours or longer)" mode.
 - When recording to a +R, +R DL and +RW.

Chapter Creation

HDD

Set the Chapter Creation method.

- Even if "Automatic" is selected, depending on the programme to be recorded, the chapter may not be created correctly.

Rec for High Speed Copy

You can copy titles to DVD in high speed mode, if you set to "On" before recording a programme.

- This setting is valid for the following cases:
 - File Conversion (⇒ 51)
 - Recording from external equipment
 - Copying from a finalised DVD-Video disc
- If "On" is selected, the following restrictions are applied to recorded titles.
 - The settings in "Aspect for Recording" (⇒ left) and in "Bilingual Audio Selection" (⇒ 94) are applied to titles.
 - You cannot switch the audio when watching a programme via AV input.

BD / DVD Speed for High Speed Copy

Select the speed of high-speed copying.

If "Normal (Silent)" is selected, the time required for copying will be longer.

Recording time in EP mode

Select the maximum number of hours for recording in EP mode (⇒ 119, Recording modes and approximate recording times).

HDD Management

Press and hold [OK] for 3 seconds to show the following settings.

Delete all titles

Delete all titles (video) on the built-in HDD.

- Delete does not work if one or more titles are protected.

Delete all photos

Delete all photos on the built-in HDD.

Format HDD

Formatting deletes all contents on the built-in HDD, and they cannot be restored. Check carefully before proceeding.

Settings for USB HDD

USB HDD Registration

Register the USB HDD. (⇒ 81)

USB HDD Disconnection

This function puts the USB HDD in a state in which it can be safely disconnected. (⇒ 80)

USB HDD Management

Press and hold [OK] for 3 seconds to show the following settings.

Delete all titles

Delete all titles on the USB HDD.

- Delete does not work if one or more titles are protected.

Format USB HDD

Formatting deletes all contents, and they cannot be restored. Check carefully before proceeding.

Cancellation of all USB HDD Registrations

This function cancels the registrations of all the USB HDDs registered on this unit.

Only do this if you are going to dispose of this unit.



- Before operation, perform "USB HDD Disconnection" (⇒ left) and remove the USB HDD.
- It is not possible to play back the content from a USB HDD whose registration has been cancelled.

Picture

Still Mode

Select the type of picture shown when you pause play.

- Field:

Select if jittering occurs when "Automatic" is selected. (The picture is coarser.)

- Frame:

Select if small text or fine patterns cannot be seen clearly when "Automatic" is selected. (The picture is clearer and finer.)

Seamless Play

The segments can be played back seamlessly.

- When "Off" is selected, frame-dropping between the segments can be avoided, but the video may freeze for a moment between the segments.
- Seamless Play function does not work depending on the condition or the kind of programme.
- This function cannot be used on encrypted titles (🔒).

NTSC Video Output

(This works only for video output from the VIDEO OUT terminal.)

Select how to output the NTSC image.

Changing the unit's settings (Setup)

Sound

Dynamic Range Compression

To lower the dynamic range for playback (e.g., at night).

- This does not work depending on broadcasts and recorded titles.

Downmix

Select the downmix system of multi-channel to 2-channels sound.

- Select "Surround encoded", when the connected equipment supports the virtual surround function.
- There is no effect on "Bitstream" via HDMI AV OUT and DIGITAL AUDIO OUT terminal.
- The audio will be output in "Stereo" in the following cases.
 - AVCHD playback
 - **BD-V** : Playback of clicking sound on the menu and audio with secondary video in picture-in-picture mode.

Bilingual Audio Selection

Select whether to record the audio type ("M1" or "M2") when:

- File Conversion (⇒ 51)
- Copying to a DVD-R, DVD-RW, +R and +RW.
- "Rec for High Speed Copy" is set to "On". (⇒ 92)

Digital Audio Output

PCM Down Conversion

Select how to output audio with a sampling frequency of 96 kHz.

- On:
 - Signals are converted to 48 kHz. (Choose when the connected equipment cannot process signals with a sampling frequency of 96 kHz.)
- Off:
 - Signals are output as 96 kHz.
 - The signals will be converted to 48 kHz regardless of the setting in the following cases.
 - The signals have a sampling frequency of over 96 kHz.
 - The disc has copy protection.
 - "BD-Video Secondary Audio" is set to "On". (**BD-V**) (⇒ below)

Dolby D / Dolby D + / Dolby TrueHD

DTS / DTS-HD

MPEG

Select the audio signal to output.

- Select "PCM" when the connected equipment cannot decode the respective audio format.
- Not making the proper settings may result in noise.

BD-Video Secondary Audio

Turn on/off the clicking sound on the menu and audio with secondary video.

Audio Delay

Mis-sync between the video and audio is corrected by delaying the audio output.

Audio for HG / HX / HE / HL / HM Recording

If the programme has multi channel audio, priority is given to what you select.

- This setting will give effect in the following cases.
 - Timer recording (⇒ 35)
 - File Conversion (⇒ 51)
 - Normal speed copy in HG, HX, HE, HL or HM mode from a title recorded in DR mode. (⇒ 56, 59)

Display

Language

Select the language for on-screen menus.

On-Screen Information

Select the time until the channel information screen (⇒ 28) disappears automatically.

Unit's Display

Changes the brightness of the unit's display.

- If "Automatic" is selected, the display turns dark during play and disappears when the unit is in standby mode. While using this mode, the standby power consumption can be reduced.
- When "Power Save in Standby" is set to "On" or "On Timer" (⇒ 99), this function is fixed to "Automatic".

Screen Saver

This is to prevent burn-in on the screen.

Teletext

Select the Teletext (⇒ 29) display mode.

Blue LED

BCT820

Set the lighting method for the lamp on the SD card slot.

- If "SD inserted" is selected, when this unit is turned on and SD card is inserted, the lamp is lighted.

Changing the unit's settings (Setup)

Connection

3D Settings

3D Type

If 3D video cannot be played back in 3D, you may be able to play it in 3D by changing the setting.

- Change the settings for 3D on the TV also when "Side by side" is selected.

3D AVCHD Output

If 2D AVCHD video is recognised as 3D video and cannot be played back correctly, you may be able to play it by changing the setting.

3D Playback Message

Set to display or hide the 3D viewing warning screen.

TV Aspect

Set to match the type of TV connected.

- Pan & Scan:

Side picture is trimmed for 16:9 picture.



The pictures may be shown in the letterbox style depending on the content.

- Letterbox:

Black bands appear for 16:9 picture.



Aspect for 4:3 Video

To play a 4:3 title, set how to show pictures on a 16:9 TV.

TV System

Set in accordance with the TV System for the connected TV.

HDMI Connection

HDMI Video Format

You can only select items compatible with the connected equipment.

- If "Automatic" is selected, the output resolution best suited to the connected TV (1080p, 1080i, 720p or 576p/480p) is automatically selected.
- To enjoy High Quality Video up-converted to 1080p, you need to connect the unit to 1080p compatible HDTV. If this unit is connected to an HDTV through other equipment, it must also be 1080p compatible.

24p Output

When playing BD-Video recorded in 24 frames, this unit displays each frame at 1/24 second intervals—the same interval originally shot with the film movie.

- This item is effective only when this unit is connected to a TV supporting 1080/24p output using an HDMI cable and "HDMI Video Format" is set to "Automatic" or "1080p". (⇒ above)
- When BD-Video images other than 24p are played, images are output at 60p.

Deep Colour Output

This setting is for selecting whether to use Deep Colour output when a TV that supports Deep Colour is connected.

HDMI Audio Output

Select "Off" when connected to a TV with an HDMI cable, and connected to an amplifier/receiver not compatible with HDMI with a DIGITAL AUDIO OUT terminal.

7.1ch Audio Reformatting

BD-V

Surround sound with 6.1 ch or less is automatically expanded and played back at 7.1 ch.

- If "Off" is selected, sound is played over the original number of channels. (Note that in the case of 6.1 ch audio, playback will be at 5.1 ch)

Audio reformatting is enabled in the following cases:

- When you have selected "PCM" in "Digital Audio Output". (⇒ 94)
- When the audio is Dolby Digital, Dolby Digital Plus, Dolby TrueHD or LPCM.

Contents Type Flag

If "Automatic" is selected, the optimal method of playback depending on the TV (e.g. cinema) will automatically be selected (only when the TV supports Contents Type Flag).

