



Dear Customer

Thank you for purchasing this product.

For optimum performance and safety, please read these instructions thoroughly before connecting, operating or adjusting this product.

Please keep this manual for future reference.

Operating Instructions

CD Stereo System

Model No. **SC-AK980**

Supplied Accessories

Please check and identify the supplied accessories.

1 x AC power supply cord	1 x FM indoor antenna
1 x Power plug adaptor	1 x AM loop antenna
2 x Remote control batteries	1 x Remote Control (N2QAYB000426)



Operations in these instructions are described mainly using the remote control, but you can perform the operations on the main unit if the controls are the same.

Your unit may not look exactly the same as illustrated.

These operating instructions are applicable to the following system.

System	SC-AK980
Main unit	SA-AK980
Front speakers	SB-PF980
Surround speakers	SB-PS980
Subwoofer 1 (with LEVEL control)	SB-WAK980
Subwoofer 2	SB-WAK981



CAUTION	~ CLASS 1M INVISIBLE LASER RADIATION WHEN OPEN. DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS. IEC60825-1 +A2/ Class 1M
WARNING	~ KLASS 1M OSYNLIG LASERSTRÅLING NÅR DENNA DEL ÄR ÖPPNAD. BETRÄKTA EJ STRÅLEN DIREKT GENOM OPTISKE INSTRUMENT.
FORSIGTIG	~ OSYNLIG LASERSTRÅLING KLASSE 1M. NÅR LÅGET ER ÅBENT, UNDGÅ AT SE LIGE PÅ MED OPTISKE INSTRUMENTER.
VARO!	~ AVATTAESSA OLET ALTIMA LUOKAN 1M NÄKYMÄTÖNTÄ LASERISÄTELYÄ. ÄLÄ KATSO OPTISELLA LAITTEELLA SUORAAN SÄTEESEEN.
VORSICHT	~ UNSICHTBARE LASERSTRAHLUNG KLASSE 1M. WENN ABBEDECKUNG GEÖFFNET, NICHT DIREKT MIT OPTISCHEN INSTRUMENTEN BETRACHTEN.
ATTENTION	~ RAYONNEMENT LASER INVISIBLE, CLASSE 1M. EN CAS D'OUVERTURE, NE PAS REGARDER DIRECTEMENT AL L'ŒIL DES INSTRUMENTS D'OPTIQUE.
PRECAUCIÓN	~ RAYONNEMENT LASER INVISIBLE DE CLASSE 1M AL ESTAR ABIERTO. NO VEA DIRECTAMENTE CON INSTRUMENTOS ÓPTICOS.
注意	~ ここを開くと不可視レーザー光が出ます。 ビームを見たり、触れたりしないでください。
注意	~ 打开时有不可见激光辐射。避免光辐射射。

Inside of product

WARNING:

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK OR PRODUCT DAMAGE,

- DO NOT EXPOSE THIS APPARATUS TO RAIN, MOISTURE, DRIPPING OR SPLASHING AND THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.
- USE ONLY THE RECOMMENDED ACCESSORIES.
- DO NOT REMOVE THE COVER (OR BACK); THERE ARE NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION!

- DO NOT INSTALL OR PLACE THIS UNIT IN A BOOKCASE, BUILT-IN CABINET OR IN ANOTHER CONFINED SPACE. ENSURE THE UNIT IS WELL VENTILATED. TO PREVENT RISK OF ELECTRIC SHOCK OR FIRE HAZARD DUE TO OVERHEATING, ENSURE THAT CURTAINS AND ANY OTHER MATERIALS DO NOT OBSTRUCT THE VENTILATION VENTS.
- DO NOT OBSTRUCT THE UNIT'S VENTILATION OPENINGS WITH NEWSPAPERS, TABLECLOTHS, CURTAINS, AND SIMILAR ITEMS.
- DO NOT PLACE SOURCES OF NAKED FLAMES, SUCH AS LIGHTED CANDLES, ON THE UNIT.
- DISPOSE OF BATTERIES IN AN ENVIRONMENTALLY FRIENDLY MANNER.

CAUTION!

THIS PRODUCT 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 OPEN COVERS AND DO NOT REPAIR YOURSELF.
REFER SERVICING TO QUALIFIED PERSONNEL.

THIS UNIT IS INTENDED FOR USE IN MODERATE CLIMATES.

CAUTION!

Change the voltage setting to suit the AC voltage in your area.
See page 6.
Note that the unit will be seriously damaged or fail to operate correctly if this setting is not made correctly.

– If you see this symbol –

Information on Disposal in other Countries outside the European Union

This symbol is only valid in the European Union.
If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.



This product may receive radio interference caused by mobile telephones during use. If such interference is apparent, please increase separation between the product and the mobile telephone.

Safety precautions

Placement

Set the unit up on an even surface away from direct sunlight, high temperatures, high humidity, and excessive vibration. These conditions can damage the cabinet and other components, thereby shortening the unit's service life.

Place it at least 15 cm away from wall surfaces to avoid distortion and unwanted acoustical effects.

Do not place heavy items on the unit.

Voltage

Do not use high voltage power sources. This can overload the unit and cause a fire.

Do not use a DC power source. Check the source carefully when setting the unit up on a ship or other places where DC is used.

AC power cord protection

Ensure the AC power cord is connected correctly and not damaged. Poor connection and lead damage can cause fire or electric shock. Do not pull, bend, or place heavy items on the lead.

Grasp the plug firmly when unplugging the lead. Pulling the AC power cord can cause electric shock.

Do not handle the plug with wet hands. This can cause electric shock.

Foreign matter

Do not let metal objects fall inside the unit. This can cause electric shock or malfunction.

Do not let liquids get into the unit. This can cause electric shock or malfunction. If this occurs, immediately disconnect the unit from the power supply and contact your dealer.

Do not spray insecticides onto or into the unit. They contain flammable gases which can ignite if sprayed into the unit.

Service

Do not attempt to repair this unit by yourself. If sound is interrupted, indicators fail to light, smoke appears, or any other problem that is not covered in these instructions occurs, disconnect the AC power cord and contact your dealer or an authorized service center. Electric shock or damage to the unit can occur if the unit is repaired, disassembled or reconstructed by unqualified persons.

Extend operating life by disconnecting the unit from the power source if it is not to be used for a long time.

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Placement of speakers

Setup example



(SB-PF980)

FRONT
(L, R)



(SB-WAK980)

SUBWOOFER
(L)



(SB-WAK981)

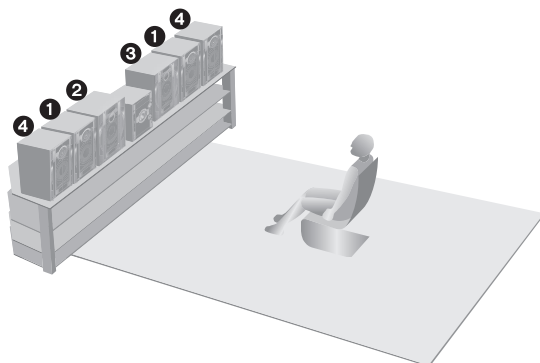
SUBWOOFER
(R)



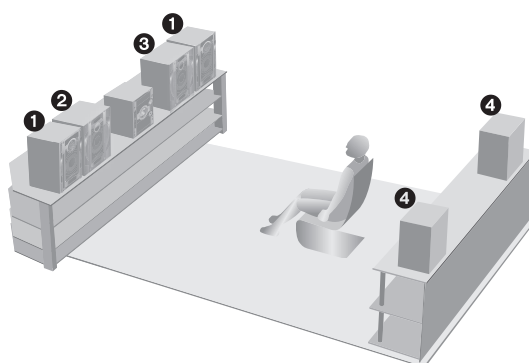
(SB-PS980)

SURROUND
(L, R)

For focused sound effect



For enhanced surround sound effect



Front speakers

Speakers are designed identically so that no left or right channel orientation is necessary.

Surround speakers

Place on the side of or slightly behind the seating area, higher than ear level.

Subwoofers

Place on the floor or a sturdy shelf to reduce vibration. Leave a space of about 10 cm at the rear for ventilation.

Use only the supplied speakers.

The combination of the main unit and speakers provide the best sound. Using other speakers can damage the unit and sound quality will be negatively affected.

