

Operation Manual

SPH-DA01

SPH-DA02

AppRadio

Be sure to read **Important Information for the User** first!

Important Information for the User includes the important information that you must understand before using this product.



Thank you for buying this Pioneer product.

Please read through these instructions so you will know how to operate your model properly. *After you have finished reading the instructions, keep this document in a safe place for future reference.*

01 Introduction

- Manual overview 4
 - How to use this manual 4
 - Conventions used in this manual 4
 - Terms used in this manual 4
- iPhone compatibility 4
- To ensure safe driving 5
- Protecting the LCD panel and screen 5
- Notes on internal memory 5
 - Before removing the vehicle battery 5
 - Data subject to erasure 5

02 About AppRadio

- Features 6
- Checking part names and functions 6
 - Connecting and disconnecting an iPhone 7
- Startup and termination 8
 - Quick Start Mode 8
 - Demonstration images 8

03 Basic operation

- Home screen 9
 - Reading the screen 9
 - Using the touch panel keys 9
- Touch panel keys common to each function 9
- Audio source control 10
- Switching to the Advanced App Mode 10
 - When a black screen appears 11

04 Using the radio

- Starting procedure 12
- Reading the screen 12
- Using the touch panel keys 12
- Using functions 12
 - Entering a frequency 12
 - Storing the frequencies to a preset channel 13

- Storing the strongest broadcast frequencies 13
- Recalling broadcast frequencies 13
- Using radio text 13
- RDS functions 13

05 Playing iPod music

- Starting procedure 16
- Reading the screen 16
- Using the touch panel keys 16

06 Using hands-free phoning

- Registering and connecting an iPhone 17
 - Connecting a registered iPhone manually 17
 - Disconnecting your iPhone 17
 - Deleting a registered iPhone 17
- Basic operation of hands-free phoning 17
 - Using the touch panel keys 18
 - Adjusting the phone volume 18
- Making a phone call 18
 - Direct dialling 18
 - Calling a number in the phone book 18
 - Dialling from the history 18
- Answering an incoming call 19
- Using advanced functions 19
 - Stopping Bluetooth wave transmission 19
 - Setting the Bluetooth auto connect function 19
 - Answering a call automatically 19
 - Editing the password 19
- Transferring the phone book 20
- Notes for hands-free phoning 20

07 Setting rear view camera

08 Customising preferences

- Customising the audio settings 22

- Using the equaliser **22**
- Using balance adjustment **23**
- Customising the general settings **23**
 - Display settings **23**
 - General settings **24**
 - Time settings **24**
 - Subwoofer settings **24**
 - Selecting the language **25**
 - Source level adjustment settings **25**
- Assigning functions to the steering wheel **26**
- Changing the background image **26**

09 Returning the AppRadio to the default or factory settings

- Restoring the default setting **27**
- Returning this product to the initial state **27**

Appendix

- Troubleshooting **28**
- Positioning technology **31**
 - Positioning by GPS **31**
- Handling large errors **31**
 - When positioning by GPS is impossible **31**
 - Conditions likely to cause noticeable positioning errors **31**
- Setting list **34**
 - Audio Settings **34**
 - General **34**

Manual overview

Before using this product, be sure to read **Important Information for the User** (a separate manual) which contains warnings, cautions, and other important information that you should note.

How to use this manual

Finding the operation procedure for what you want to do

When you have decided what you want to do, you can find the page you need from the *Contents*.

Finding customisable settings

If you want to look up the settings of this product, refer to *Setting list* at the end of the manual.

Conventions used in this manual

Before moving on, take a few minutes to read the following information about the conventions used in this manual. Familiarity with these conventions will help you greatly as you learn how to use your new equipment.

- Buttons on this product are described in **bold** lettering:
e.g.)
Press the **Home** button to display the Home screen.
- Menu items, screen titles, and functional components are described in **bold** with double quotation marks “ ”:
e.g.)
Set “**Dimmer**” to “**OFF**”.
- Touch panel keys that are available on the screen are described in **bold** in brackets []:
e.g.)
Tap [**Radio**] on the Home screen.
- Extra information, alternatives and other notes are presented in the following format:
e.g.)
 If the home location has not been stored yet, set the location first.

- Functions of other keys on the same screen are indicated with ■ at the beginning of the description:
e.g.)
■ If you touch [**OK**], the entry is deleted.
- References are indicated like this:
e.g.)
➔ For details, refer to *Answering a call automatically* on page 19.

Terms used in this manual

“Front display”

In this manual, the screen that is attached to the body of this product is referred to as the “Front display”.

“microSD card”

The microSD card and microSDHC card are collectively referred to as the “microSD card”.

“iPhone”

In this manual, iPod and iPhone will be referred to as iPhone.

iPhone compatibility


This product supports only the following iPhone models and iPhone software versions. Others may not work correctly.

Made for





- iPhone 4S: iOS 5.0
- iPhone 4: iOS 5.0
- iPod touch (4th generation): iOS 5.0
- Operation methods may vary depending on the iPhone models and the software version of iPhone.
- Depending on the software version of the iPhone, it may not be compatible with this equipment.
For details about iPhone compatibility with this product, refer to the information on our website.

Introduction

To ensure safe driving



Certain functions (such as viewing of app-based visual content and certain touch panel key operations) offered by this product could be dangerous and/or unlawful if used while driving. To prevent such functions from being used while the vehicle is in motion, there is an interlock system that senses when the handbrake is set. If you attempt to use the functions described above while driving, they will become disabled until you stop the vehicle in a safe place, and apply the handbrake. Please keep the brake pedal pushed down before releasing the handbrake. 

Protecting the LCD panel and screen

-  Do not allow direct sunlight to fall on the LCD screen when this product is not being used. Extended exposure to direct sunlight can result in LCD screen malfunction due to the resulting high temperatures.
-  When using a mobile phone, keep the aerial of the mobile phone away from the LCD screen to prevent disruption of the video in the form of spots, coloured stripes, etc.
-  To protect the LCD screen from damage, be sure to tap the touch panel keys with your finger only and gently touch the screen. 




Notes on internal memory Before removing the vehicle battery

If the battery is disconnected or discharged, the memory will be erased and must be reprogrammed.