VIERA Link

Select "Off" when you do not want to use "HDAVI Control".

AV1 Output

Set according to the terminal of the connected TV.

AV2 Settings

AV2 Input

Set according to the output from the external equipment.

Ext Link

Set "Ext Link 1" when a Set Top Box which transmits a control signal via the 21-pin Scart cable is connected.

- This setting cannot be made when "TV System" is set to "NTSC" (⇒ 96).

Common Interface

Access to software contained on CI module. (⇒ 14)

- Select "Slot 1:" or "Slot 2:" and press [OK]. Follow the on-screen instructions.
- This setting cannot be made when "TV System" is set to "NTSC" (⇒ 96).



- On-screen instructions may not correspond to the remote control buttons.
- For more information about TV service, please contact your service provider.
- Depending on the card, in some cases its use together with this unit may be limited or not possible.

Changing the unit's settings (Setup)

Network

Easy Network Setting

Press [OK] to start Easy Network Setting. (⇒ 24)

Network Settings

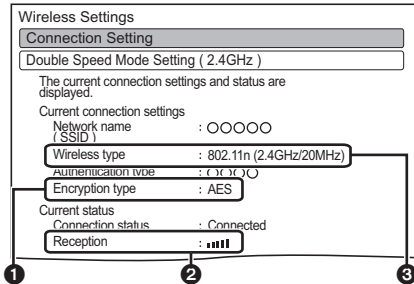
LAN Connection Mode

Select the LAN connection method.

Wireless Settings

This allows to set and check the connection settings of the Wireless router.

e.g.,



- ❶ Encryption type
- ❷ Reception
- ❸ Type of wireless router

Connection Setting

The Wireless router connection wizard will be displayed.

Double Speed Mode Setting (2.4GHz)

When a 2.4 GHz wireless format is used, this setting sets the connection speed.

- If you connect using the “Double Speed Mode (40MHz)”, 2 channels use the same frequency band, and there is consequently a greater risk of reception interference. This can cause the connection speed to drop or the connection to become unstable.

IP Address / DNS Settings

Check the connection of the network or set the IP address and DNS.

- To set the IP address and DNS
 - 1 Set “IP Address Auto-assignment” and “DNS-IP Auto-assignment” to “Off”.
 - 2 Select the item, then press [OK] to show the respective setting.
- When the router's DHCP server function is not activated, check the numbers of other connected devices such as personal computers, then assign a number different from those of other devices for the “IP Address” and assign the same number for “Subnet Mask” and “Gateway Address”.

Proxy Server Settings

Check and set the connection to the Proxy server.

- Press [OK] to show the respective setting.

Network Service Settings

Lock

You can restrict using VIERA Connect.

- PIN is required to change. (⇒ 27)

Automatic Volume Control

Volume is adjusted automatically to the standard volume while using VIERA Connect.

- Depending on contents, this function will not work.
- Select “Off” when the audio is warped.

Home Network Settings

You can set the DLNA (Server) function.
(⇒ 74)

Home Network function

You can switch between enable/disable of the DLNA (Server) and DMR (Media Renderer) function.

- If "On" is selected, "Power Save in Standby" is fixed to "Off". (⇒ right)
- This cannot be set to "On" if the connection with the wireless broadband router is not encrypted in the wireless connection.

Setting device name

It is also possible to change the name of this unit on the network.

- Select from a preset list
Select the preset name, then press [OK].
- Create name
Enter the name.
Refer to "Entering text". (⇒ 104)

Registration type for remote devices

- Automatic:
All connected devices on the same network can access this unit.
- Manual:
Only registered devices can access this unit.

Remote device list

- To register equipment manually
 - 1 Select the device name or the MAC Address for the device you want to register, then press [OK].
 - 2 Select "Yes", then press [OK].
- To deregister equipment
 - 1 Select the registered equipment, then press [OK].
 - 2 Select "Yes", then press [OK].



- This function cannot be enabled when "Automatic" is selected in "Registration type for remote devices". (⇒ above)
- The maximum number of equipment that can be registered is 16.

Others

Standby Settings

Power Save in Standby

- On:
It will go into the "Power Save in Standby" mode.
- On Timer:
"Power Save in Standby" is activated when the set time comes.
 - If the clock has not been set, "Power Save in Standby" is activated at all hours.
- Off:
It is possible to start quickly from standby mode. (Quick Start mode)



- This function cannot be enabled when the DLNA function is enabled in "Home Network function". (⇒ left)
- If "On" or "On Timer" is selected, "Unit's Display" is fixed to "Automatic". (⇒ 95)
- When "Power Save in Standby" is activated, Video from AV2 input cannot be viewed with this unit in standby mode.
- The setting may be changed to "Off" automatically when the setting for video communication is changed. (⇒ 77)

Automatic Standby

Set the time to turn the unit to standby mode automatically.

When the unit is not operating, the unit will be turned to standby mode once the set time has passed.

- When "REWIND LIVE TV" is set to "On" (⇒ 92), "Off" cannot be selected.

Automatic Standby after OTR

- On:
This unit is turned to standby mode when it is not operated for approximately 5 minutes after completing "Automatic Stop" or "Recording Time" (⇒ 31).

Changing the unit's settings (Setup)

Automatic Standby after Copy

- On:
This unit is turned to standby mode when it is not operated for approximately 5 minutes after completing copy (⇒ 56, Copying from media other than HDD with DIRECT NAVIGATOR, Copying titles with copying list).

RF OUT (CATV Signal)

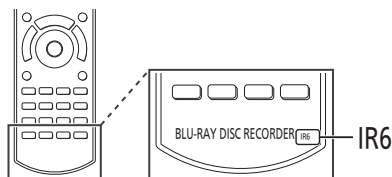
Set whether to output the broadcasting signal from RF OUT or not while in standby mode (When "Power Save in Standby" is activated).

- If "On" is selected, the broadcasting signal is output from this unit.

Remote Control

Change the remote control code on the main unit and the remote control if you place other Panasonic products close together.

- Use "BD 1", the factory set code, under normal circumstances.
 - 1 Select the code, then press [OK].
 - 2 While pressing [OK], press and hold the number button ([1] to [6]) for more than 5 seconds.
 - 3 Press and hold [OK] for more than 5 seconds.
 - 4 Press [OK].
- Operation is possible only with Panasonic remote controls with "IR6" printed at the bottom when the remote control code of this unit is set to "BD 4", "BD 5" or "BD 6".



Clock

If the time is not set correctly, use the settings listed in the method below.

- Automatic
This unit usually obtains time and date information from digital broadcasts.
- Time Zone
When the time is not correct, set "Time Zone". (GMT - 6 to + 6)
- Manual Setting
 - 1 Select "Off" of "Automatic", then press [OK].
 - 2 Select the item you want to change.
 - 3 Change the setting.
 - 4 Press [OK] when you have finished the settings.

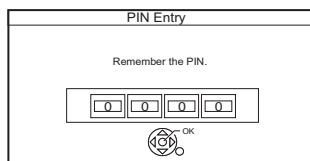


- When the clock is set manually, you cannot perform playing/recording/PAUSE LIVE TV/REWIND LIVE TV of the programmes that are copy protected (Copying is prohibited). (⇒ 15)

PIN Entry

You can set/change the PIN for parental control.

- 1 Enter your 4-digit PIN with the number buttons.
- 2 Enter the new 4-digit PIN with the number buttons.
 - **Make a note of PIN in case you forget it.**
e.g.,



- 3 Press [OK].

System Update

Software Update in Standby

When you set this unit to standby mode, software (firmware) updates (⇒ 102) are downloaded automatically at the time you have specified.

Software Update Now (Broadcast)

You can check for the latest software (firmware) version and update the software (firmware) from broadcaster immediately. However, some cable providers do not support this function.

Software Update Now (Internet)

Refer to "Software (Firmware) Update".
(⇒ 102)

Software Licence

Information about the software licence is displayed.

System Information

Display software (firmware) version, HDAVI Control version, Wireless Module version (When using wireless connection only), and terminal ID (ESN) of this unit.

DivX Registration

You need this registration code to purchase and play DivX Video-on-Demand (VOD) content.

- After playing DivX VOD content for the first time, the registration code is not displayed.
- If you purchase DivX VOD content using a registration code different from this unit's code, you will not be able to play this content.
- To cancel the unit's registration
Select "Yes".
Use the deregistration code to cancel the registration in www.divx.com.