Note:

- Keep your speakers at least 10mm away from the system for proper ventilation.
- These speakers do not have magnetic shielding. Do not place them near televisions, personal computers or other devices easily influenced by magnetism.
- You can damage your speakers and shorten their useful life if you play sound at high levels over extended periods.
- Reduce the volume in the following cases to avoid damage.
 - When playing distorted sound.
 - When adjusting the sound quality.

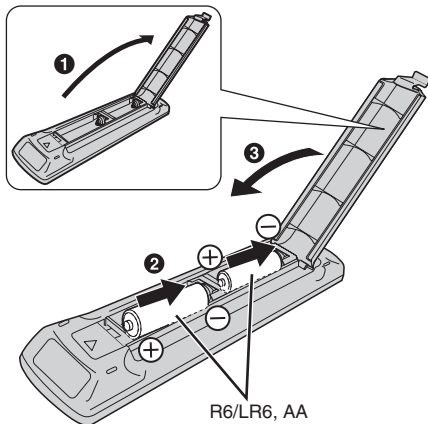
Caution

- **Use the speakers only with the recommended system. Failure to do so can damage the amplifier and speakers, and can cause fire. Consult a qualified service person if damage occurs or if a sudden change in performance is apparent.**
- **Do not attach these speakers to walls or ceilings.**

Preparing the remote control

Use alkaline or manganese batteries.

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



Aim at the remote control signal sensor (➔ page 8), avoiding obstacles, at a maximum range of 7 m directly in front of the unit.

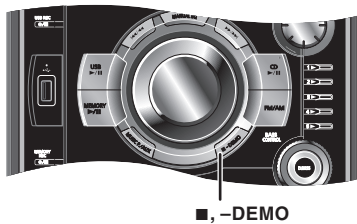
Note on using the remote control

- Do not mix old and new batteries.
- Do not use different types of batteries at the same time.
- Do not take apart or short circuit the batteries.
- Do not attempt to recharge alkaline or manganese batteries.
- Do not use batteries if the covering has been peeled off.
- Do not heat or expose to flame.
- Do not leave the battery(ies) in an automobile exposed to direct sunlight for a long period of time with doors and windows closed.
- Mishandling of batteries in the remote control can cause electrolyte leakage, which may cause a fire.
- Remove the batteries if the remote control is not going to be used for a long period of time. Store in a cool, dark place.

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

DEMO function



When the unit is first plugged in, a demonstration of its functions may be shown on the display.

If the demo setting is off, you can show a demonstration by selecting "DEMO ON".

Press and hold [■, -DEMO] on the main unit.

The display changes each time you press and hold the button.

DEMO OFF (off) ↔ DEMO ON (on)

While in standby mode, select "DEMO OFF" to reduce power consumption.

Note:

DEMO function cannot be turned on when dimmer function is on.

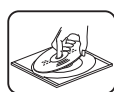
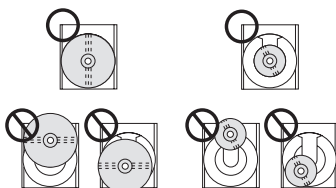
Handling of the disc trays and discs

Not doing the following will cause damage to the unit.

Removing the power plug

Press [⏻, POWER] to turn off the unit and remove the power plug only after all the displays have disappeared.

Inserting a disc



Tray caution



- Place the disc correctly with the label facing up as shown in the diagram.
- Insert one disc into each tray.

- Always press [▲, OPEN/CLOSE] to insert or remove a disc.
- Do not push or pull out the tray by hand as this will cause an accident.

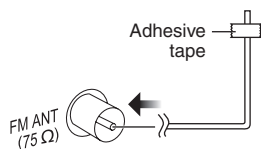
Making the connections

Connect the AC power supply cord only after all the other connections have been made.

Antenna connections

Place the antenna where reception is best.

■ FM indoor antenna

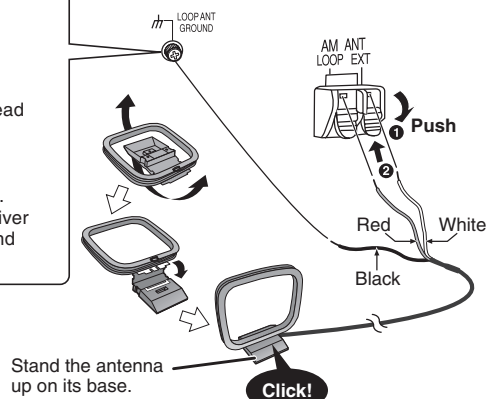


■ AM loop antenna



Use a Phillips-head screwdriver, etc.

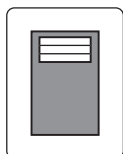
Note:
Do not screw too tightly.
Otherwise, the screwdriver
goes around in circle and
cannot be fixed.



Set the voltage

Use a flat-head screwdriver to set the voltage selector
on the rear panel to the appropriate position for the
area in which this system is used.

VOLT ADJ



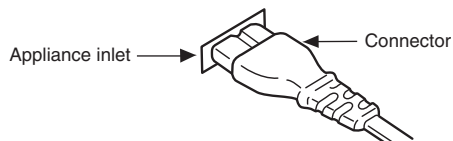
220-240V

110-127V

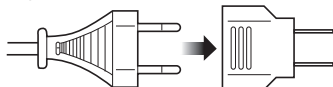
Power supply connection

Insertion of connector

Even when the connector is perfectly inserted,
depending on the type of inlet used, the front part
of the connector may jut out as shown in the drawing.
However there is no problem using the unit.



If the power plug does not fit your socket, use the
power plug adaptor (included).



For your reference

To save power when the unit is not to be used for a
long time, unplug it from the household AC outlet.
You will need to reset some memory items after
plugging in the unit.

Note:

- The included AC power supply cord is for use with
this unit only.
Do not use it with other equipment.
- Do not use an AC power supply cord from other
equipment.