-  Some data remains. Be sure to read *Returning the AppRadio to the default or factory settings* first.
 -  For details, refer to Chapter 9.

Data subject to erasure

The information is erased by disconnecting the yellow lead from the battery (or removing the battery itself).

-  Some data remains. Be sure to read *Returning the AppRadio to the default or factory settings* first.
 -  For details, refer to Chapter 9. 

Features

Listening to the radio

You can listen to the radio by using this product.

Playing iPod music

You can play and operate the audio source with the iPhone connected.

Advanced App Mode

With **Advanced App Mode**, you can display the iPhone application screen on the display of AppRadio. And you can operate AppRadio compatible iPhone applications (such as **AppRadio app**) via the display with multi-touch gestures like tapping, dragging, scrolling, flicking.

- ☐ For details of **Advanced App Mode**, refer to the Operation Manual for **AppRadio app**.

Hands-free phoning

You can control Bluetooth connection of the iPhone, and make a call with incoming or outgoing call histories, transferred phone book, or dials.

Displaying the rear view camera image

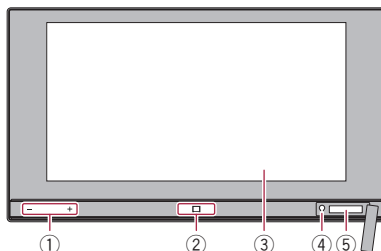
You can display what is behind the vehicle if a rear view camera (e.g. ND-BC5) (sold separately) is connected to the system.

Pop-up text

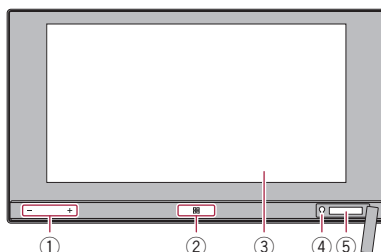
If you touch and hold an image icon, a pop-up text explaining the function of the icon is displayed. ☐

Checking part names and functions

SPH-DA01



SPH-DA02



- ① **Volume (+/-) button**
- ② **Home button**
 - Press the **Home** button to display the Home screen.
 - When you press the **Home** button while using an **Advanced App Mode**-compatible application, **AppRadio app** launches and the Application menu screen is displayed.
 - ☐ With the SPH-DA01, depending on the application, the Home screen may be displayed.
 - Press the **Home** button twice, the audio source control keys will be displayed on-screen.
- ③ **LCD screen**
- ④ **Reset button**
 - ☞ For details, refer to Chapter 9.

About AppRadio

⑤ microSD card slot

- A microSD card is used only to upgrade the software of this product.
- For details of software upgrades, refer to the information on our website.
- Close the cover of the microSD card slot if you don't use a microSD card.

Connecting and disconnecting an iPhone

⚠ CAUTION

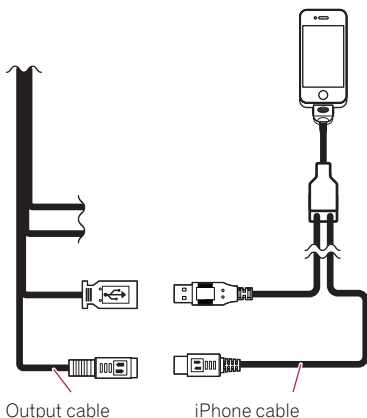
- To prevent data loss and damage to the iPhone, never remove it from this product while data is being transferred.
- If data loss or corruption occurs on the iPhone for any reason, it is usually not possible to recover the data. Pioneer accepts no liability for damages, costs or expenses arising from data loss or corruption.

Connecting your iPhone

Using the supplied iPhone cable enables you to connect your iPhone to this product.

- Connection via a USB hub is not possible.

- **Connect your iPhone.**



Disconnecting your iPhone

- **Pull out the iPhone cable after checking that no data is being accessed.**

Startup and termination

1 Start the engine to boot up the system.

After a short pause, the splash screen comes on for a few seconds.

2 Read the disclaimer carefully, checking its details, and then tap [OK] if you agree to the conditions.



- ❑ On first-time startup, a language setup screen appears before the disclaimer. Select the language of your choice in this screen.

3 Turn off the vehicle engine to terminate the system.

- ❑ If you switch off the vehicle ignition (ACC OFF) with the iPhone still attached, a beep will sound twice to remind you that you have forgotten to disconnect the iPhone.

When you turn the ignition switch off (ACC OFF) and then turn it on again (ACC ON), the demonstration images will not be displayed.

- ❑ If you reset the system, the demonstration images will be displayed again. ❑

Quick Start Mode

Your AppRadio features a Quick Start Mode that puts the AppRadio into a reduced power mode for five minutes when the vehicle ignition is switched to off (ACC OFF). While in Quick Start Mode, if you turn the ignition switch on (ACC ON), AppRadio will immediately start up. If the unit is in Quick Start Mode and the ignition is not switched on (ACC ON) within five minutes, AppRadio automatically turns off.

Demonstration images

If you do not operate this product for 30 seconds, demonstration images are displayed.

Basic operation

Home screen

The Home screen is the main screen that allows access to your entertainment sources, Apps, settings and more.

Reading the screen



- ① Day of the week indicator
- ② Current time

Using the touch panel keys



Radio

Displays the radio source screen.
➡ For details, refer to Chapter 4.



iPod

Displays the iPod audio source screen.
➡ For details, refer to Chapter 5.



Apps

Switches to the **Advanced App Mode** and displays the application operation screen.

- ☐ Tapping while **AppRadio app** is running on the iPhone displays the Application menu screen.

➡ For details, refer to *Switching to the Advanced App Mode* on the next page.



Phone

Displays the phone function screen.
➡ For details, refer to Chapter 6.



Displays the settings menu screen.
➡ For details, refer to Chapter 8.



Displays the rear view camera image.
➡ For details, refer to Chapter 7.

Touch panel keys common to each function

The touch panel keys for common operations for each function are described below.



The previous screen returns.



Deletes the input text one letter at a time, beginning at the end of the text.



Scrolls through the list and allows you to view the remaining items.
☐ The selected item is highlighted.

Audio source control

When you press the **Home** button twice, the audio source control keys will be displayed on-screen. Using these keys, you can operate the audio source currently playing in the background without leaving the screen currently displayed.