Initialize

Shipping Condition

All the settings except for basic settings return to the factory preset. The timer recording programmes are also cancelled.

Default Settings

All the settings other than the tuning settings, clock settings, disc language settings, rating PIN, remote control code, etc. return to the factory presets.

Language code list

Abkhazian:	6566	Lingala:	7678
Afar:	6565	Lithuanian:	7684
Afrikaans:	6570	Macedonian:	7775
Albanian:	8381	Malagasy:	7771
Amharic:	6577	Malay:	7783
Arabic:	6582	Malayalam:	7776
Armenian:	7289	Maltese:	7784
Assamese:	6583	Maori:	7773
Aymara:	6589	Marathi:	7782
Azerbaijani:	6590	Moldavian:	7779
Bashkir:	6665	Mongolian:	7778
Basque:	6985	Nauru:	7865
Bengali; Bangla:	6678	Nepali:	7869
Bhutani:	6890	Norwegian:	7879
Bihari:	6672	Oriya:	7982
Breton:	6682	Pashto, Pushto:	8083
Bulgarian:	6671	Persian:	7065
Burmese:	7789	Polish:	8076
Byelorussian:	6669	Portuguese:	8084
Cambodian:	7577	Punjabi:	8065
Catalan:	6765	Quechua:	8185
Chinese:	9072	Rhaeto-Romance:	8277
Corsican:	6779	Romanian:	8279
Croatian:	7282	Russian:	8285
Czech:	6783	Samoan:	8377
Danish:	6865	Sanskrit:	8365
Dutch:	7876	Scots Gaelic:	7168
English:	6978	Serbian:	8382
Esperanto:	6979	Serbo-Croatian:	8372
Estonian:	6984	Shona:	8378
Faroese:	7079	Sindhi:	8368
Fiji:	7074	Singhalese:	8373
Finnish:	7073	Slovak:	8375
French:	7082	Slovenian:	8376
Frisian:	7089	Somali:	8379
Galician:	7176	Spanish:	6983
Georgian:	7565	Sundanese:	8385
German:	6869	Swahili:	8387
Greek:	6976	Swedish:	8386
Greenlandic:	7576	Tagalog:	8476
Guarani:	7178	Tajik:	8471
Gujarati:	7185	Tamil:	8465
Hausa:	7265	Tatar:	8484
Hebrew:	7387	Telugu:	8469
Hindi:	7273	Thai:	8472
Hungarian:	7285	Tibetan:	6679
Icelandic:	7383	Tigrinya:	8473
Indonesian:	7378	Tonga:	8479
Interlingua:	7365	Turkish:	8482
Irish:	7165	Turkmen:	8475
Italian:	7384	Twi:	8487
Japanese:	7465	Ukrainian:	8575
Javanese:	7487	Urdu:	8582
Kannada:	7578	Uzbek:	8590
Kashmiri:	7583	Vietnamese:	8673
Kazakh:	7575	Volapük:	8679
Kirghiz:	7589	Welsh:	6789
Korean:	7579	Wolof:	8779
Kurdish:	7585	Xhosa:	8872
Laotian:	7679	Yiddish:	7473
Latin:	7665	Yoruba:	8979
Latvian, Lettish:	7686	Zulu:	9085

Software (Firmware) Update

You cannot operate the unit until the update is complete. Don't remove the AC mains lead during the update. Removing the AC mains lead while the update is in progress may damage the unit.

Update software (firmware) of this unit

When this unit is connected to the Internet, the unit can automatically check for the latest software (firmware) version when switched to standby mode.

We recommend that you always connect this unit to the Internet. (⇒ 20, 24)

If a software (firmware) update is available, a notification is displayed.

New software version has been found.
The software will be updated automatically after this unit is switched to standby.
Do not disconnect the AC mains lead.

Update of the software (firmware) will start when the unit is turned to standby mode.

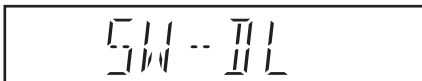
To update the software (firmware) immediately

Use the "Software Update Now (Internet)" function. (⇒ 101)

- Network connection and setting are required. (⇒ 20, 24)

The unit's display during the update

e.g.,



- When "FINISH" is displayed, update of the software (firmware) has completed.

If your unit is not connected to the Internet

You can download the latest software (firmware) version from the Panasonic support site below. After you copy the latest software (firmware) to a CD-R disc, play the disc in the unit and it will automatically update the software (firmware).



- It may take up to a few hours until the update is completed depending on the network environment.
- The timer recording always takes preference over the software (firmware) download; if the timer recording is scheduled to start, the downloading will be performed at the next opportunity.
- For the latest firmware update information, please refer to the Panasonic support site below.

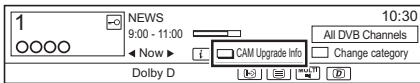
Panasonic support site:

<http://panasonic.jp/support/global/cs/>

CI Plus compatible CAM software (firmware) update

Software (firmware) of CAM (compatible CI Plus) can be updated automatically from broadcasts. Availability of software (firmware) update is detected while viewing the programmes compatible with CI Plus.

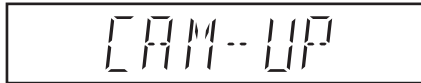
- When notification is displayed on the screen, select "Yes" and press [OK].
 - If for some reason the notification is not displayed, or if cancelled, the notification is instead displayed on the channel information (⇒ 28).
e.g.,



To execute CAM software upgrade, press the red button.

- Follow the instructions on the screen.

The unit's display during the update



- Do not remove the CAM from this unit while updating.
- CAM software (firmware) update notice is not displayed in the following cases:
 - When recording a programme
 - When timer recording and CAM update occur simultaneously
 - When displaying FUNCTION MENU, DIRECT NAVIGATOR, etc.
- Operations such as view, playback, or record cannot be performed while upgrading the CAM. Any buttons on the remote control or the unit cannot be used while upgrading the CAM.
- If the timer recording is started, CAM software upgrade is cancelled to start recording.
- For details, refer to your CAM's operating instructions or consult your dealer.

Other operations

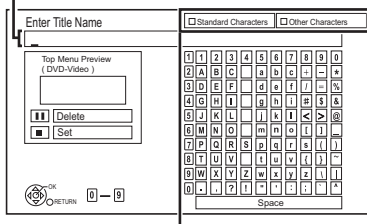
Entering title text

Preparation

- Show the “Enter Title Name” screen, etc.

- 1 Select a character, then press [OK].
Repeat this step to enter other characters.

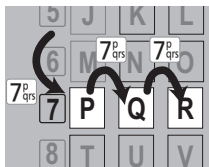
e.g.,
Name field: shows the text you have entered



Press the red button or green button to select character type and press [OK].

- To delete a character:
Select the character in the name field, then press [PAUSE ■■].
- To enter characters with number buttons:
e.g., entering the letter “R”

- 1 Press [7] to move to the seventh row.
- 2 Press [7] twice to highlight “R”.
- 3 Press [OK].



- 2 Press [STOP ■] (Set).
“Writing...” appears then the screen returns to the previous screen and so on.

To end partway

Press [RETURN ⊕]. (Text is not added.)



- The maximum number of characters depends on the media.
- If a name is long, parts of it may not be shown in some screens.

Switching the aspect ratio of the screen

When the image does not match the screen size of the TV, you can enlarge the image to fill the screen.

- 1 Press [OPTION].
- 2 Select “Aspect”, then press [OK].
- 3 Select the item, then press [OK].

Normal:

Normal output

Side cut:

The black bars on the right and left sides of the 16:9 image disappear and the image is enlarged.

Zoom:

The black bars on the top and bottom sides of the 4:3 image disappear and the image is enlarged.

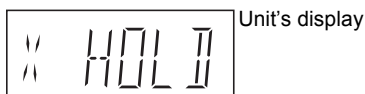


- This function does not work when watching 3D programme and playing back 3D title or 3D photo.
- It may also be adjusted using the screen mode of the TV etc.
- The screen mode is switched to “Normal” in the following situations:
 - when you change the channel
 - when you start or end the playback of a title
 - when you switch the unit on or to standby mode.
- [BD-V] [DVD-V] “Side cut” does not have any effect.
- When “TV Aspect” (⇒ 96) is set to “Pan & Scan” or “Letterbox”, the “Zoom” effect is disabled.

HOLD function

The HOLD function deactivates all buttons on the unit and remote control.