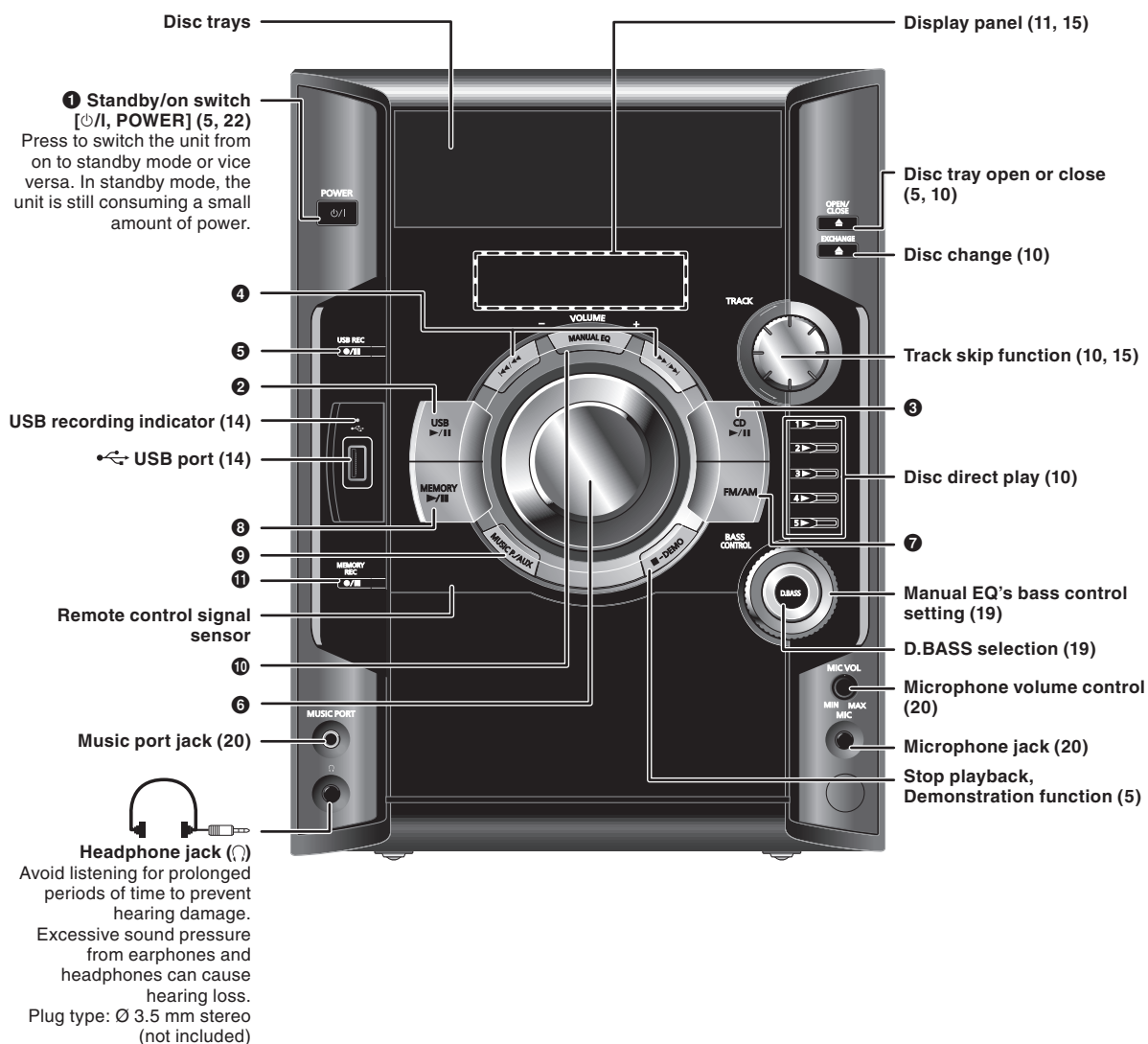
To household AC outlet



Overview of controls

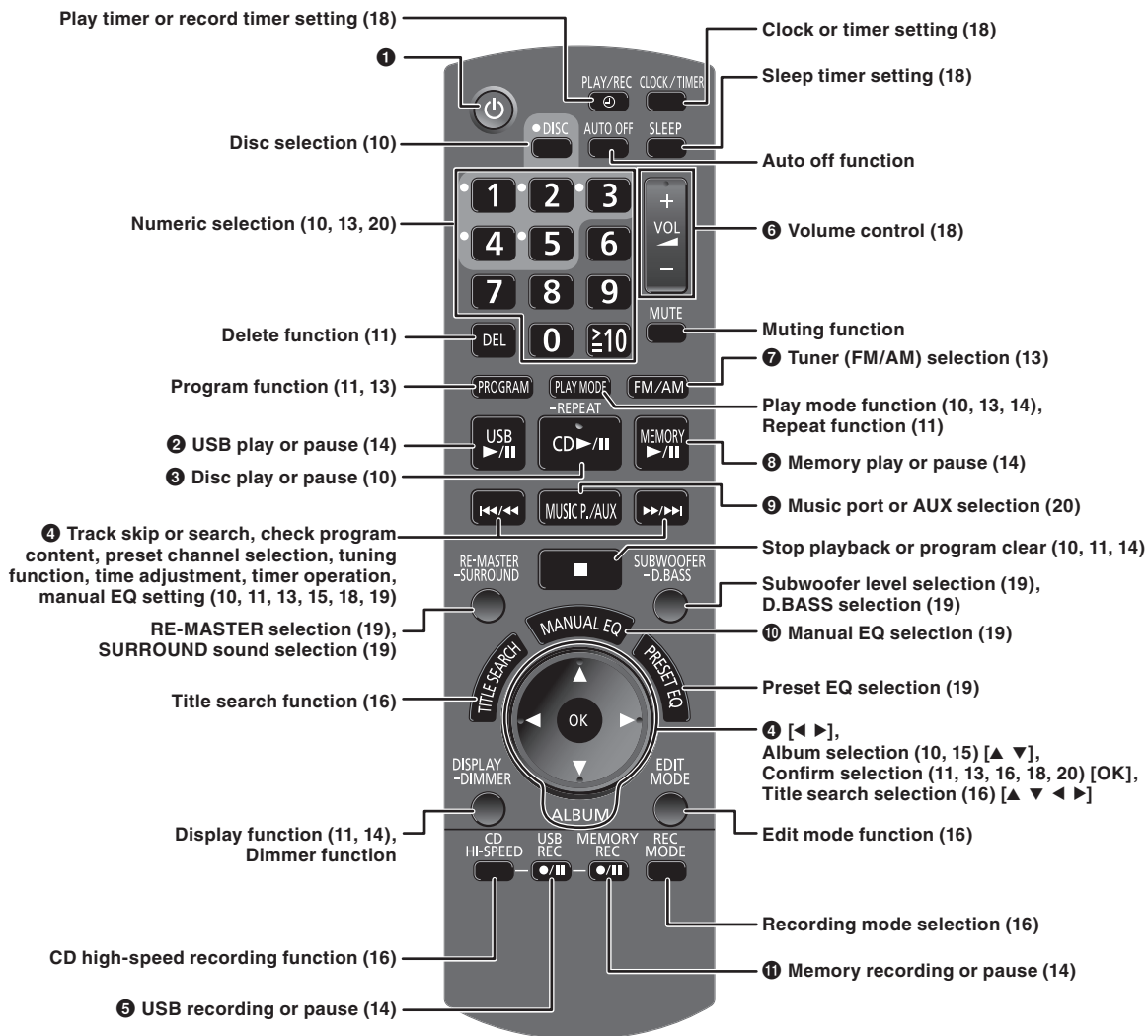
Main unit

Refer to the numbers in parentheses for page reference. Buttons labeled such as ❶ function in exactly the same way as the controls on the remote control (➔ page 9).



Remote control

Buttons labeled such as ❶ function in exactly the same way as the controls on the main unit (➔ page 8).



AUTO OFF

This auto off function allows you to turn off the unit in **disc, USB or memory** mode only after left unused for 10 minutes.

- Press the button to activate the function.
- Press the button again to cancel.
- The setting is maintained even if the unit is turned off.

DISPLAY
-DIMMER

To dim the display panel.

- Press and hold the button to activate the function.
- Press and hold the button again to cancel.

MUTE

To mute the sound.

- Press the button to activate the function.
- Press the button again or adjust the volume to cancel.

Discs



Basic play

- 1 Press **[▲, OPEN/CLOSE]** on the main unit to open the tray.
The unit turns on, load a disc in the current tray with the label facing up.
Press **[▲, OPEN/CLOSE]** to close the tray.
- 2 Press **[▶/II, CD]** to start play.
You can also press **[▶, 1] ~ [▶, 5]** or **[● DISC]** and then **[* 1] ~ [* 5]** to select and play the other loaded discs.



Current disc indicator

<p>Stop playback</p>	<p>Press [■] (stop) during play.</p> <p>MP3</p> <p>Display when in the stop mode: Example: "MP3" indicates the disc contains MP3 files.</p> <p>Total number of albums Total number of tracks</p>
<p>Pause play</p>	<p>Press [▶/II, CD] during play. Press again to resume play.</p>
<p>Skip album</p>	<p>MP3</p> <p>Press [▲/▼, ALBUM] to select the desired album during play or when in stop mode.</p> <ul style="list-style-type: none"> • This function does not work during 1-DISC RANDOM mode.
<p>Skip tracks</p>	<p>During play</p> <p>Press [◀◀/▶▶] or [▶▶/▶▶], or turn [TRACK] to skip to your desired track.</p> <p>While in stop mode</p> <p>Press [◀◀/▶▶] or [▶▶/▶▶] followed by [▶/II, CD] to skip and play your desired track.</p> <p>Alternatively, turn [TRACK] to skip and play your desired track.</p> <ul style="list-style-type: none"> • During random play (➡ see right, "Play Mode function"), you cannot skip to tracks which have been played. <p>MP3</p> <p>During 1-ALBUM and 1-ALBUM RANDOM mode, track skipping can only be done within the current album.</p>
<p>Search through tracks</p>	<p>CD</p> <p>Press and hold [◀◀/▶▶] or [▶▶/▶▶] during play or pause to search.</p> <ul style="list-style-type: none"> • During program play (➡ see page 11), or random play (➡ see right, "Play Mode function"), you can search only within the track.

PLAY MODE

-REPEAT

CD **MP3**

Play Mode function

You can listen to specific discs and tracks.

Preparation

Select and play your desired disc.

Press **[PLAY MODE]** to select the desired mode.