- ❑ The audio source control keys cannot be displayed on the iPod audio source screen.



Each tap of the key selects whether to mix or mute radio output with the iPhone audio output. When radio audio is mixed, is displayed, and when unmixed, is displayed.

- ❑ This setting is only available when this product is switched to **Advanced App Mode**.
- ❑ If you making a hands-free call or switching to a radio source, radio output is muted.



Each tap of the key switches between muted and unmuted audio source. When muted, is displayed, and when unmuted, is displayed.



When "iPod" is selected as the source, tapping the key switches between playback and pause.



When "Radio" is selected as the source, tapping the key moves to the next or previous preset channel. When "iPod" is selected as the source, tapping the key moves to the next or previous track.

- ❑ When you turn the ignition switch off (ACC OFF) and then turn it on again (ACC ON), these settings will be reset.

Switching to the Advanced App Mode



WARNING

Certain uses of a smartphone may not be legal while driving in your jurisdiction, so you must be aware of and obey any such restrictions.

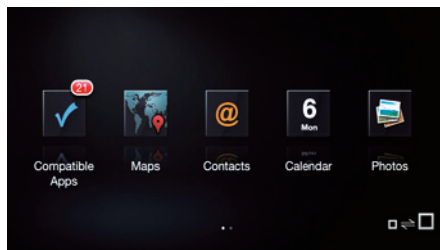
If in doubt as to a particular function, only perform it while the car is parked.

No feature should be used unless it is safe to do so under the driving conditions you are experiencing.

- ❑ To use this function, you need to install **AppRadio app** in your iPhone.

1 Unlock your iPhone and then connect the iPhone to this product.

The launch application message is displayed. **AppRadio app** launches and the Application menu screen appears.



- ❑ Depending on the status of the connected iPhone, **AppRadio app** may fail to launch. If this happens, follow the launch application message to launch **AppRadio app**.
- ❑ If you connect your iPhone while an **Advanced App Mode**-compatible application is already running, the application operation screen appears on the AppRadio display.

2 Tap the desired application icon on the Application menu screen.

The desired application operation screen is displayed, enabling you to operate the application.

Basic operation

3 Press the Home button.

The Application menu screen appears.

- ❑ When you press the **Home** button on the Application menu screen, the Home screen appears. When you tap [**Apps**] on the Home screen, the Application menu screen appears.
- ❑ With the SPH-DA01, depending on the application, the Home screen may be displayed.

When a black screen appears


A black screen appears when you perform the following operations:

- Tap [**Ignore**] on the launch application message.
- Exit an application on your iPhone during operation.

If the black screen appears, press the **Home** button to display the Home screen.

- ❑ If you start up a video playback application on your iPhone while the black screen is displayed, depending on the application, the video may appear on the AppRadio display.

Starting procedure

- 1 Press the Home button to display the Home screen.
- 2 Tap [Radio] on the Home screen.
- 3 Use the touch panel keys on the screen to control the radio. 

Reading the screen



- 1 **Band indicator**
- 2 **RDS status indicator**

Each indicator lights when in the following status.

AF

"AF" is set to "ON".
 ➔ For details, refer to *Tuning into alternative frequencies* on the next page.

TA

"TA" is set to "ON".
 ➔ For details, refer to *Receiving traffic announcements* on page 14.

TP

Traffic programme (TP) is received.

REG


"REG" is set to "ON".
 ➔ For details, refer to *Limiting stations to regional programming* on page 14.

CT

"CT" is set to "ON".
 ➔ For details, refer to *Receiving date and time data* on the next page.





PS

Programme service (PS) name is received.

- 3 **iPhone connection status indicator**
- 4 **Frequency indicator** 

Using the touch panel keys



Tap  or  to lower or raise frequencies in one-step increments. Hold down  or  and the tuner will scan frequencies until a broadcast strong enough for good reception is found.



Displays the radio text (when radio text is received).



Tapping the key repeatedly switches between the following bands:
FM1, FM2, FM3, MW or LW.



Stores the frequency to a preset channel.




Stores the strongest broadcast frequencies.




Inputs the frequency.




Displays the optional menu. 

Using functions


Entering a frequency

- 1 Tap  to switch to the frequency band you want to enter.

Using the radio

- 2 Tap .
- 3 Enter a frequency of your choice and tap [Enter].

Storing the frequencies to a preset channel

- 1 Adjust to a frequency you want to register.
- 2 Tap .
- 3 Tap the channel of the frequency you want to register.

Storing the strongest broadcast frequencies

This function automatically assigns frequencies with good reception to the preset channels in the selected band.

You can update six channels in each band. Up to 18 channels in the same band can be updated at one time.

- Storing broadcast frequencies may replace broadcast frequencies you have already saved.
- The lowest frequency is registered for channels that could not be registered automatically.

- Tap .

Recalling broadcast frequencies

- Tap any frequency on the preset channel keys.

Preset channel keys



Using radio text

This tuner can display radio text data transmitted by RDS stations, such as station information, the title of the currently broadcast song and the name of the artist.

- When no radio text is received, "No Text" is displayed.

- Tap .

RDS functions

The functions related to RDS (Radio Data System) are available only in areas with FM stations broadcasting RDS signals. Even if this product is receiving an RDS station, not all the functions related with RDS will be available. You can make the settings for the RDS function on the optional menu.

Receiving date and time data

You can automatically set the time information sent from the broadcasting station as the time on this product. (CT function)

- 1 Tap  to open the optional menu.

- 2 Tap [CT].

Each tap of [CT] changes the setting as follows:

- **OFF** (default):
Turns off CT function.
- **ON**
Turns on CT function.

Tuning into alternative frequencies

You can select to enable or disable the AF (Alternative frequency) function.

If you are listening to a broadcast and the reception becomes weak or there are other problems, this product will automatically search for a different station in the same network that is broadcasting a stronger signal.

- 1 Tap  to open the optional menu.

- 2 Tap [AF].

Each tap of [AF] changes the setting as follows:

- **ON** (default):
Turns on **AF** function.
- **OFF**:
Turns off **AF** function.

Limiting stations to regional programming

When AF is used to automatically retune frequencies, the regional (**REG**) function limits the selection to stations broadcasting regional programmes.