Press and hold [OK] and [RETURN ⊕] simultaneously until “X HOLD” appears on the unit’s display.



To cancel the HOLD function

Press and hold [OK] and [RETURN ⊕] simultaneously until “X HOLD” disappears.

Troubleshooting guide

Before requesting service, make the following checks. If the problem still persists, consult your dealer for instructions.

Updating to the latest software (firmware) may solve the problem. (⇒ 102)

The followings do not indicate a problem with this unit:

- Regular disc rotating sounds or HDD rotating sounds.
- Poor reception due to atmospheric conditions.
- Image disturbance during search.
- Image disturbance when replacing 3D discs.
- Interruptions in reception due to periodic broadcasting breaks.
- When you switch the unit on or to standby mode, there may be an unexpected sound.

General operation

The unit does not work.

- Check the connections. (⇒ 16)
- One of the unit's safety devices may have been activated.

Reset the unit as follows:

- 1 Press [⏻/|] on the main unit to switch the unit to standby.
 - If the unit does not switch to standby, press [⏻/|] on the main unit for about 3 seconds. The unit is forcibly switched to standby. Alternatively, disconnect the AC mains lead, wait one minute, then reconnect it.
- 2 Press [⏻/|] on the main unit to switch it on. If the unit still cannot be operated, consult the dealer.

Cannot eject a disc.

- 1 While the unit is in standby mode, press and hold [OK], the yellow button and the blue button at the same time for more than 5 seconds.
 - "00 RET" is displayed on the unit's display.
- 2 Repeatedly press [▶] (right) until "06 FTO" is displayed on the unit's display.
- 3 Press [OK].

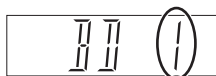
The unit is switched to standby mode automatically.

- VIERA Link or Q Link has worked. (⇒ 82, Power off link)

Troubleshooting guide

The remote control does not work.

- The remote control and main unit are using different codes. Change the code on the remote control.



Unit's display

Press and hold [OK] and the indicated number button at the same time for more than 5 seconds. (⇒ 100)

- Software (firmware) is updating when "UPD □/□" is displaying on the unit's display. Wait until the update is completed. (⇒ 102)
- The HOLD function is activated. (⇒ 104)

Startup is slow.

- Startup takes time in the following situations:
 - A disc is inserted.
 - The clock is not set.
 - Immediately after a power failure or the AC mains lead is connected.
 - When a BD-J application is executing.
 - When the "Power Save in Standby" is activated. (⇒ 99)

Displays

"0:00" is flashing on the unit's display.

- Set the clock. (⇒ 86, 100)

The clock does not display on the unit when switched to standby.

- The clock does not display when "Unit's Display" is set to "Automatic". (⇒ 95)

TV screen and video

Screen size is wrong.

- Check the "TV Aspect" or "Aspect for 4:3 Video". (⇒ 96)
- Adjust the aspect ratio setting on TV.
- If you connect to 4:3 TV, set "HDMI Video Format" to "576p/480p". (⇒ 86, 96)
- Check "Aspect for Recording" before recording or file conversion. (⇒ 86, 92)

The black screen appears on the TV.

- This phenomenon may occur, depending on the TV setting, when "Power Save in Standby" is set to "Off". Depending on the TV, this phenomenon may be prevented by reconnecting to a different HDMI input terminal.

Picture does not appear with the HD quality although HD setting was made.

- The pictures are output with 576p/480p depending on the title.

The screen changes automatically.

- If "Screen Saver" is set to "On", the screen saver function will be activated when there is no operation for 5 minutes or more. (⇒ 95)

There is a lot of image lag when playing video.

- Set "HD optimizer" in the Picture menu to "Off". (⇒ 85)
- Set "Audio Delay". (⇒ 86, 95)

The images do not appear on the TV.**The picture is distorted during play, or video will not play correctly.**

- Check the connections. (⇒ 16)
- Check the settings of the connected TV, etc.
- An incorrect resolution is selected in "HDMI Video Format". Reset the setting as follows:
 - 1 While the unit is on, press and hold [OK], the yellow button and the blue button at the same time for more than 5 seconds.
 - "00 RET" is displayed on the unit's display.
 - 2 Repeatedly press [▶] (right) until "04 PRG" is displayed on the unit's display.
 - 3 Press and hold [OK] for at least 3 seconds. Set the item again. (⇒ 86, 96)
 - When Dolby Digital Plus, Dolby TrueHD, and DTS-HD audio are not output properly, select "Yes" in "Default Settings" and make proper settings. (⇒ 86, 101)
- The unit's TV System is different from that of the disc. While stopped, keep pressing [■] (STOP) and [▲ OPEN/CLOSE] on the main unit for 5 or more seconds. The system switches from PAL to NTSC or vice versa.
- Picture may not be seen when more than 4 devices are connected with HDMI cables. Reduce the number of connected devices.
- The picture may be distorted or a black screen may appear between scenes recorded with different aspect ratios.
- Set "Deep Colour Output" (⇒ 86, 96) or "Contents Type Flag" (⇒ 86, 97) to "Off".

3D video is not output correctly.

- 3D video may be output correctly by changing the following settings:
 - "3D Type" of "3D Settings" (⇒ 96)
 - "Signal Format" (⇒ 47, 3D settings during playback)
- Check the settings of the connected TV.
- When a non-3D compatible amplifier/receiver is connected between this unit and a TV, 3D video is not output. (⇒ 18)
- When the amplifier/receiver which is connected between this unit and a TV is off, 3D video is not output. (⇒ 18)
- 3D discs may not be played back correctly due to the settings of the TV.
- When "HDMI Audio Output" is set to "Off", 3D video may not be output correctly. (⇒ 96)

The same video is displayed in each left and right half of the screen.

- This is a 3D programme of the Side-by-Side type.

Change the setting as follows if connecting with a 3D compatible TV:

 - 1 Press [OPTION].
 - 2 Select "3D Settings", then press [OK].
 - 3 Select "Side by side" in "Signal Format", then press [OK].

Sound**No sound.****Distorted sound.**

- Check the connections. (⇒ 16)
- Check the settings of the connected TV, etc.
- Press [AUDIO] to select the audio. (⇒ 29, 46)
- To output audio from a device connected with an HDMI cable, set "HDMI Audio Output" to "On". (⇒ 86, 96)

Cannot change audio channel.

- You cannot change the audio channel if "Digital Audio Output" is set to "Bitstream" (⇒ 94)

Troubleshooting guide

Recording, timer recording and copying

Cannot record.

Cannot copy.

- Some broadcasts are copyright protected.
- You cannot record to the disc by pressing the [REC ●] or timer recording.
- The disc is protected. (⇒ 78)
- [DVD-R] [DVD-RW] [+R] [+RW] Since it will copy to HDD temporarily, copying is not possible if there is insufficient available capacity on the HDD.
- [DVD-R] [DVD-RW] [+R] [+RW] Copying or editing may not be possible on these discs after ejecting and loading the disc or switching the unit on or to standby mode for approximately 30 times after being copied to.
- This unit cannot record/copy NTSC signals to discs that already have PAL signal recordings.

Timer recording does not work properly.

- Failed timer recordings are displayed in grey with ☒ on the Timer Recording screen. (⇒ 38)
When you programme a timer recording, check the screen icons. If "!" is displayed, this timer programme may not be recorded because:
 - there is not enough space left.
 - the number of possible titles has reached its maximum.
 - programmes are deactivated, etc.

Auto Renewal Recording does not work properly.

- The programme will not be overwritten in the following cases:
 - the programme is protected
 - any programme is being played back or copied
 - a screen such as DIRECT NAVIGATOR is displayed
 Instead, the programme will be saved as a separate programme and that will be overwritten.

A part or whole of a recorded title has been lost.

- If there is a power failure or the AC mains lead is disconnected from the household mains socket while recording or editing, the title may be lost or the HDD may become unusable. We cannot offer any guarantee regarding lost programmes.

An unusually loud sound is coming from the rotating disc.

- If you want copy to perform more quietly, select "Normal (Silent)" in "BD / DVD Speed for High Speed Copy". (⇒ 86, 92)

The time recorded on the disc and the available time shown do not add up.


- [DVD-R] [+R] If you record or edit many times, the remaining capacity is reduced and then recording or editing may be disabled.
- Available disc space display may be different from actual.

Encrypted titles cannot be decrypted.

- Depending on the encrypted service, it may not be possible to decrypt certain content.