1-DISC 1 DISC	Play one selected disc.
ALL-DISC ALL DISC	Play all loaded discs in succession from the selected disc to the final disc. Example: 4 → 5 → 1 → 2 → 3.
1-TRACK 1-TR	Play one selected track on the selected disc. Press the numeric buttons to select the track in the current disc. Play starts from the selected track.
1-ALBUM 1-ALB	MP3 Play one selected album on the selected disc. Press [▲/▼, ALBUM] to select the album.
1-DISC RANDOM 1 DISC RND	Play one selected disc randomly.
1-ALBUM RANDOM 1-ALB RND	MP3 Play all tracks in one selected album randomly. Press [▲/▼, ALBUM] to select the album.
ALL-DISC RANDOM ALL DISC RND	CD Play all loaded discs randomly.

When playback ends

The current play mode will be retained in memory until it is changed even if the unit is turned off.

Note:

You cannot use program mode together with "Play Mode function".

EXCHANGE



Changing multiple discs

By main unit only

Press **[▲, EXCHANGE]** repeatedly to check and change multiple discs.

Note:

- The tray with a disc being played will not open.
- If the player is stopped, all trays will open. To close the remaining trays simultaneously, press **[▲, OPEN/CLOSE]**.

DISPLAY
- DIMMER



Checking the track information

You can view the information of the current track from the display panel.

Press [DISPLAY] repeatedly during play or pause.

CD

Elapsed play time ↔ Remaining play time

MP3



Note:

MP3

- "NO TAG" is displayed if titles with tags have not been entered.
- This unit can display album, track and artist name with MP3 ID3 tags (version 1.0 and 1.1).
- Titles containing text data that the unit does not support may be differently displayed.
- ID3 is a tag embedded in MP3 track to provide information about the track.
- Titles entered with 2-byte code cannot be displayed correctly on this unit.

Advanced play

PROGRAM

Program play

This function allows you to program up to 24 tracks.

CD

- 1 Press [▶/II, CD] and then [■] (stop).
- 2 Press [PROGRAM].
"PGM" appears.
- 3 Press [● DISC] and then [• 1] ~ [• 5] to select the disc.
- 4 Press the numeric buttons to select your desired track.
Repeat steps 3 and 4 to program other tracks.
- 5 Press [▶/II, CD] to start play.

MP3

- 1 Press [● DISC] and then [• 1] ~ [• 5] to select the disc.
- 2 Press [■] (stop).
- 3 Press [PROGRAM].
- 4 Press [▲/▼, ALBUM] to select your desired album.

- 5 Press [◀◀/◀◀] or [▶▶/▶▶] to select the track.
To select a track directly, press the numeric buttons after pressing [◀◀/◀◀] or [▶▶/▶▶].

- 6 Press [OK].
Repeat steps 4 to 6 to program other tracks.

- 7 Press [▶/II, CD] to start play.

For two-digit track, press [≥10] once then the two digits.
For three-digit track, press [≥10] twice then the three digits.

Cancel program mode	Press [PROGRAM] in the stop mode.
Replay the program	Press [PROGRAM] then [▶/II, CD] in the stop mode.
Add to the program	<p>CD</p> <p>Repeat steps 3 and 4 in the stop mode.</p> <p>MP3</p> <p>Repeat steps 4 to 6 in the stop mode.</p>
Check program contents	<p>Press [◀◀/◀◀] or [▶▶/▶▶] when "PGM" is displayed in the stop mode.</p> <p>CD</p> <p>The track number, program order and disc number are displayed:</p> <p>MP3</p> <p>The program order is displayed followed by the album number and track number.</p>
Clear the last track	Press [DEL] in the stop mode.
Clear all programmed tracks	Press [■] (clear) in the stop mode. "CLEAR ALL" is displayed.

Note:

- You cannot program CD-DA together with MP3 tracks.
- The program memory is cleared when you change a disc or open the disc tray.

MP3

- You cannot program more than one disc.

PLAY MODE

Repeat play

- REPEAT

CD MP3

You can repeat program play or other selected play mode.

Press and hold [- REPEAT].
"REPEAT ON" and "⏮" are displayed.

To cancel
Press and hold [- REPEAT] again.
"REPEAT OFF" is displayed and "⏮" is cleared.

Note:

You can use repeat mode with "Program play" (⇒ see left) and "Play Mode function" (⇒ page 10).

NOTE about using a DualDisc

The digital audio content side of a DualDisc does not meet the technical specifications of the Compact Disc Digital Audio (CD-DA) format so playback may not be possible.

NOTE on CDs

- This unit can access up to 99 tracks.
- This unit can play MP3 files and CD-DA format audio CD-R/RW that have been finalized.
- It may not be able to play some CD-R/RW due to the condition of the recording.
- Do not use irregularly shaped disc.
- Do not use disc with labels and stickers that are coming off or with adhesive exuding from under labels and stickers.
- Do not attach extra labels or stickers on the disc.
- Do not write anything on the disc.

NOTE on MP3

- Files are treated as tracks and folders are treated as albums.
- This unit can access up to 999 tracks, 255 albums and 20 sessions.
- Disc must conform to ISO9660 level 1 or 2 (except for extended formats).
- To play in a certain order, prefix the folder and file names with 3-digits numbers in the order you want to play them.

When "PLAYERERROR" appears on the display, an unsupported MP3 format is being played. The unit will skip that track and play the next one.

Limitations on MP3 play

- If you have recorded MP3 on the same disc as CD-DA, only the format recorded in the first session can be played.
- Some MP3s may not be played due to the condition of the disc or recording.
- Recordings will not necessarily be played in the order you recorded them.

Using the FM/AM radio

FM/AM

PLAY MODE
-REPEAT

Manual tuning

- 1 Press [FM/AM] to select "FM" or "AM".
- 2 Press [PLAY MODE] to select "MANUAL".
- 3 Press [◀◀/◀] or [▶/▶▶] to select the frequency of the required station.
"ST" is displayed when a stereo FM broadcast is being received.

To tune automatically

Press and hold [◀◀/◀] or [▶/▶▶] until the frequency starts changing rapidly. The unit begins auto tuning, stopping when it finds a station.

- Auto tuning may be interrupted when there is excessive interference.
- To cancel auto tuning, press [◀◀/◀] or [▶/▶▶] once again.

PLAY MODE
-REPEAT

To improve the sound quality

When "FM" is selected

Press and hold [PLAY MODE] to display "MONO".

To cancel

Press and hold [PLAY MODE] again until "MONO" disappears.

- MONO is also canceled if the frequency is changed.
- Turn off "MONO" for normal listening.

When "AM" is selected

Press and hold [PLAY MODE].

Each time you press button: BP2 ↔ BP1

FM/AM

AM allocation setting

By main unit only

This system can also receive AM broadcasts allocated in 10 kHz steps.

To change the step from 9 kHz to 10 kHz

- 1 Press and hold [FM/AM].
After a few seconds the display changes to a flashing display of the current minimum frequency.
- 2 Continue to hold down [FM/AM].
 - When the minimum frequency changes, release the button. To return to the original step, repeat the above steps.
 - After changing the setting, previously preset frequency will be cleared.

FM/AM

Memory preset

30 FM and 15 AM stations can be preset.

Preparation

Press [FM/AM] to select "FM" or "AM".

PROGRAM

Automatic presetting

- 1 Press [OK] repeatedly to select either "CURRENT" or "LOWEST".

CURRENT	Tuning begins from the current frequency.
LOWEST	Tuning begins from the lowest frequency.

- 2 Press and hold [PROGRAM] to start presetting.



The tuner presets all the stations it can receive into the channels in ascending order. When finished, the first station memorized is tuned in.

PROGRAM

Manual presetting

- 1 Press [PLAY MODE] to select "MANUAL".
- 2 Press [◀◀/◀] or [▶/▶▶] to tune to the required station.
- 3 Press [PROGRAM].
- 4 Press the numeric buttons to select a channel.
The station occupying a channel is erased if another station is preset to that channel.
- 5 Repeat steps 2 to 4 to preset more stations.

PLAY MODE
-REPEAT

Selecting a preset station

Press the numeric buttons to select the channel.

For channels 10 to 30 press [≥10], then the two digits.



OR

- 1 Press [PLAY MODE] to select "PRESET".
- 2 Press [◀◀/◀] or [▶/▶▶] to select the channel.

USB and internal memory

The USB connectivity enables you to record sound or music tracks from various sources to MP3 format and store into the USB mass storage device which can be played back. Typically, USB memory devices (bulk only transfer).