1 Tap [F] to open the optional menu.

2 Tap [REG].

Each tap of [REG] changes the setting as follows:

- **ON** (default):
Turns on **REG** function.
- **OFF**:
Turns off **REG** function.

Receiving traffic announcements

TA (traffic announcement standby) lets you receive traffic announcements automatically, no matter what source you are listening to. TA can be activated for both a TP station (a station that broadcasts traffic information) or another enhanced network's TP station (a station carrying information that cross-references TP stations).

1 Tap [F] to open the optional menu.

2 Tap [TA].

Each tap of [TA] changes the setting as follows:

- **OFF** (default):
Turns off **TA** function.
- **ON**:
Turns on **TA** function.

Setting the volume for traffic announcements

- **Use the Volume (+/-) button to adjust the TA volume when a traffic announcement begins.**

The newly set volume is stored in memory and recalled for subsequent traffic announcements.

Searching for an RDS station by PTY information

You can search for general types of broadcasting programmes.

- ➔ For details, refer to *PTY list* on the next page.

1 Tap [F] to open the optional menu.

2 Tap [PTY List].

3 Scroll through the list and tap the programme type you want to search.

The tuner searches for a station broadcasting that programme type.

- The programmes of some stations may differ from that indicated by the transmitted PTY.
- If no station is broadcasting the type of programme you searched for, the tuner returns to the original station.

Using the radio

PTY list

Specific	Type of programme
News	News
Affairs	Current affairs
Info	General information and advice
Sports	Sports
Education	Educational programmes
Drama	All radio plays and serials
Culture	National or regional culture
Science	Nature, science and technology
Variety	Light entertainment
Pop	Popular music
Rock	Contemporary modern music
Easy	Easy listening music
Light	Light classical music
Classical	Serious classical music
Other	Non categorised music
Weather	Weather reports/meteorological information
Finance	Stock market reports, commerce, trading, etc.
Children	Children's
Social	Social affairs
Religion	Religion affairs or services
Phone In	Phone In
Travel	Travel programmes, not for announcements about traffic problems
Leisure	Hobbies and recreational activities
Jazz	Jazz
Country	Country music
Nation	National music
Oldies	Oldies music, golden oldies
Folk	Folk music
Document	Documentaries



Starting procedure

1 Connect your iPhone.

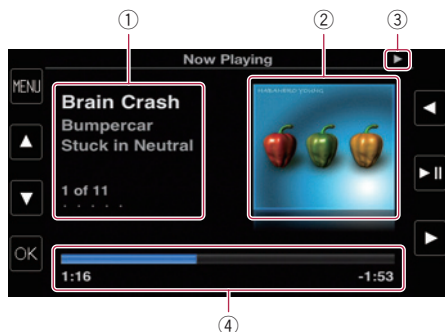
The launch application message appears.

2 Press the Home button to display the Home screen.

3 Tap [iPod] on the Home screen.

4 Tap or to select an item and tap to complete the selection. When a track is selected, the playback screen is displayed.

Reading the screen



① Current song (episode) information

Following informations are displayed:

- Song title (episode)
- Artist name (podcast title)
- Album title (release date)
- Song (episode) number
- The information in brackets is displayed when a podcast is played.

② Album artwork

③ Playback condition indicator

④ Play time



- The screen display may vary according to the iOS version. 

Using the touch panel keys



- Displays the list screen.
- When the list screen is displayed, displays the previous list.



In the list screen, use  or  to select the song you want to listen to.








Selects the highlighted item in the list screen.

- Selecting a song starts playback.
- Selecting a category displays the category list.



Tapping the key switches between playback and pause.



Tapping  key skips to the start of the next song. Tapping  once skips to the start of the current song. Tapping  twice quickly will skip to the previous song. Touching and holding  or  performs fast reverse or fast forward.



Using hands-free phoning

CAUTION

For your safety, avoid talking on the phone as much as possible while driving.

You can control Bluetooth connection of the iPhone, and make a call with incoming or outgoing call histories, transferred phone book, or dials.

To connect using the hands-free phoning function, you must first use the iPhone to pair this product with the iPhone.

For details about the connectivity with the devices featuring Bluetooth wireless technology, refer to the information on our website.

Registering and connecting an iPhone

- For details on the iPhone operating procedures, refer to the iPhone User Guide.
- Before registration, make sure that "Bluetooth" in the optional menu is set to "ON".
- Up to eight iPhones can be paired with this product. If the entries reach the maximum number, a new entry will overwrite the oldest one.

● Use the Bluetooth setting in the iPhone to pair this product with iPhone.

After completing pairing, Bluetooth connection starts.

- The device name is "AppRadio".
- The default password (PIN code) is "0000".

Connecting a registered iPhone manually

1 Disconnect the Bluetooth connection if this product is connected to the iPhone via Bluetooth wireless technology.

2 Activate the Bluetooth wireless technology on your iPhone.

3 Tap the name of the iPhone that you want to connect.


4 Tap .

Disconnecting your iPhone

1 Tap [Phone] on the Home screen.

2 Tap  to open the optional menu.

3 Tap [Bluetooth] to set Bluetooth function to "OFF".

- To temporarily disconnect Bluetooth connection, tap .
- When "Auto Connect" in the Bluetooth optional menu is set to "ON", or the Bluetooth auto connect function for the iPhone is enabled, Bluetooth may automatically start up connection again after disconnection.

Deleting a registered iPhone

1 Disconnect the Bluetooth connection if this product is connected to the iPhone via Bluetooth wireless technology.

2 Tap the name of the iPhone that you want to delete.

3 Tap .

The iPhone is deleted.

Basic operation of hands-free phoning

The basic operations when using the hands-free phoning function are described below.

Using the touch panel keys



Inputs the dial number.



- Initiates a call.
- When there is an incoming call, connects the call.



- Disconnects a call.
- When a call is being placed, cancels the call.
- When there is an incoming call, rejects the call.



Each tap of the key switches between phone audio output from the speakers and output from the iPhone.



Each tap of the key turns the microphone on and off.



When the list screen appears, the previous list is displayed.



Displays the optional menu.

Adjusting the phone volume

During the hands-free phoning, you can adjust the phone volume by using the **Volume (+/-)** button when you are talking. The ring tone volume also can be adjusted while the phone rings.