Play

Cannot play back.

- The disc is dirty. (⇒ 10)
- The disc is scratched or marked.
- **BD-R** **BD-RE**
Set "Play Video (AVCHD) on BD-RE / BD-R" to "On" and the playback may be possible (⇒ 86, 91).
- The disc may not be able to play back if it was not finalized or a Top Menu was not created on the equipment used for recording.
- When the  icon is turned grey on the DIRECT NAVIGATOR screen, the playable period has ended and the title is copy protected (Copying is prohibited). (⇒ 15, 39)
- Depending on the encrypted service, it may not be possible to play back certain titles if they have been recorded without being decrypted.

Audio and video momentarily pause.

- DVD-R DL and +R DL discs have two writable layers on one side. Video and audio may momentarily cut out when the unit is switching layers.

BD-Video or DVD-Video is not played.

- Ensure the disc is for the correct BD-Video region code or DVD-Video region number, and is not defective.

You have forgotten your rating PIN.

- The rating level returns to the factory preset.
 - 1 While the unit is on, press and hold [OK], the yellow button and the blue button at the same time for more than 5 seconds.
 - "00 RET" is displayed on the unit's display.
 - 2 Repeatedly press [▶] (right) until "03 VL" is displayed on the unit's display.
 - 3 Press [OK].
 - "INIT" is displayed on the unit's display.

Image for the Quick View is not smooth.

- Image may not be played back smoothly in case of DR, HG, HX, HE, HL, HM mode titles, AVCHD format titles or BD-Video.

Cannot play the disc on other players.

- **BD-RE** **BD-R** When these discs cannot be played back on other Blu-ray Disc players, etc. (e.g., title recorded with HE-AAC audio format), convert the recording mode to play them back. (⇒ 51, File Conversion)
- **DVD-R** **DVD-RW** **+R** **+RW** The disc must be finalized or have a Top Menu created (⇒ 79).
- **DVD-R** The disc created in AVCHD format can only be played back on AVCHD compatible equipment.

Edit

The available recording time does not increase even after deleting titles on the disc.

- **BD-R** **DVD-R** **+R** Available space on the disc does not increase even after deleting titles.
- **DVD-RW** **+RW** Available space on the disc increases when you delete the last title.

Cannot edit.

- You may not be able to edit on the HDD if there is no available space. Delete any unwanted titles to create empty space. (⇒ 48)

Cannot create a playlist.

- Creation or editing of playlists cannot be done on this unit.

Troubleshooting guide

Photo

The contents of the SD card cannot be read.

- Remove the card from the slot and then insert again. If this does not solve the problem, switch the unit to standby mode and turn it on again.

Copying, deleting and setting protection takes a long time.

- When there are a lot of folders and files, it may sometimes take a long time.

Photos do not play back normally.

- The images that were edited on the PC, such as Progressive JPEG, etc., may not play back. (⇒ 117)

Music

Tracks could not be copied to the HDD.

- Copyright protected tracks such as SCMS restrictions will not be copied.
- Recording from CDs that do not conform to CD-DA specifications (copy control CDs, etc.) cannot be guaranteed.

USB

This unit does not recognize the USB device correctly.

- If USB device is connected to this unit while using a video communication the USB device will not be recognized. Press [EXIT ⊗] and reconnect USB device.
- If inserted during playback the USB device may not be recognized by this unit. Disconnect and reconnect the USB device. If it still does not recognize the connection, switch the unit to standby mode and turn it on again.
- USB devices connected using a USB extension cable other than a dedicated one or a USB hub may not be recognized by this unit.

TV Guide

The TV Guide information is not displayed properly.

- Set the clock correctly. (⇒ 86, 100, Clock)
- Some broadcast may not send programme information.
- There was a programme change, or TV Guide information from a broadcast station was possibly not correctly transmitted.
- If signal quality is bad, the TV Guide system may not be able to receive any data.

Broadcast

Digital broadcasts cannot be received.

- To receive an encrypted broadcast, a CI module valid for the broadcast is required.

Picture regularly breaks up on some channels.

- Adjust the reception with "Manual Tuning". (⇒ 86, 90)

The channel which was once selectable cannot be selected.

- Reveal the channel on the channel list. (⇒ 89)

Major channels and favourite channels are not displayed on the top part of the channel list.

- To change channel allocation, restart Auto Setup in Setup menu and change channel number allocation selection. (⇒ 89)
- You can change channel number assignment. (⇒ 89, Channel List)

VIERA Link

VIERA Link does not work.


- Some functions may not work depending on the version of "HDAVI Control" of the connected TV, etc. This unit supports "HDAVI Control 5" functions.
- Check the settings of the connected TV, etc.
- If the connection for the equipment connected with HDMI was changed, or if there was a power failure or the plug was removed from the household mains socket, "HDAVI Control" may not work.
In this case, change TV (VIERA) setting for "HDAVI Control" again.
- This unit does not support "ONE TOUCH PLAY" function of the Panasonic AV Control Receiver.

Network

You cannot access this unit from DLNA compatible equipment on the network.

- Check the network connection and the network settings. (⇒ 20, 24)
- It may not be possible to connect depending on the types of the equipment or the status of the equipment.

You cannot play contents properly from DLNA compatible equipment on the network.

- There may be some video that cannot be played back on DLNA compatible equipment depending on the equipment.
- Following titles cannot be played back:
 - A title with access restriction
 - A title with copy protection (Copying is prohibited) (⇒ 15)
 - A title with audio only format
 - A title with incompatible format
 - An encrypted title ()

- Playback via DLNA compatible equipment may not be performed when this unit is in the following conditions:
 - While playing back a BD-Video
 - While simultaneously performing High speed copy and recording
 - While displaying the Setup menu
 - While executing functions using a network, such as "VIERA Connect"
- You cannot play back simultaneously from two or more items of DLNA compatible equipment.
- If the DLNA compatible equipment is not capable of outputting HE-AAC audio format, etc., sound may not be played back.

When using Wireless LAN connection, video from the DLNA Certified media server is not played back or video frames are dropped during playback.

- Use 802.11n (2.4 GHz) Wireless router.
Simultaneous use with a microwave, cordless telephone etc. at 2.4 GHz may result in connection interruptions or other problems.
- On the "Wireless Settings" screen (⇒ 98), the continuous lighting of at least four "Reception" indicators is the target for a stable connection. If three or fewer indicators are lit or the connection is being interrupted, change the position or angle of your Wireless router. If there is no improvement, connect to a wired network and perform the "Easy Network Setting" (⇒ 24) again.

Reset

To return all the settings to the factory preset

Perform "Shipping Condition" or "Default Settings". (⇒ 86, 101)

Troubleshooting guide

Messages on the unit's display

The following messages or service numbers appear on the unit's display when something unusual is detected.

BD □

("□" stands for a number.)

The remote control and main unit are using different codes. Change the code on the remote control. (⇒ 106)

CAM-UP

CAM is being updated. (⇒ 103)

CONV

Selected titles in the USB HDD are being converted.

Do not disconnect the USB HDD from this unit.

GUIDE

TV Guide data is being downloaded.

HARD ERR

If there is no change after switching the unit to standby mode and turning it on, consult the dealer.

NoERAS

You cannot delete items on this disc.
The disc may be damaged.

NoREAD

- The disc is dirty. (⇒ 10) The unit cannot record, play, or edit.
- The lens cleaner has finished cleaning. Press [▲ OPEN/CLOSE] on the main unit to eject the disc.

NoWRIT

You cannot write to this disc.
The disc may be damaged. Use a new disc.

PLEASE WAIT

- Displayed when the unit is started and is switched to standby mode.
- There was a power failure or the AC plug was disconnected while the unit was on. The unit is carrying out its recovery process. Wait until the message disappears.

PROG FULL

There are already 32 timer programmes. Delete unnecessary timer programmes. (⇒ 38)

REMOVE

The USB device is drawing too much power.
Remove the USB device.

START

Update of the software (firmware) is started.
You cannot operate the unit until the update is complete. (⇒ 102)

SW-DL

Software (firmware) is downloading.
Download will stop when the unit is turned on, or the timer recording starts. (⇒ 102)

UNSUPPORT

The media is not supported.

UPD □/□

("□" stands for a number.)

The software (firmware) is being updated.
You cannot operate the unit until the update is complete. (⇒ 102)

U59

The unit is hot.
 The unit switches to standby for safety reasons.
 Wait for about 30 minutes until the message disappears.
 Do not block the cooling fan on the rear of the unit.