The 2 GB internal memory of this unit also allows you to store recorded sound or music tracks from various sources to MP3 format which can also be played back when desired.

You can play or record up to 255 folders (maximum 999 tracks in an album) or a total of 2500 tracks.

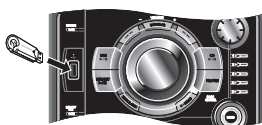
Connecting a USB mass storage device

Preparation

Before connecting any USB mass storage device to the unit, ensure that the data stored therein has been backed up.

It is not recommended to use a USB extension cable. The device connected via the cable will not be recognised by this unit.

USB enabled device
(not included)



Reduce the volume and connect the USB mass storage device to the USB port.

DISPLAY
-DIMMER

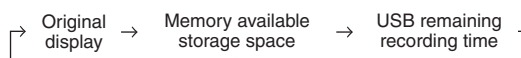
Checking the USB and internal memory status

You can check available storage space in the USB device or internal memory.

USB

1 Press [▶/II, USB] and then [■] (stop).

2 Press [DISPLAY] repeatedly in the stop mode.



Example of USB remaining recording time:

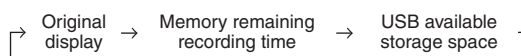
Shows the time is 10 minutes and 15 seconds Shows the time 20 hours and 15 minutes



MEMORY

1 Press [▶/II, MEMORY] and then [■] (stop).

2 Press [DISPLAY] repeatedly in the stop mode.



Example:



Note:

The memory's remaining recording time will also have similar display as USB.

Recording to a USB mass storage device or the internal memory

Panasonic will not be held responsible on the consumer's action to record copyrighted music in the form of various audio files which results in copyright infringement.

Note:

- These functions do not work with any "RANDOM" mode selection.
- Repeat mode will turn off when recording starts.
- A new album is created each time you perform recording. Depending on the memory, the album's sequence may change once the recording has completed.
- The recorded sound or music tracks are stored in a folder named "REC_DATA" in the USB.
- All tracks are recorded to .mp3 format.

USB REC
MEMORY REC

Basic recording

1 Select the source to be recorded.

Radio recording:

Tune in the station (➡ page 13).

CD recording:

- 1) Insert the disc(s) you want to record.
Press [▶/II, CD] and then [■] (stop).
- 2) Prepare the desired disc recording mode.

Record programmed tracks	Program the tracks you want (➡ page 11).
Record specific tracks	Press [PLAY MODE] to select the desired mode (➡ page 10).

Ensure the disc has stopped.

MUSIC PORT or AUX recording:

Connect and play the equipment (➡ page 20).

2 Record to your desired storage location.

USB

Press [▶/II, USB REC] to start recording

"REC" is displayed and the USB recording indicator blinks.

MEMORY

Press [▶/II, MEMORY REC] to start recording

"MEMORY REC" is displayed.

"REXXXXXX MAKING" is displayed, where "REXXXXXX" is the folder name.

Stop recording	Press [■] (stop). "WRITING" is displayed for a few seconds.
Pause recording	USB Press [▶/II, USB REC] during recording. Press again to resume. MEMORY Press [▶/II, MEMORY REC] during recording. Press again to resume. Note: Pause can only be performed during recording from the radio, music port or aux source (except in SYNCHRO mode). A track mark (➡ page 16) is inserted every time you pause.
Erased a recorded track	(➡ page 17)

Note:

"RENAME" and "ALBUM" will be displayed when the system rearranges and renames the folders in ascending order.

DISPLAY
-DIMMER

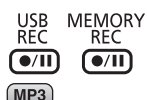
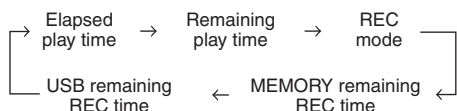


Checking the track information

While performing basic recording function (➡ page 14), you can view the information of the current track from the display panel.

Press **[DISPLAY]** repeatedly during recording.

Example: display during CD recording



Recording of MP3 tracks

You can record MP3 tracks stored in an album from the disc to a USB device or the unit's internal memory.

Album recording can also be performed from the USB device to the internal memory and vice versa.

1 Select the source of the album you want to record.

Disc:

Press **[▶/II, CD]** and then **[■]** (stop).

USB

Press **[▶/II, USB]** and then **[■]** (stop).

MEMORY

Press **[▶/II, MEMORY]** and then **[■]** (stop).

2 Press **[▲/▼, ALBUM]** to select the desired album.

3 Record to your desired storage location.

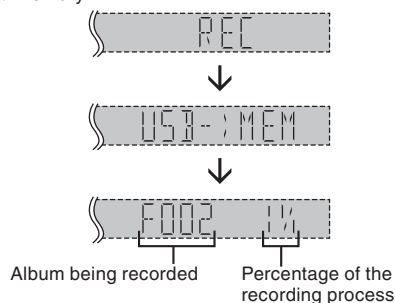
USB

Press **[●/II, USB REC]** to start recording.

MEMORY

Press **[●/II, MEMORY REC]** to start recording.

Example: Recording an album from the USB device to the internal memory.



Stop recording	Press [■] (stop). Recording stops at the last completed track in the album. "NO. FXXX" which is the folder name will be displayed. Example: If recording stops amidst the fourth track, only the first three tracks will be stored. "NO FILE RECORDED" is displayed if recording stops amidst the first track.
Erased a recorded track	(➡ page 17)

Note:

- Some files may take longer to record.
- Depending on the condition of the disc or file, some MP3 files may not be able to record.



Basic play

USB

Press **[▶/II, USB]** to start play.

MEMORY

Press **[▶/II, MEMORY]** to start play.

Stop playback	Press [■] (stop) during play. This unit memorizes the track at which you stopped. Playback will resume from that track. USB Press [▶/II, USB] to resume play. MEMORY Press [▶/II, MEMORY] to resume play. OR Press [■] (stop) again to cancel the resume play function.
Pause play	USB Press [▶/II, USB] during play. Press again to resume play. MEMORY Press [▶/II, MEMORY] during play. Press again to resume play.
Skip tracks	Press [◀◀/▶▶] or [▶▶/▶▶] , or turn [TRACK] to skip to your desired track (➡ page 10 "Basic play").
Skip albums	Press [▲/▼, ALBUM] to select the desired album during play or when in stop mode.

DISPLAY
-DIMMER

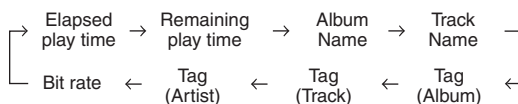


Checking the track information

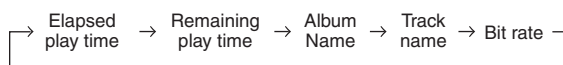
You can view the information of the current track from the display panel.

Press **[DISPLAY]** repeatedly during play or paused.

USB



MEMORY



Advanced play



Title search

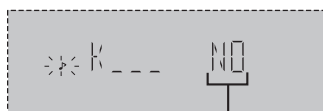
MEMORY

After a period of time, the number of MP3 tracks will increase in the internal memory storage. This is where the title search function comes in handy to enable you the convenience to search for your desired track.

- 1 Press [TITLE SEARCH] to start the search.
"P" indicator blinks.

- 2 Press [▲] or [▼] repeatedly to select the first character of the desired track.
▲ : Search in descending order (other characters, 9 to 0, Z to A).
▼ : Search in ascending order (A to Z, 0 to 9, other characters).

Example:



Indication that there is no match

- 3 When there are more than one track that match with the selected character, press [◀] or [▶] repeatedly to search for your desired track.

Example:



- 4 Press [OK] to select and play the track.

Note:

- This function will skip tracks that are created with basic recording (➡ page 14).
- This function does not work with any random or program mode.
- The character is not case sensitive.
- A same track title display will be shown for tracks with the same title.

Advanced recording functions



High-speed recording

CD

Recording speed:

CD : Four times (maximum of 4x) the normal speed.
CD-RW : Two times (2x) the normal speed.

- 1 Insert the CD you want to record.
- 2 Press [▶/II, CD] and then [■] (stop).
- 3 Press [PLAY MODE] to select 1-TRACK, 1-DISC or ALL DISC.
- 4 **USB**
Press [CD HI-SPEED] and [●/II, USB REC] simultaneously to start recording.
MEMORY
Press [CD HI-SPEED] and [●/II, MEMORY REC] simultaneously to start recording.