Making a phone call

You can make a phone call in many different ways.

Direct dialling

- 1 Tap

- 2 Tap the number keys to enter the phone number.

- If you tap , the entered number is deleted one digit at a time from the end of the number.
- If you tap **[Clear]**, the entered number is cleared.

- 3 Tap

Dialling starts.

- 4 Tap to end the call.

Calling a number in the phone book

You can select and call a contact from the phone book entries transferred to this product.

- Before using this function, you need to transfer the phone book entries stored in your iPhone to this product.
- ➔ For details, refer to *Transferring the phone book* on page 20.

- 1 Tap **[Phone book]**.

- 2 Tap the desired name on the list.

Dialling starts.

- 3 Tap to end the call.

Dialling from the history

The most recent calls made (dialled), received and missed are stored in the call history list. You can browse the call history list and call numbers from it.

- Each call history saves 100 calls per registered iPhone. If the number of calls exceeds 100, the oldest entry will be deleted.

- 1 Tap **[Received calls]**, **[Dialled calls]** or **[Missed calls]**.

The selected call history list appears.

- 2 Tap an entry on the list.

Dialling starts.

- 3 Tap to end the call.

Using hands-free phoning

Answering an incoming call


The system informs you that it is receiving a call by displaying a message and producing a ring sound.

- You can set the system to automatically answer incoming calls. If not set to automatically answer incoming calls, you will have to answer the calls manually.

➔ For details, refer to *Answering a call automatically* on this page.

- The registered name appears if the phone number of the received call is already registered in “**Phone book**”.

1 To answer an incoming call, tap .

- If you tap , an incoming call is rejected. The rejected call is recorded in the missed call history list.

2 Tap to end the call.

Using advanced functions

Stopping Bluetooth wave transmission

You can stop transmission of electric waves by turning off the Bluetooth function. If you do not use the Bluetooth wireless technology, we recommend selecting “**OFF**”.

1 Tap to open the optional menu.

2 Tap **[Bluetooth]**.

Each tap of **[Bluetooth]** changes the setting as follows:

- **ON** (default):
Turns on Bluetooth function.
- **OFF**:
Turns off Bluetooth function.

Setting the Bluetooth auto connect function

You can select to enable or disable the Bluetooth auto connect function.

1 Tap to open the optional menu.

2 Tap **[Auto Connect]**.

Each tap of **[Auto Connect]** changes the setting as follows:

- **ON** (default):
Activates the Bluetooth auto connect function.
- **OFF**:
Deactivates the Bluetooth auto connect function.

Answering a call automatically

You can select to enable or disable auto answer for handling incoming calls.

This product automatically answers incoming calls to the iPhone, so you can answer a call while driving without taking your hands off the steering wheel.

1 Tap to open the optional menu.

2 Tap **[Auto Answer]**.

Each tap of **[Auto Answer]** changes the setting as follows:

- **OFF** (default):
No automatic response. Respond manually.
- **ON**:
Answers incoming calls automatically.

Editing the password


You can change the password to be used for authentication on your iPhone. (Default is “0000”.)

- Four characters can be entered for a password.

1 Tap to open the optional menu.

2 Tap **[Passcode]**.

3 Enter the new password by using the keyboard.

- If you tap , the entered number is deleted one digit at a time from the end of the number.
- If you tap **[Clear]**, the entered password (PIN code) is cleared.

4 Tap **[Enter]**.

The password is changed.

Transferring the phone book

The phone book of an iPhone currently connected to this product via Bluetooth wireless technology can be transferred to the product.


- ❑ Up to 1 000 contacts can be transferred to this product.
Even if the number of the contacts to transfer does not exceed 1 000, the transfer will stop when the total number of the telephone numbers of the transferred contacts exceeds 4 000.
- ❑ The transferred phone book can be used after another iPhone is connected to this product. When you transfer the phone book from another iPhone, the previous phone book will be replaced with the new one.
- ❑ Depending on the iPhone that is connected to this product via Bluetooth technology, this product may not be able to display the phone book correctly. (Some characters may be garbled.)
- ❑ The transferred data cannot be edited on this product.

1 Connect the iPhone that has the phone book to transfer.

2 Tap **ii** to open the optional menu.

3 Tap [Phone Book Sync].

4 Tap [OK].

Transfer starts. It may take time depending on how many entries will be transferred. When the data is successfully imported, an import complete message is displayed and the phone function screen appears. 

Notes for hands-free phoning

General notes

The line-of-sight distance between this product and your iPhone must be 10 metres or less when sending and receiving voice and data via Bluetooth technology. However, the actual transmission distance may be shorter

than the estimated distance, depending on the usage environment.


Registration and connection

With some iPhones, phone book transfer may not work even though your iPhone is paired with this product. In that case, disconnect your iPhone, perform pairing again from your iPhone to this product, and then perform the phone book transfer.

Making and receiving calls

- You may hear a noise in the following situations:
 - When you answer the phone by using the button on the phone.
 - When the person on the other end of line hangs up the phone.
- If the person on the other end of the phone call cannot hear the conversation due to an echo, decrease the volume level for hands-free phoning. This may reduce the echo.
- The registered name appears if the phone number of the received call is already registered in the phone book. When one phone number is registered under different names, the name that comes first in the phone book is displayed.
- If the phone number of the received call is not registered in the phone book, the phone number of the received call appears.

The received call history and the dialled number history

- Calls made or editing performed only on your iPhone will not be reflected to the dialled number history or phone book in this product.
- You cannot make a call to the entry of an unknown user (no phone number) in the received call history. 

Setting rear view camera

The following two functions are available. The rear view camera feature requires a separately sold rear view camera (e.g. ND-BC5). (For details, consult your dealer.)

Rear view camera

This product features a function that automatically switches to the full-screen image of the rear view camera installed on your vehicle. When the gearstick is in the REVERSE (R) position, the screen automatically switches to full-screen rear view camera image.

Camera for Rear view mode

Rear view can be displayed at all times (e.g. when monitoring an attached trailer, etc.). Please be aware that with this setting, camera image is not resized to fit, and that a portion of what is seen by the camera is not viewable.



CAUTION

Check to make sure settings for rear view camera displays a mirror reversed image.