U61

(When a disc is not inserted) A malfunction has occurred. The unit is trying to restore to the normal operation. Once the message disappears you can use the unit again.
 If it remains displayed, consult the dealer.

U76

HDMI cannot be output because it is connected to a model that does not support copyright protection.

U77

Due to the current disc not having authorised copyright information, video output is not performed.

U88

(When a disc is inserted) There was something unusual detected with the disc or the unit. The unit is trying to restore to the normal operation. Once the message disappears you can use the unit again.
 If it remains displayed, consult the dealer.

U99

The unit fails to operate properly. Press [⏻/|] on the main unit to switch the unit to standby mode. Now press [⏻/|] on the main unit again to turn the unit on.

X HOLD

The HOLD function is activated. (⇒ 104)

H□□ or F□□

("□" stands for a number.)

There is something unusual. (The service number displayed after H and F depends on the unit's condition.)

Reset the unit as follows:

- 1 Disconnect the plug from the household mains socket, wait a few seconds, then reconnect it.
- 2 Press [⏻/|] to turn the power on. (The unit may be fixed.)

Request service from the dealer. Inform the dealer of the service number when requesting service.

When you experience problems with Easy Network Setting

If there is any problem, the following message is displayed on the screen.

Wireless Settings

Display	Check the following
A conflict with other devices occurred.	<ul style="list-style-type: none"> • Please wait a few moments, and then try again.
A time out error occurred.	<ul style="list-style-type: none"> • Setting of the Wireless router for MAC Address etc. • The signal may be weak. • The SSID and the encryption key of the Wireless router.
An authentication error or a time out error occurred.	<ul style="list-style-type: none"> • Please wait a few moments, and then try again.
A device error occurred.	<ul style="list-style-type: none"> • If the problem is not solved, consult your dealer.

Troubleshooting guide

Easy Network Setting (Home Network Connection Check)

Display	Check the following
1. LAN cable connection or Wireless setting: "Fail" 2. IP address setting: "Fail" 3. Connection to gateway: "Fail"	<ul style="list-style-type: none"> • Connection of the LAN cables (⇒ 20) • Settings of the hub and router
1. LAN cable connection or Wireless setting: "Pass" 2. IP address setting: "Fail" 3. Connection to gateway: "Fail"	<ul style="list-style-type: none"> • Connection and settings of the hub and router • Settings of "IP Address / DNS Settings" (⇒ 86, 98)
1. LAN cable connection or Wireless setting: "Pass" 2. IP address setting: "Pass" 3. Connection to gateway: "Fail"	
1. LAN cable connection or Wireless setting: "Pass" 2. IP address setting: "Home network available" 3. Connection to gateway: "Fail"	

Easy Network Setting (Internet Connection Test)

Display	Check the following
Cannot find the server. (B019)	<ul style="list-style-type: none"> • "Primary DNS" and "Secondary DNS" settings of "IP Address / DNS Settings" (⇒ 86, 98)
No connection could be made to the server. (B020)	<ul style="list-style-type: none"> • The server may be busy or the service may have been suspended. Please wait a few moments, and then try again. • Settings of "Proxy Server Settings" (⇒ 86, 98) and the router.

Specifications

Specifications are subject to change without notice.

■ General

Dimensions:	430 mm (W)
	BCT820 66 mm (H)
	BCT720 BCT721 59 mm (H)
	(excluding the projecting parts)
	238 mm (D)
	(including the projecting parts)
	249 mm (D)
Mass:	BCT820 Approx. 3.3 kg
	BCT720 BCT721 Approx. 3.2 kg
Power supply:	AC 220 to 240 V, 50 Hz
Power consumption:	Approx. 37 W
	"Power Save in Standby" is activated and
	"RF OUT (CATV Signal)" is set to "Off"
	Approx. 0.2 W
	"Power Save in Standby" is not activated
	Approx. 4 W
Operating temperature:	5 °C to 40 °C
Operating humidity range:	10 % to 80 % RH (no condensation)

■ TV system

Tuner System:	DVB-C
Country:	Germany, Austria, Switzerland
Channel coverage:	51 MHz to 858 MHz

■ Recording system

Video:	MPEG-2 (Hybrid VBR), MPEG-4 AVC/H.264
Audio:	
Dolby Digital	(XP, SP, LP, EP mode: 2ch)
Dolby Digital	(DR mode, HG, HX, HE, HL, HM mode: Max 5.1ch)
Dolby Digital Plus	(DR mode: Max 5.1ch)
MPEG	(DR mode: 2ch)

■ Video

Video system:	PAL/NTSC/SECAM (IN)
Video in:	AV1/AV2 (21 pin) 1 Vp-p (75 Ω)
S-Video in:	AV2 (21 pin) 1 Vp-p (75 Ω)
Video out:	AV1/AV2 (21 pin), Video Out (pin jack) 1 Vp-p (75 Ω)
S-Video out:	AV1 (21 pin) 1 Vp-p (75 Ω)
RGB out:	AV1 (21 pin) 0.7 Vp-p (75 Ω)

■ Audio

Audio in:	AV1/AV2 (21 pin) Full scale: 2.0 Vrms at 1 kHz
Input impedance:	More than 10 kΩ
Audio out:	AV1/AV2 (21 pin), Audio Out L/R (pin jack) Full scale: 2.0 Vrms at 1 kHz
Output impedance:	Less than 1 kΩ
Digital audio out (optical):	1 pc.
Output format:	PCM, Dolby Digital, DTS, MPEG
Digital audio out (coaxial):	1 pc.
Output format:	PCM, Dolby Digital, DTS, MPEG

■ HDMI terminal

HDMI output (19 pin type A):	1 pc.
Output format:	PCM, Dolby Digital, DTS, MPEG, Dolby Digital Plus, Dolby TrueHD, DTS-HD Master Audio, DTS-HD High Resolution Audio
	• This unit supports "HDMI Control 5" function.

■ Internal HDD capacity

BCT820	1 TB
BCT720 BCT721	500 GB

■ Other terminals

USB Port (Type A):	2 pcs.
SD Card Slot:	1 pc.
Common Interface slot	2 pcs.
	Compliant with CENELEC EN 50221: February, 1997.
LAN (Ethernet) Port:	1 pc.
	10BASE-T/100BASE-TX

■ Wireless LAN

Standard compliance:	IEEE802.11b/g/n
Frequency range:	2.4 GHz band
Security*:	WPA™/WPA2™ (Encryption type: TKIP/AES, Authentication type: PSK)
WEP	(64 bit/128 bit)

* This unit supports WPA™ and WPA2™ encryption.

Specifications

■ Recordable discs

BD-RE (SL/DL):	1-2X SPEED (Ver. 2.1)
BD-R (SL/DL):	1-2X SPEED (Ver. 1.1), 1-4X SPEED (Ver. 1.2), 1-6X SPEED (Ver. 1.3), 1-2X SPEED LTH type (Ver. 1.2), 1-6X SPEED LTH type (Ver. 1.3)
DVD-RAM:	2X SPEED (Ver. 2.0), 2-3X SPEED (Ver. 2.1), 2-5X SPEED (Ver. 2.2)
DVD-R (SL):	1X SPEED (Ver. 2.0), 1-4X SPEED (Ver. 2.0), 1-8X SPEED (Ver. 2.0), 1-16X SPEED (Ver. 2.1)
DVD-R (DL):	2-4X SPEED (Ver. 3.0), 2-8X SPEED (Ver. 3.0)
DVD-RW:	1X SPEED (Ver. 1.1), 1-2X SPEED (Ver. 1.1), 2-4X SPEED (Ver. 1.2), 2-6X SPEED (Ver. 1.2)
+R (SL):	2.4X SPEED (Ver. 1.0), 2.4-4X SPEED (Ver. 1.1), 2.4-8X SPEED (Ver. 1.2), 2.4-16X SPEED (Ver. 1.3)
+R (DL):	2.4X SPEED (Ver. 1.0), 2.4-8X SPEED (Ver. 1.1)
+RW:	2.4X SPEED (Ver. 1.1), 2.4-4X SPEED (Ver. 1.2)

■ Optical pick-up

System with 2 lenses, 3 integration units
(405 nm wavelength for BDs,
661 nm wavelength for DVDs,
783 nm wavelength for CDs)

■ LASER specification

Class 1 LASER Product	
Wave length:	405 nm (BDs) 661 nm (DVDs) 783 nm (CDs)

Laser power:

No hazardous radiation is emitted with
the safety protection

■ Recording system

BD-RE (SL/DL):	Blu-ray Disc Rewritable Format
BD-R (SL/DL):	Blu-ray Disc Recordable Format
DVD-RAM:	DVD Video Recording format
DVD-R (SL/DL):	DVD-Video format
DVD-RW:	DVD-Video format
+R (SL/DL), +RW	

■ Copying speed from HDD to BD-R in High Speed Copy

HDD (HM, 1 hour) → 6X Speed BD-R

Copying speed:	60x
Required time:	Approx. 1 min.