Note:

- Depending on the condition of the disc, it may not be possible to record at four times the normal speed or perform high-speed recording. Record the CD at normal speed.
- The sound is muted during high-speed recording.

EDIT MODE



Recording from CD using analog format

CD

You can change your recording mode from the default digital recording to analog recording.

- 1 Press [▶/II, CD] and then [■] (stop).
- 2 Press and hold [EDIT MODE] to select "ANALOG-REC".
Each time you press and hold the button:

ANALOG-REC ↔ DIGITAL-REC
(analog recording) (digital recording)

Note:

- The recording mode returns to the default "DIGITAL-REC" after completing the analog recording.
- High-speed recording is not applicable while using analog mode.

REC MODE



Recording mode

You can select the desired recording mode before you start the basic recording (➡ page 14).

Press [REC MODE] repeatedly to select your desired setting.

128 KBPS → 192 KBPS → 320 KBPS

Recording mode	Effect
128 KBPS	Long play mode
192 KBPS	Normal mode
320 KBPS	High quality sound mode

During recording

Press [DISPLAY] repeatedly to display the current recording mode.

Note:

You cannot change the recording mode during recording.

EDIT MODE



Adding track marks

When recording from analog source such as radio, music port or aux, you may want to separate the sound or music track at the desired point during recording.

You can perform this separation by adding track marks using the various listed modes.

Before recording

Press [EDIT MODE] repeatedly to select your desired track mark mode.

Radio:

MANUAL ↔ TIME MARK

MUSIC PORT or AUX:

MANUAL → SYNCHRO → TIME MARK

Edit mode	Action
MANUAL	Track marks are inserted manually. Press [OK] to add track marks during recording.
TIME MARK	Track marks are inserted automatically every five minutes.
SYNCHRO	Recording starts automatically when the other equipment starts play. Recording pause when it detects silence for approximately three seconds.

Note:

- If you press [OK] or pause recording while using TIME MARK mode during recording, the five minutes counter will be reset.
- You cannot insert track marks manually in SYNCHRO mode.

EDIT MODE**Erasing the recorded tracks**

This function enables you to erase unwanted tracks quickly and easily.

1 **USB**

Press [▶/II, USB] and then [■] (stop).

MEMORY

Press [▶/II, MEMORY] and then [■] (stop).

2 Press [▲, ▼, ◀, ▶] to select your desired album or track.**3** Press [EDIT MODE] repeatedly to select the desired erasing mode.**USB**

TRACKDEL → ALBUMDEL → FORMAT
 ↑ Original display ←

MEMORY

TRACKDEL → ALBUMDEL → ALL DEL
 ↑ Original display ←

Edit mode	Function
TRACKDEL	Erase single track
ALBUMDEL	Erase one album
FORMAT	Format the USB device
ALL DEL	Erase all albums

4 Press [OK].

Within 2 seconds or so, the selected album or track to be erased is displayed followed by the “PRESS OK” display.

Example:

**5** Press [OK] again.**6** Press [◀, ▶] to select “YES” then press [OK] to confirm the erasure.

“WRITING” is displayed.

OR

Press [◀, ▶] to select “NO” then press [OK] to cancel the erasure.

Example:

**Note:**

For “ALBUMDEL”, only 999 tracks in albums which contain more than 999 tracks will be erased. To erase the selected album, repeat steps 2 to 6.

NOTE on USB**Compatible devices**

Devices which are defined as USB mass storage class:

- USB devices that support bulk only transfer.
- USB devices that support USB 2.0 full speed.

Supported format

- Folders are defined as album.
- Files are defined as track.
- Track must have the extension “.mp3” or “.MP3”.
- CBI (Control/Bulk/Interrupt) is not supported.
- A device using NTFS file system is not supported. [Only FAT 12/16/32 (File Allocation Table 12/16/32) file system is supported.]
- Depending on the sector size, some files may not work.

When you connect your digital audio player to the USB port, it charges all the time except standby mode.

Using the timers

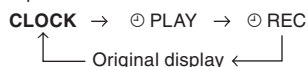
CLOCK/TIMER



Setting the clock

This is a 24-hour clock.

- 1 Press [CLOCK/TIMER] to select "CLOCK".
Each time you press the button:



- 2 **(Within 8 seconds or so)**
Press [◀◀/▶▶] or [▶▶/▶▶] to set the time.

- 3 Press [OK] to finish setting the time.

Displaying the clock

Press [CLOCK/TIMER] once when the unit is on or in standby mode.
The time is displayed for a few seconds.

Note:

Reset the clock regularly to maintain accuracy.

PLAY/REC



Using the play or record timer

You can set the timer to come on at a certain time to wake you up (play timer) or to record from the radio or the other equipment (record timer).

Play timer and record timer cannot be used together.

Turn the unit on and set the clock.

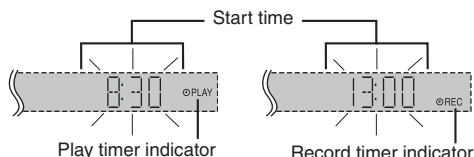
Play timer	Prepare the music source you want to listen to; disc number (1 to 5), USB device, internal memory, radio or other equipments and set the volume.
Record timer	Insert the USB device (for USB recording) and tune to the radio station (➡ page 13) or select the music port or AUX source (➡ page 20).

- 1 Press [CLOCK/TIMER] repeatedly to select the timer function.



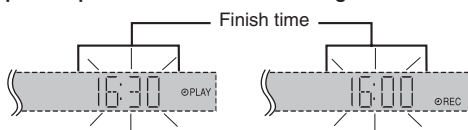
⏮PLAY : to set the play timer
⏭REC : to set the record timer
(Proceed to the next step **within 8 seconds**)

- 2 Press [◀◀/▶▶] or [▶▶/▶▶] to set the starting time.



- 3 Press [OK] to confirm.

- 4 Repeat steps 2 and 3 to set the finishing time.



For play timer : proceed to step 7.

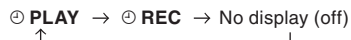
For record timer : continue from step 5 onward.

- 5 Press [◀◀/▶▶] or [▶▶/▶▶] to select "USB" or "MEMORY" for the desired recording storage location.

- 6 Press [OK] to confirm.

To activate the timer

- 7 Press [⏮PLAY/REC] repeatedly to turn on your desired timer.



- 8 Press [⏻] to turn off the unit.

The unit must be turned off for the timers to operate.

Change the settings	Repeat steps 1 to 6 and 8 (➡ see left and above).
Change the source or volume	1) Press [⏮PLAY/REC] to clear the timer indicator from the display. 2) Make changes to the source or volume. 3) Perform steps 7 and 8 (➡ see above).
Check the settings	Press [CLOCK/TIMER] repeatedly to select ⏮PLAY or ⏭REC.
Cancel	Press [⏮PLAY/REC] to clear the timer indicators from the display.

If you use the unit after the timers are set

After using, check that the correct disc is loaded before turning the unit off.

Note:

- The play timer will start at the preset time with volume increasing gradually to preset level.
- The record timer will start 30 seconds before the set time with the volume muted.
- The timer comes on at the set time every day if the timer is on.
- The unit must be in the standby mode for the timer to function.
- If you turn the unit off and on again while a timer is functioning, the finish time setting will not be activated.

SLEEP



Using the sleep timer

This function enables you to turn off the unit automatically after the set time.

Press [SLEEP] to select your desired time.



Sleep timer indicator

To cancel

Press [SLEEP] to select "OFF".

Changing the remaining time

Press [SLEEP] to show the remaining time and press [SLEEP] again to select your desired time.

Note:

- The play and sleep timer or the record and sleep timer can be used together.
- The sleep timer always has priority. Be sure not to overlap timer settings.

Using sound effects



Changing the sound quality: Preset EQ

Press [PRESET EQ] repeatedly to select your desired setting.