- Immediately verify whether the display changes to a rear view camera image when the gearstick is moved to REVERSE (R) from another position.
- When the screen changes to full-screen rear view camera image during normal driving, switch to the opposite setting in "Rear Camera".

1 Press the Home button to display the Home screen.

2 Tap  on the Home screen.

3 Tap [General].

4 Tap .

5 Tap [Rear Camera].

You can select the following polarity:

- **OFF** (default):
Select when the rear view camera is not connected.
- **Normal:**
Displays the rear view camera image without change.

Select "**Normal**" in the following case:

- When the rear view camera is connected to display a mirror reversed image.
- When the polarity of the connected lead is positive while the gearstick is in the REVERSE (R) position.

- **Normal(GND):**

Displays the rear view camera image without change.

Select "**Normal(GND)**" in the following case:

- When the rear view camera is connected to display a mirror reversed image.
- When the polarity of the connected lead is negative while the gearstick is in the REVERSE (R) position.

- **Mirror:**

Displays the rear view camera image in mirror reverse.

Select "**Mirror**" in the following case:

- When the rear view camera is connected to display a normal image.
- When the polarity of the connected lead is positive while the gearstick is in the REVERSE (R) position.


- **Mirror(GND):**

Displays the rear view camera image in mirror reverse.

Select "**Mirror(GND)**" in the following case:

- When the rear view camera is connected to display a normal image.
- When the polarity of the connected lead is negative while the gearstick is in the REVERSE (R) position.

Customising the audio settings

- 1 Press the Home button to display the Home screen.
- 2 Tap  on the Home screen.
- 3 Tap [Audio Settings].
The audio settings screen appears.
- 4 Tap the item that you want to change the setting.

Using the equaliser

The equaliser lets you adjust equalisation to match vehicle interior acoustic characteristics as desired.

Recalling equaliser curves

There are seven stored equaliser curves that you can easily recall at any time. Here is a list of the equaliser curves:

Equaliser curve

S.Bass (Super Bass) is a curve in which only low-pitched sound is boosted.

Powerful is a curve in which low-pitched and high-pitched sounds are boosted.

Natural is a curve in which low-pitched and high-pitched sounds are slightly boosted.

Vocal is a curve in which the midrange, which is the human vocal range, is boosted.

Flat is a flat curve in which nothing is boosted.

Custom1 is an adjusted equaliser curve that you create. A separate custom curve can be created for each source.

Custom2 is an adjusted equaliser curve that you create. If you select this curve, the effect is applied to all audio sources.



- When “Flat” is selected, no supplement or correction is made to the sound. This is useful to check the effect of the equaliser curves by switching alternatively between “Flat” and a set equaliser curve.

- 1 Display the audio settings screen.
- 2 Tap [EQ].
- 3 Tap the equaliser you want.

Customising the equaliser curves



You can adjust the currently selected equaliser curve setting as desired. Adjustments can be made with a 3-band parametric equaliser.

- **Band:**
You can select the equaliser band.
- **Freq:**
You can select which frequency to set as the centre frequency.
- **Level:**
You can select the decibel (dB) level of the selected EQ.
- **Q:**
You can select the details of the curve characteristics.

- 1 Display the audio settings screen.
- 2 Tap [EQ].
- 3 Tap one of the keys to select a curve that you want to use as the basis of customising.
- 4 Tap  or  to select the equaliser band to adjust.



You can select the following bands:

Low — Mid — High

- 5 Tap  or  to select the desired frequency.

You can select the following frequencies:

Low: 60Hz — 80Hz — 100Hz — 200Hz
Mid: 0.5kHz — 1kHz — 1.5kHz — 2.5kHz
High: 10kHz — 12.5kHz — 15kHz — 17.5kHz

- 6 Tap  or  to adjust the level of the equaliser band.

You can set the level of the equalisation band between “-15” and “15”.

Customising preferences

7 Tap or to select the desired Q factor.

You can select the following Q factors:

Low: 1 — 1.25 — 1.5 — 2

Mid: 0.5 — 0.75 — 1.0 — 1.25

- Q factor cannot be adjusted when you select “High”.
- If you tap [Reset], the setting values of equaliser curve is returned to the default settings.

Using balance adjustment

You can select a fader/balance setting that provides an ideal listening environment in all occupied seats.

1 Display the audio settings screen.

2 Tap [FAD BAL].

3 Tap or to adjust front/rear speaker balance.

You can set the front/rear speaker balance from “-24” to “+24”.

4 Tap or to adjust left/right speaker balance.

You can set the left/right speaker balance from “-24” to “+24”.

Setting subwoofer gain

1 Display the audio settings screen.

2 Tap [FAD BAL].

3 Tap or to adjust the subwoofer gain.

You can set the subwoofer gain from “-12” to “+12”. 

Customising the general settings

1 Press the Home button to display the Home screen.

2 Tap on the Home screen.

3 Tap [General].

The general settings screen appears.

4 Tap the item that you want to change the setting.

Display settings


1 Display the general settings screen.

2 Tap .

Make the following settings.

Rear Camera

You can switch the polarity of the rear view camera.

-  For details, refer to Chapter 7.
-

Screen OFF

You can set the time when the screen is blacked out.

- **OFF** (default):
The screen does not black out.
 - **10 sec:**
The screen is blacked out after 10 seconds.
 - **20 sec:**
The screen is blacked out after 20 seconds.
-



Dimmer

You can link the brightness of the screen to operation of the vehicle's headlights.

- **ON** (default):
Dims the screen when the vehicle's headlights are turned on.
 - **OFF:**
The screen is not dimmed even when the vehicle's headlights are turned on.
-



LCD brightness

You can adjust the brightness of display.

Each time you tap  or  increases or decreases the level. “5” to “1” is displayed as the level is increased or decreased.

Black level

You can adjust the black intensity.

Each time you tap  or  increases or decreases the level. “5” to “1” is displayed as the level is increased or decreased.

Safe Mode

For safety reasons, you can limit the functions that are available while your vehicle is in motion.

- **ON** (default):
Activates the safe mode function.
- **OFF**:
Deactivates the safe mode function.

General settings**1 Display the general settings screen.****2 Tap .**

Make the following settings.

Radio Region

You can set the radio reception area.