- The above rate in the list indicates the shortest time and fastest speed required for copying one-hour title from HDD to the disc by High-Speed copying.
- The required amount of time and speed may vary depending on the conditions such as the area where information is written or unique feature on the disc.

■ Region code

DVD:	#2
BD:	Region B

■ Playable discs

BD-Video (Blu-ray 3D, BD-Live)	
BD-ROM Version 2.4	
BD-RE:	Ver. 2.1, JPEG, MPO
BD-RE DL:	Ver. 2.1, JPEG, MPO
BD-R:	Ver. 1.3, LTH type Ver. 1.3, DivX ^{®1} , MKV ^{®1}
BD-R DL:	Ver. 1.3, DivX ^{®1} , MKV ^{®1}
DVD-RAM:	DVD Video Recording format, AVCHD format, JPEG, MPO
DVD-R:	DVD-Video format, AVCHD format, JPEG ^{®2} , MPO ^{®2} , MP3 ^{®2} , DivX ^{®2,3} , MKV ^{®2,3}
DVD-R DL:	DVD-Video format, AVCHD format, JPEG ^{®2} , MPO ^{®2} , MP3 ^{®2} , DivX ^{®2,3} , MKV ^{®2,3}
DVD-RW:	DVD-Video format, DVD Video Recording format, AVCHD format
+R:	Video, AVCHD format
+R DL:	Video, AVCHD format
+RW:	Video, AVCHD format
DVD-Video:	DVD-Video format
CD-Audio:	CD-DA
CD-R/CD-RW:	CD-DA, JPEG ^{®2} , MPO ^{®2} , MP3 ^{®2} , DivX ^{®2} , MKV ^{®2}

^{®1} UDF2.5

^{®2} ISO9660 level 1 or 2 (except for extended formats), Joliet

This unit is compatible with multi-session.

This unit is not compatible with packet writing.

^{®3} UDF1.02 without ISO9660, UDF1.5 with ISO9660

■ SD Card

Compatible media: SD Memory Card*¹
 Format: FAT12, FAT16, FAT32, exFAT*²

Data that can be played: JPEG, MPO,
 AVCHD format, MPEG-2, MP4

*¹ Includes SDHC/SDXC cards.

Includes miniSD™ cards (need a miniSD™ adaptor).

Includes microSD™/microSDHC™/
 microSDXC™ cards (need a microSD™ adaptor).

*² SDXC only

■ USB device

USB standard: USB2.0 High Speed
 Format: FAT12, FAT16, FAT32

Data that can be played: MP3, JPEG, MPO,
 DivX, MKV, MP4, MPEG-2

Audio information

The audio output differs depending on which terminals are connected to the amplifier/receiver, and the setting on this unit. (⇒ 94, Digital Audio Output)

- The number of channels listed is the maximum possible number of output channels when connected to amplifier/receiver compatible with the respective audio format.

Terminal	Digital Audio Output	
	Bitstream	PCM
HDMI AV OUT	Output using original audio* ¹	BD-Video: 7.1ch PCM* ^{1, 2} DVD-Video: 5.1ch PCM
DIGITAL AUDIO OUT	Dolby Digital/ DTS Digital Surround	Down-mixed 2ch PCM

*¹ When "BD-Video Secondary Audio" is set to "On", the audio will be output as Dolby Digital, DTS Digital Surround or 5.1ch PCM.

*² The audio output is amplified from 5.1ch or 6.1ch to 7.1ch depending on the DTS, Inc. specifications.

Maximum numbers of titles that can be recorded

HDD	999 titles (When continuously recording for long durations, titles are automatically divided every 8 hours.)
BD-RE, BD-R	200 titles on one disc.
DVD-RAM, DVD-R, DVD-RW	99 titles on one disc.
+R, +RW	49 titles on one disc.

Information for the files other than recorded programmes

■ JPEG/MPO

Playable media: HDD, BD-RE (SL/DL),
 DVD-RAM, DVD-R, DVD-R DL,
 CD-R, CD-RW, SD Card, USB device

Compatible pixels:

Between 34×34 and 8192×8192 pixels
 (Sub sampling is 4:2:2 or 4:2:0)

Files: JPEG conforming DCF
 (Design rule for Camera File system)
 MPO conforming MPF
 (Multi Picture Format)

Maximum numbers of folders and files:

Media	Maximum folders	Maximum files
HDD	—	20000
BD-RE	500	10000
DVD-RAM	500	10000
DVD-R	500	10000
CD-R, CD-RW	500	10000
SD Card	500	10000
USB device	500	10000

- This unit is not compatible with Motion JPEG or Progressive JPEG.

Specifications

■ MP3

Playable media: HDD, DVD-R, DVD-R DL, CD-R, CD-RW, USB device

Compression rate: 32 kbps to 320 kbps
 Sampling rate: 16 kHz, 22.05 kHz, 24 kHz, 32 kHz, 44.1 kHz, 48 kHz

Maximum numbers of folders and files:

Media	Maximum folders	Maximum files
HDD	–	40000
DVD-R	300	3000
CD-R, CD-RW	300	3000
USB device	300	3000

■ DivX

Playable media: BD-R (SL/DL), DVD-R, DVD-R DL, CD-R, CD-RW, USB device

Official DivX Certified® product
 DivX Certified to play DivX video up to HD 1080p, including premium content.
 GMC (Global Motion Compensation) is not supported.

Maximum number of folders: 300 folders
 (including the root folder)

Maximum number of files: 200 files

• Support version

Picture resolution

Up to 1920×1080 pixels

Video

- Number of stream: Up to 1
- Codec: DIV3, DIV4, DIVX, DV50, DIV6
- FPS (Frame Per Second): Up to 60 fps

Audio

- Number of stream: Up to 8
- Format: MP3, MPEG, Dolby Digital
- Multi channel: Dolby Digital is possible. MPEG multi is 2 ch conversion.

- DVD-R and DVD-R DL must conform to UDF 1.02 without ISO9660 and UDF 1.5 with ISO9660.

■ MKV

Playable media: BD-R (SL/DL), DVD-R, DVD-R DL, CD-R, CD-RW, USB device

MPEG-4 AVC (H.264) profile is up to High Profile, Level 4.

AAC-LC, MP3, Dolby Digital audio, DTS, PCM, Vorbis and FLAC can be decoded.

Maximum number of folders: 300 folders
 (including the root folder)

Maximum number of files: 200 files

■ MP4

Playable media: SD Card, USB device
 MPEG-4 AVC/H.264:

Up to High Profile, Level 4.2

Video resolution: Up to 1920×1080

MPEG-4 AAC-LC

Sampling rate: 8 kHz to 48 kHz

Number of audio channel: 1 or 2

■ SD-Video (Standard Definition)

Playable media: SD Card, USB device
 Codec: MPEG-2

File Format:

SD-Video format*
 used on Standard Definition Camera
 (Panasonic and some other's)

* SD-Video Entertainment Video Profile

■ HD-Video (High Definition)

Playable media: SD Card, USB device
 Codec: MPEG-4 AVC/H.264

File Format: AVCHD format conforming

Recording modes and approximate recording times

Depending on the content being recorded, the recording time may become shorter than indicated.

■ DR mode

Recording Mode	HDD		BD-RE, BD-R	
	BCT820 (1 TB)	BCT720 BCT721 (500 GB)	Single Layer (25 GB)	Dual Layer (50 GB)
DR (HD quality)	150 hours	75 hours	3 hours 30 min.	7 hours 30 min.
DR (SD quality)	422 hours	211 hours	10 hours 15 min.	21 hours

• Recording time of DR mode may vary depending on the bit rate of broadcasting:

- High Definition (HD) quality: estimated bit rate is 14 Mbps
- Standard Definition (SD) quality: estimated bit rate is 5 Mbps

• Regarding recording time remaining:

Remaining time in the DR mode is calculated with a bit rate of 14 Mbps. But the bit rate differs depending on the broadcast, so the displayed remaining time might be different from the actual remaining time.