HEAVY → CLEAR → SOFT → VOCAL
 ↑ FLAT (off) ←

Setting	Effect
HEAVY	Adds punch to rock
CLEAR	Clarifies higher frequencies
SOFT	For background music
VOCAL	Adds gloss to vocal
FLAT	No effect



Changing the sound quality: Manual EQ

1 Press [MANUAL EQ] repeatedly to select your desired setting.

BASS → MID → TREBLE
 ↑ Original display ←

Setting	Effect
BASS	For lower pitch sound
MID	For middle pitch sound
TREBLE	For higher pitch sound

2 Press [◀◀/◀] or [▶/▶▶] to adjust the level.

OR

By main unit only

Setting the BASS:

Turn [BASS CONTROL] to either increase (+) or decrease (-) the pitch.

Note:

- The level of the pitch is between -3 to +3.
- The changes you make are stored and automatically recalled the next time you activate "MANUAL EQ".



Changing the sound quality: RE-MASTER

This feature reproduces the frequencies lost during recording (original soundtrack) to give you a sound closer to the original.

Press [RE-MASTER] repeatedly to select either "ON RE-MASTER" or "OFF RE-MASTER".

Note:

- During CD (MP3), USB or memory selection, the re-master effect is digital.
- As for MUSIC PORT selection, the re-master effect is analog.



Changing the sound quality: SURROUND sound

Enables you to add natural width and depth to the stereo sound.

To activate

Press and hold [-SURROUND] to display "■■■■■■■■■■"

To cancel

Press and hold [-SURROUND] again to clear "■■■■■■■■■■"

Note:

- Surround sound is less discernible when listening through headphones.
- If interference in FM stereo reception increases, cancel the surround sound effect.



Enjoying the bass: D.BASS

Press and hold [-D.BASS] repeatedly to select either "ON D.BASS" or "OFF D.BASS".

Note:

"D.BASS" knob remains lighted during "ON D.BASS" or "OFF D.BASS" selection.



Boosting the subwoofer

LEVEL -, LEVEL +



(SB-WAK980)

Turn [LEVEL -, LEVEL +] knob on the subwoofer speaker.

OR

Press [SUBWOOFER] repeatedly to select your desired setting.

→ OFF → SW1 → SW2 → SW3

Note:

This function is not applicable when a headphone is connected.

Using other equipments

Note:

All peripheral components and cables are sold separately.



Avoid interfering with other Panasonic equipment

Other Panasonic audio or video equipment may start functioning when you operate the unit using the supplied remote control.

You can operate this unit in another mode by setting the remote control operating mode to "REMOTE 2".

The main unit and remote control must be set to the same mode.

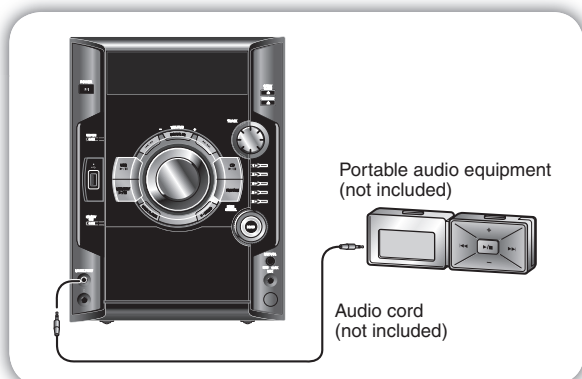
1 Press and hold [MUSIC P./AUX] on the main unit and [2] on the remote control until the main unit's display shows "REMOTE 2".

2 Press and hold [OK] and [2] on the remote control for at least 2 seconds.

To change the mode back to "REMOTE 1", repeat the steps above by replacing [2] with [1].

Connecting to a portable audio equipment

This feature enables you to enjoy music from a portable audio equipment.



MUSIC P./AUX

Playing from a portable audio equipment

Switch off the equalizer function (if there is any) of the portable audio equipment before you plug into the MUSIC PORT jack. Otherwise, sound from the speaker may be distorted.

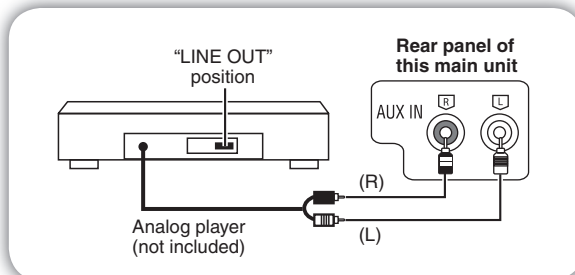
1 Plug the audio cord into the MUSIC PORT jack.

2 Press [MUSIC P./AUX] repeatedly to select "MUSIC PORT".

3 Play the portable audio equipment. (See the portable audio equipment's instruction manual.)

Connecting to other external unit

You can connect to an analog player with a built-in phone equalizer.



MUSIC P./AUX

Playing from an external unit

1 Press [MUSIC P./AUX] repeatedly to select "AUX".

2 Start playback from the external source.

Note:

- For details, refer to the instruction manual of the unit which is to be connected.
- When units other than those described above are to be connected, please consult your audio dealer.
- Sound distortion may occur when you use an adaptor other than the one supplied.

Using the microphone

The buttons described for "Using the microphone" are mainly using the main unit unless indicated otherwise.



Enjoying the microphone mixing

You can enjoy microphone mixing from various music sources (disc, radio, USB device, internal memory or other equipments).

1 Firstly, lower the volume with [MIC VOL, MAX/MIN], connect the microphone (not included) to the microphone jack.

Plug type : Ø 3.5 mm monaural

2 Start playing the music source.

3 Adjust the volume with [+/-, VOLUME] and [MIC VOL, MAX/MIN] and sing along.

Note:

- If a strange noise (howling) is emitted during use, move the microphone away from the speakers, or turn down the microphone volume.
- When you are not using the microphone, disconnect it from the microphone jack, and turn down the microphone volume level to "MIN".

Troubleshooting guide

Before requesting service, make the following checks. If you are in doubt about some of the check points, or if the solutions indicated in the chart do not solve the problem, consult your dealer for instructions.

Common problems		Page
When the unit is in standby mode, the display lights up and changes continuously.	<ul style="list-style-type: none"> Turn off the demo function. 	5
No response from the unit even though it has been turned on.	<ul style="list-style-type: none"> Press [⏻/I, POWER] for more than 10 seconds to turn off the unit. Alternatively, unplug the AC power supply cord and plug it in after a lapse of a few seconds. Turn the unit on again. 	—
No response when remote control buttons are pressed.	<ul style="list-style-type: none"> Check that the batteries are installed correctly. 	5
Distorted sound or no sound.	<ul style="list-style-type: none"> Turn the volume up. Turn off the unit, determine and correct the cause, then turn the unit on again. It may be caused by straining of the speakers through excessive volume or power, and using the unit in a hot environment. 	— —
A “humming” sound can be heard during play.	<ul style="list-style-type: none"> An AC power supply cord or fluorescent light is near the unit. Keep other appliances and cords away from the unit. 	—

Discs

Incorrect display or play will not start.	<ul style="list-style-type: none"> You have not inserted the disc correctly; insert it correctly. Disc may be dirty. Wipe it clean. Replace the disc if it is scratched, warped, or non-standard. Condensation has formed: Wait 1 to 2 hours for it to evaporate. 	5 — — —
The total number of tracks displayed is incorrect. The disc cannot be read. Distorted sound is heard.	<ul style="list-style-type: none"> You have inserted a disc the unit cannot play; insert one it can. You have inserted a disc that has not been finalized or completely formatted. 	— —
Disc tray(s) cannot open.	<ul style="list-style-type: none"> Press [⏻/I, POWER] to release the jammed tray(s) as the unit will switch off. Turn it on again and the tray(s) will initialize to the previous tray(s) condition. If this still does not fix the problem, please consult the dealer. 	— —

Radio

Distorted sound or noise is heard. The stereo indicator flickers or does not light.	<ul style="list-style-type: none"> Use an outdoor antenna. 	7
A beat sound is heard.	<ul style="list-style-type: none"> Turn the television off or move it away from the unit. Switch to either BP 1 or BP 2 when in AM tuner mode. 	— 13
A low hum is heard during AM broadcast.	<ul style="list-style-type: none"> Separate the antenna from other cables and cords. 	—

USB

The USB drive or its contents cannot be read.	<ul style="list-style-type: none"> The USB drive format or its contents is/are not compatible with the system. The USB host function of this product may not work with some USB devices. USB devices with storage capacity of more than 32 gigabytes may not work in some instances. 	17 — —
Slow operation of the USB device.	<ul style="list-style-type: none"> Large file size or high memory USB flash drive takes longer time to read. 	—