- **Other** (default):
Sets the radio reception area to "**Other**".
 When you use this product in Europe, Russia or Australia, select "**Other**".
- **North America**:
Sets the radio reception area to "**North America**".
 When you use this product in North America, select "**North America**".

Local

Local seek tuning allows you to tune in only those radio stations with sufficiently strong signals for good reception.

- **OFF** (default):
Turns off local seek tuning.
- **Local**:
Turns on local seek tuning.

GPS Check

You can check the reception status of GPS aerial.

- **Received**:
Indicates that a signal has been received by the GPS aerial.
- **No Signal**:
Indicates that no signal has been received by the GPS aerial.

System Reset

You can return settings or recorded content to the default or factory settings.

- For details, refer to *Returning this product to the initial state* on page 27.

Software Version

The current version is displayed.

- For details of software upgrades, refer to the information on our website.

Time settings**1 Display the general settings screen.****2 Tap .**

Make the following settings.

Clock mode



- **24Hr** (default):
Changes the display to 24-hour format.
- **12Hr**:
Changes the display to 12-hour format with am/pm.

Summer Time

You can set summer time. You can adjust the time difference from one hour in 15-minute decrements.

Changing the date settings**1 Display the general settings screen.****2 Tap .****3 Tap [Date].****4 Tap  or  to adjust the system's date.****Setting the time difference**

You can adjust the system's clock.

1 Display the general settings screen.**2 Tap .****3 Tap [Time].****4 Tap  or  to adjust the system's clock.****Subwoofer settings****1 Display the general settings screen.**

Customising preferences

2 Tap .

Make the following settings.


RCA Preout

You can set audio output to the rear speakers.

- **FULL** (default):
When no subwoofer is connected to the rear output, select "FULL".
- **Sub.W**:
When a subwoofer is connected to the rear output, select "Sub.W".

Sub.W LPF




You can set the cut off frequency of the subwoofer output.

Each time you tap  or  selects cut-off frequencies. You can select the following cut-off frequencies:

80 Hz — 120 Hz — 160 Hz



Selecting the language

You can set the languages used on the programme.




- 1 **Display the general settings screen.**
- 2 Tap .
- 3 Tap [Language].
- 4 Tap  or  to select the desired on-screen language.

Setting the keyboard layout

You can select the keyboard layout displayed on this product for text input in **Advanced App Mode**.

- Characters entered with the keyboard displayed on this product depend on the iPhone keyboard layout. If you want to change the characters that can be entered, tap  displayed on this product to change the iPhone keyboard layout while the keyboard is displayed.
- The iPhone keyboard layouts that can be selected by tapping  depends on the setting of Hardware Keyboard Layout of your iPhone.

For details on the iPhone operating procedures, refer to the iPhone User Guide.




- 1 **Display the general settings screen.**
- 2 Tap .
- 3 Tap [Keyboard].
- 4 Tap  or  to select the desired keyboard layout.


Source level adjustment settings

SLA (source level adjustment) lets you adjust the volume level of each source to prevent radical changes in volume when switching between sources.

You can adjust the volume level of the following sources:





- **Radio**
- **iPhone**
- **Handsfree**


- 1 **Display the general settings screen.**
- 2 Tap .
- 3 **Tap the source to adjust the source volume level.**
- 4 Tap  or  to select the desired setting value.

You can set the source volume level between "–6" and "+6". .

Assigning functions to the steering wheel



The steering wheel control settings allow you to assign functions to the steering wheel control of the vehicle.

- 1 Press the Home button to display the Home screen.
- 2 Tap  on the Home screen.
- 3 Tap [Steering Wheel Control].
- 4 Tap the button you want to assign functions to.
- 5 Tap  or  to select the function to assign.
- 6 Tap .

The screen for setting the voltage appears. Follow the instructions displayed in the screen. 

Changing the background image

You can change the background image to the other images preinstalled in this product.

- 1 Press the Home button to display the Home screen.
- 2 Tap  on the Home screen.
- 3 Tap [Change Background].
Each tap of [Change Background] switches the background image. 

Returning the AppRadio to the default or factory settings

You can return settings or recorded content to the default or factory settings. There are some methods to clear user data, and the situations and the cleared content are different for each method. For information regarding the content that is cleared by each method, see the following descriptions.

Method 1: Remove the vehicle battery

Method 2: Press the Reset button

The settings and registered content are reset to the default settings, except for the following settings and registered contents.

- Background image
 - Registered information in the paired hands-free device
 - Phone book data
- For details, refer to *Restoring the default setting* on this page.

Method 3: Tap [System Reset]

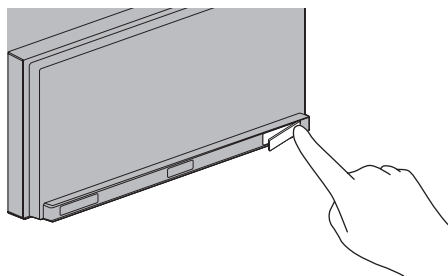
All the settings and registered content are reset to the default settings.

- For details, refer to *Returning this product to the initial state* on this page.

Restoring the default setting

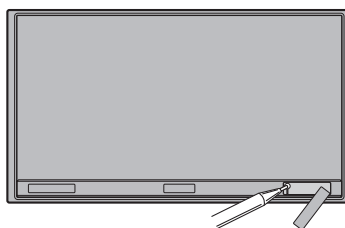
1 Open the cover of the microSD card slot.

Press the right side of the cover. The left side of the cover pops up slightly, so pull it out gently.



2 Press the Reset button.

Press the reset button on this product with a pointed object such as the tip of a pen.



Returning this product to the initial state

Resets various settings registered to this product and restores them to the default or factory settings.

1 Press the Home button to display the Home screen.

2 Tap on the Home screen.

3 Tap [General].

4 Tap .

5 Tap [System Reset].

6 Tap [OK]. .

Appendix

Troubleshooting

If you have problems operating this product, refer to this section. The most common problems are listed below, along with likely causes and solutions. If a solution to your problem cannot be found here, contact your dealer or the nearest authorised Pioneer service facility.