■ HG, HX, HE, HL, HM modes

Recording Mode	HDD		BD-RE, BD-R	
	BCT820 (1 TB)	BCT720 BCT721 (500 GB)	Single Layer (25 GB)	Dual Layer (50 GB)
HG	157 hours	78 hours	4 hours	8 hours
HX	235 hours	117 hours	6 hours	12 hours
HE	353 hours	176 hours	9 hours	18 hours
HL	472 hours	235 hours	12 hours	24 hours
HM	684 hours	341 hours	17 hours 30 min.	35 hours

Specifications

■ XP, SP, LP, EP modes

Recording Mode	HDD		BD-RE, BD-R	
	BCT820 (1 TB)	BCT720 BCT721 (500 GB)	Single Layer (25 GB)	Dual Layer (50 GB)
XP	215 hours	107 hours	5 hours 15 min.	10 hours 30 min.
SP	431 hours	215 hours	10 hours 30 min.	21 hours
LP	862 hours	430 hours	21 hours	42 hours
EP (6 hours)*	1293 hours	645 hours	31 hours 30 min.	63 hours
EP (8 hours)	1724 hours	860 hours	42 hours	84 hours




Recording Mode	DVD-RAM		DVD-R, DVD-RW, +R, +RW (4.7 GB)	DVD-R DL, +R DL (8.5 GB)
	Single-sided (4.7 GB)	Double-sided (9.4 GB)		
XP	1 hour	2 hours	1 hour	1 hour 45 min.
SP	2 hours	4 hours	2 hours	3 hours 35 min.
LP	4 hours	8 hours	4 hours	7 hours 10 min.
EP (6 hours)*	6 hours	12 hours	6 hours	10 hours 45 min.
EP (8 hours)	8 hours	16 hours	8 hours	14 hours 20 min.

* When "Recording time in EP mode" is set to "6 hours" (⇒ 92)

• **Regarding recording time remaining:**

This unit records using a VBR (Variable bit rate) data compression system to vary recorded data segments to match video data segments which may cause differences in the displayed amount of time and space remaining for recording.

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Index

A

Aspect96, 104

Audio

Broadcasts29
 Digital Audio117
 Playback46

Auto Setup22, 89

AVCHD

Copy61, 72
 Playback39, 42

B

BD-Live43, 91

BD-Video

BD-Live43, 91
 Playback42
 3D46

BD-Video Parental Control91

C

CAM (Conditional Access

Module)14

Channel information28

Channel List27

Edit89

Chapter41, 45, 53

Chapter Creation92

Child Lock90

CI Plus14, 15, 103

Clock100

Common Interface14, 97

Connection

Amplifier/receiver18
 AUDIO OUT terminal19
 Audio/Video terminal19
 Basic connections16
 Common Interface14
 DIGITAL AUDIO OUT
 terminal19
 HDMI cable16, 18
 Network20
 Set Top Box17
 Video equipment17
 21-pin Scart terminals19

Copy (Music)66

Copy (Photo)65

Copy (Video)54

Copy title playing61
 Finalised disc60
 HD Video (AVCHD)61, 72
 SD Video (MPEG2)73

D

Delete

Delete BD-Video data ... 43
 Music69
 Photo64
 Video48

Delete all photos

HDD93

Delete all titles

Disc78
 HDD93
 USB HDD93

Delete BD-Video data43

DIRECT NAVIGATOR

Music67
 Photo62
 Video39

Disc

Delete all titles78
 Finalise79
 Format78
 Media information6, 9
 Protection78

DivX

Playback42

DVD-Video

Playback42

DVD-Video Parental Control ... 91

E

Easy Network Setting ... 24, 98

Easy setting22

Edit (Music)69

Edit (Photo)64

Edit (Video)49

Chapter45, 53
 Delete48, 49
 File Conversion51
 Protection50

Entering text104

F

Favourites88

File Conversion51

Finalise79

Format

Disc78
 HDD93
 SD Card78
 USB HDD93

FUNCTION MENU26

H

HD Video (AVCHD)

Copy61, 72
 Play39, 42

HDAVI Control82, 97

HDD

Delete all photos93
 Delete all titles93
 Format93
 Media information6

HDMI cable17

HOLD function104

J

JPEG62, 117

L

Language code list 101

Lens cleaner11

Linked Timer Recording 71

M

Manual Tuning90

Media

Disc6, 9
 HDD6
 SD Card6, 10
 USB HDD6
 USB memories6, 10

Media Renderer76

Menu screen42

MKV118

Playback42

MPEG273, 118

MPO (3D photo) 62, 117

MP366, 118

Music

Copy66
 Delete69
 Edit69
 Playback66

N

Network

BD-Live43
 Connection20
 DLNA (Client)75
 DLNA (Server)74, 99
 Setting98
 Software (Firmware)
 Update102
 VIERA Connect77

- P**
- PAUSE LIVE TV** 30
 - Photo**
 - Copy 65
 - Delete 64
 - Edit 64
 - Playback 62
 - Protection 64
 - Slideshow 62, 68
 - PIN** 27, 100
 - Playback menu** 84
 - Playback (Music)**
 - Audio CD 66
 - MP3 66
 - Recorded on HDD 67
 - Playback (Photo)** 62
 - Slideshow 62, 68
 - Playback (Video)**
 - AVCHD 39, 42
 - BD-Video 42
 - BD-Video Parental Control . . . 91
 - Changing audio 46
 - Chapter 41
 - DivX 42
 - DVD-Video 42
 - DVD-Video Parental Control . . . 91
 - MKV 42
 - Playlist created on other equipment 42
 - Recorded video contents . . . 39
 - Status message 44
 - Subtitles 46
 - Teletext 46
 - 3D 46
 - Power Save in Standby** 99
 - Protection**
 - Disc 78
 - HOLD function 104
 - Photo 64
 - Video 50
- R**
- Recording** 31
 - Aspect 92
 - From external equipment . . . 70
 - High speed copy 92
 - Recording mode 8, 119
 - Recording time 119
 - Timer recording 35
 - Recording mode** 8, 119
 - Remote control** 12
 - HOLD function 104
 - Manufacturer and Code No. 21
 - Remote control code 100
 - TV operation 21
 - Reset** 101, 109, 111
 - REWIND LIVE TV** 30, 92
- S**
- SD Card**
 - Format 78
 - Media information 6, 10
 - miniSD / microSD 10
 - SD Video (MPEG2)**
 - Copy 73
 - Setting**
 - Auto Setup 22, 89
 - Easy Network Setting . . . 24, 98
 - Easy setting 22
 - Setup menu** 86
 - Connection 96
 - Display 95
 - DVB Tuning 88
 - HDD / Disc / USB HDD . . . 91
 - Network 98
 - Others 99
 - Picture 93
 - Sound 94
 - Skype™** 77
 - Slideshow** 62, 68
 - Smart Card** 14
 - Smart Home Networking (DLNA)**
 - Client 75
 - Media Renderer 76
 - Server 74, 99
 - Software (Firmware)**
 - Update** 102
 - Subtitles**
 - Broadcasts 29
 - Playback 46
- T**
- Teletext** 29, 95
 - Playback 46
 - Timer recording** 35
 - Auto Renewal Recording . . . 36
 - Manually programming timer recording . . . 36
 - Top Menu**
 - Create Top Menu 79
 - Tuning**
 - Channel List 89
 - Child Lock 90
 - Manual Tuning 90
 - Signal condition 90
 - TV Guide**
 - Operation 28
 - Timer recording 35
 - TV System** 96
- U**
- Unit's display**
 - Messages 112
 - USB HDD**
 - Cancellation of all USB HDD Registrations 93
 - Delete all titles 93
 - Disconnection 80, 93
 - Format 93
 - Media information 6
 - Registration 81, 93
 - USB memories**
 - Media information 6, 10
- V**
- Video**
 - Copy 54
 - Delete 48
 - DIRECT NAVIGATOR 39
 - Edit 49
 - Playback 39, 42
 - Protection 50
 - Recording 31
 - VIERA Connect** 77
 - VIERA Link** 82, 97
- 3D** 46

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