Troubleshooting guide (continued)

■ Unit displays		Page
"NO PLAY"	<ul style="list-style-type: none"> Check the content. Only MP3 format files can be played. 	—
"F61"	<ul style="list-style-type: none"> Check and correct the speaker cords connection. If this does not fix the problem, consult the dealer. Disconnect the USB device. Turn the unit off and then back on. 	7
"ERROR"	<ul style="list-style-type: none"> Incorrect operation performed. Read the instructions and try again. 	—
"ERROR" (during recording)	<ul style="list-style-type: none"> You are not able to select other playback source (example: radio, USB and etc.) or press [◀◀/▶▶] or [▶▶/▶▶] during recording. Stop the recording function. You are not able to open the disc tray when recording from AM source. Select a suitable recording mode (128 KBPS or 192 KBPS) and resume recording. 	14
"VBR—"	<ul style="list-style-type: none"> The unit cannot display the remaining play time for variable bit rate (VBR) tracks. 	—
"—:—:—" (during standby mode)	<ul style="list-style-type: none"> You plugged the AC power supply cord in for the first time or there was a power failure recently. Set the time. 	18
"USB OVER CURRENT ERROR"	<ul style="list-style-type: none"> The USB device is drawing too much power. Disconnect the USB device. Turn the unit off and then back on. 	—
"HI-SPEED CAN'T REC"	<ul style="list-style-type: none"> You cannot use high-speed recording while using analog mode. Change to digital mode or use normal recording. 	16
"DEVICE FULL"	<ul style="list-style-type: none"> You cannot perform recording because the total USB remaining REC (recording) time of the USB device is less than the total time of music source. Change to a USB device which has the appropriate recording time and perform the recording again. 	16

System memory reset (Initialization)

When the following situations occur, refer to the instructions below to reset the memory:

- There is no response when buttons are pressed.
- You want to clear and reset the memory contents.

To reset system memory

- 1 Disconnect the AC power supply cord. (Wait at least 3 minutes before proceeding to step 2.)
- 2 While pressing and holding down [◻/I, POWER] on the main unit, reconnect the AC power supply cord. "-----" appears on the display panel.
- 3 Release [◻/I, POWER].
All the settings are returned to the factory preset.
You will need to reset the memory items.

Maintenance

If the surfaces are dirty

To clean this unit, wipe with a soft, dry cloth.

- Never use alcohol, paint thinner or benzene to clean this unit.
- Before using chemically treated cloth, read the instructions that came with the cloth carefully.

When moving the unit

- 1 Remove all discs.
- 2 Press [◻/I, POWER] to turn the unit off.
- 3 Disconnect the AC power supply cord.

Specifications

AMPLIFIER SECTION

RMS output power stereo mode

Front Ch (both channels driven)	125 W per channel (3 Ω), 1 kHz
Surround Ch (both channels driven)	125 W per channel (3 Ω), 1 kHz
Subwoofer Ch (2 channels)	250 W per channel (6 Ω), 100 Hz
Total RMS stereo mode power	1000 W

FM/AM TUNER, TERMINALS SECTION

Preset station	FM 30 stations AM 15 stations
Frequency Modulation (FM)	
Frequency range	87.50 to 108.00 MHz (50 kHz step)
Antenna terminal(s)	75 Ω (unbalanced)
Amplitude Modulation (AM)	
Frequency range	522 to 1629 kHz (9 kHz step) 520 to 1630 kHz (10 kHz step)
Aux input	RCA pin jack
Music Port (front) jack	
Sensitivity	100 mV, 4.7 kΩ
Terminal	Stereo, 3.5 mm jack
Headphone jack	
Terminal	Stereo, 3.5 mm jack
Output level (CD, 1 kHz, -20 dB)	32 Ω (Max)
Mic jack	
Sensitivity	0.7 mV, 1.2 kΩ
Terminal	Mono, 3.5 mm jack (1 system)

DISC SECTION

Disc played (8 cm or 12 cm)

- (1) CD-Audio (CD-DA)
- (2) CD-R/RW (CD-DA, MP3* formatted disc)
- (3) MP3*

* MPEG-1 Layer 3, MPEG-2 Layer 3

Pick up

Wavelength	795 nm
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Audio output (disc)

Number of channels	4.2 ch (FL, FR, SL, SR, SWx2)
FL = Front left channel	
FR = Front right channel	
SL = Surround left channel	
SR = Surround right channel	
SW = Subwoofer channel	

USB SECTION

USB port

USB Standard	USB 2.0 full speed
Media file format support	MP3 (*.mp3)
USB device file system	FAT12/FAT16/FAT32
USB port power	500 mA (Max)
Bit rate	16 kbps to 320 kbps (P.B)

USB recording

Recording file format	MP3 (*.mp3)
Bit rate	128 kbps / 192 kbps / 320 kbps
USB recording speed	1x, max 4x (CD only)

MEMORY SECTION

Memory

Memory size	2 GB
Memory file format	MP3 (*.mp3)

Memory recording

Recording file format	MP3 (*.mp3)
Bit rate	128 kbps / 192 kbps / 320 kbps
Memory recording speed	1x, max 4x (CD only)

SPEAKER SECTION

Front speakers (SB-PF980)	Surround speakers (SB-PS980)
Type	2 way, 2 speaker system (Bass reflex)
Speaker unit(s)	
Tweeter	6 cm cone type
Woofer	20 cm cone type
Impedance	3 Ω
Input power (IEC)	125 W (Max)
Output sound pressure	87 dB/W (1.0 m)
Frequency range	49 Hz to 21 kHz (-16 dB) 68 Hz to 20 kHz (-10 dB)
Dimensions (WxHxD)	250 mm x 414 mm x 298 mm
Mass	5.3 kg

Subwoofer (SB-WAK980)

Type	1 way, 1 speaker system (Bass reflex)
Speaker unit(s)	
Woofer	25 cm cone type
Impedance	6 Ω
Input power (IEC)	250 W (Max)
Output sound pressure	82 dB/W (1.0 m)
Frequency range	48 Hz to 250 Hz (-16 dB) 50 Hz to 200 Hz (-10 dB)
Dimensions (WxHxD)	320 mm x 414 mm x 338 mm
Mass	8.3 kg

Subwoofer (SB-WAK981)

Type	1 way, 1 speaker system (Bass reflex)
Speaker unit(s)	
Woofer	25 cm cone type
Impedance	6 Ω
Input power (IEC)	250 W (Max)
Output sound pressure	82 dB/W (1.0 m)
Frequency range	48 Hz to 250 Hz (-16 dB) 50 Hz to 200 Hz (-10 dB)
Dimensions (WxHxD)	320 mm x 414 mm x 327 mm
Mass	8.2 kg

GENERAL

Power supply	AC 110 to 127/220 to 240 V, 50/60 Hz
Power consumption	165 W
Dimensions (WxHxD)	250 mm x 333 mm x 326 mm
Mass	4.7 kg
Operating temperature range	0°C to +40°C
Operating humidity range	35% to 80% RH (no condensation)

Power consumption in standby mode: 0.5 W (approximate)

Note:

- Specifications are subject to change without notice.
Mass and dimensions are approximate.
- Total harmonic distortion is measured by the digital spectrum analyzer.

Useful information

Customer Service

Customer Service Directory

Obtain information products and operative assistant; localize the closer distributor or Service Center; buy spare parts and accessories by our web site to Latin American:

<http://www.lar.panasonic.com>

Also you may contact us directly by our Contact Center:

Panama	800-PANA (800-7262)
Colombia	1-8000-94PANA (1-8000-947262) - National Line
	635-PANA (635-7262) - Bogota Line
Ecuador	1800-PANASONIC (1800-726276)
Costa Rica	800-PANA737 (800-7262737)
El Salvador	800-PANA (800-7262)
Guatemala	1-801-811-PANA (1-801-811-7262)
Chile	800-260602
	From a cell phone: 245-2520
Venezuela	800-PANA-800 (800-7262-800)
Uruguay	0-800-PANA (0800-7262)

Mexico Service

To obtain information in the Republic of Mexico contact us at:

[email: atencion.clientes@mx.panasonic.com](mailto:atencion.clientes@mx.panasonic.com)

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