Problems with this product

Symptom	Cause	Action (Reference)
The power doesn't turn on. This product doesn't operate.	Leads and connectors are incorrectly connected.	Confirm once more that all connections are correct.
	The fuse is blown.	Rectify the reason for the fuse blowing, then replace the fuse. Be very sure to install a correct fuse with the same rating.
	Noise and other factors are causing the built-in microprocessor to operate incorrectly.	Press the Reset button.
The screen is too bright.	Picture quality adjustment of the display is not correct.	Adjust the picture quality. (Page 23)
The display is very dim.	The vehicle's light is turned on, and " Dimmer " is selected on " ON ".	Set " Dimmer " to " OFF ". (Page 23)
	Picture quality adjustment of the display is not correct.	Adjust the picture quality. (Page 23)
No sounds of audio source are produced. The volume level will not rise.	The volume level is low.	Adjust the volume level.
	The mute is on.	Turn the mute off.
	A speaker lead is disconnected.	Check the connection.
The person on the other end of the phone call cannot hear the conversation due to an echo.	The voice from the person on the other end of the phone call is output from the speakers and then picked up by the microphone again, creating an echo.	Use the following methods to reduce the echo: —Lower the volume on the receiver —Have both parties pause slightly before speaking
There's no picture.	The handbrake cord is not connected.	Connect the handbrake cord, and apply the handbrake.
	The handbrake is not applied.	Connect the handbrake cord, and apply the handbrake.
	The screen is turned off.	<ul style="list-style-type: none"> • Touch anywhere on the screen to turn it back on. • Set "Screen OFF" to "OFF". (Page 23)
Nothing is displayed and the touch panel keys cannot be used.	The setting for the rear view camera is incorrect.	Select the appropriate setting for the rear view camera.
	The gearstick was placed in [R] when the rear view camera was not connected.	Select the correct polarity setting for " Rear Camera ". (Page 23)

Appendix

Symptom	Cause	Action (Reference)
There is no GPS signal.	The GPS aerial is in an unsuitable location.	The quality of signals from the GPS satellites is poor, causing reduced positioning accuracy. Check the GPS signal reception and the position of the GPS aerial if necessary.
	Obstacles are blocking signals from the satellites.	The quality of signals from the GPS satellites is poor, causing reduced positioning accuracy. Check the GPS signal reception and the position of the GPS aerial if necessary, or continue driving until reception improves. Keep the aerial clean.
	The position of satellites relative to your vehicle is inadequate.	The quality of signals from the GPS satellites is poor, causing reduced positioning accuracy. Continue driving until reception improves.
	Signals from the GPS satellites have been modified to reduce accuracy. (GPS satellites are operated by the US Department of Defense, and the US government reserves the right to distort positioning data for military reasons. This may lead to greater positioning errors.)	The quality of signals from the GPS satellites is poor, causing reduced positioning accuracy. Continue driving until reception improves.
	If a vehicle phone or mobile phone is used near the GPS aerial, GPS reception may be lost temporarily.	The quality of signals from the GPS satellites is poor, causing reduced positioning accuracy. When using a mobile phone, keep the aerial of the mobile phone away from the GPS aerial.
	Something covers the GPS aerial.	Do not cover the GPS aerial with spray paint or vehicle wax, because this may block the reception of GPS signals. Snow buildup can also degrade the signals.

Problems with the audio screen

Symptom	Cause	Action (Reference)
iPhone cannot be operated.	The iPhone is frozen.	Reconnect the iPhone with the iPhone cable.
	An error has occurred.	<ul style="list-style-type: none"> • Reconnect the iPhone with the iPhone cable. • Press the Reset button.

Problems with the phone screen

Symptom	Cause	Action (Reference)
Dialling is not possible because the touch panel keys for dialling are inactive.	Your phone is out of range for service.	Retry after re-entering the range for service.
	The connection between the iPhone and this product cannot be established now.	Perform the connection process.

Appendix

Problems with Advanced App Mode screen

Symptom	Cause	Action (Reference)
A black screen appears.	[Ignore] was tapped in the launch application message.	Follow the message to launch AppRadio app .
	The application was exited on the iPhone during operation.	Press the Home button to display the Home screen.
A message urging reconnection is displayed.	The iPhone was connected to this product with the lock engaged.	Unlock the iPhone and reconnect.
	Your installed iOS version is old.	Upgrade to a newer iOS version.
	The connected iPhone is not compatible with this product.	Connect an iPhone that is compatible with this product.
	AppRadio app has not been installed in your iPhone.	Install AppRadio app .



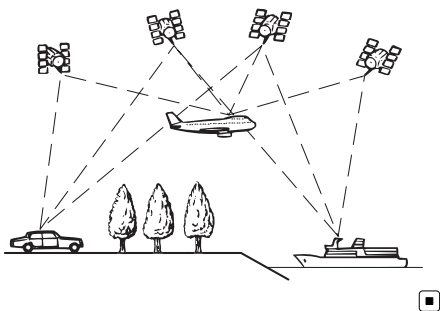
Appendix

Positioning technology

Positioning by GPS

The Global Positioning System (GPS) uses a network of satellites orbiting the Earth. Each of the satellites, which orbit at a height of 21 000 km, continually broadcasts radio signals giving time and position information. This ensures that signals from at least three can be picked up from any open area on the earth's surface.

The accuracy of the GPS information depends on how good the reception is. When the signals are strong and reception is good, GPS can determine latitude, longitude and altitude for accurate positioning in three dimensions. But if signal quality is poor, only two dimensions, latitude and longitude, can be obtained and positioning errors are somewhat greater.



Handling large errors

Positioning errors are kept to a minimum by combining GPS, dead reckoning and map matching. However, in some situations, these functions may not work properly, and the error may become bigger.

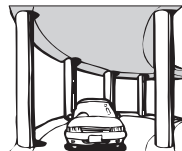
When positioning by GPS is impossible

- GPS positioning is disabled if signals cannot be received from more than two GPS satellites.

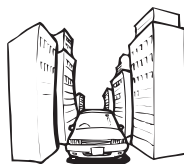
- In some driving conditions, signals from GPS satellites may not reach your vehicle. In this case, it is impossible for the system to use GPS positioning.



In tunnels or enclosed parking garages



Under elevated roads or similar structures



When driving among high buildings



When driving through a dense forest or tall trees

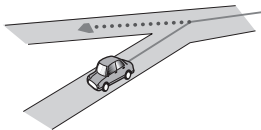
- If a car phone or mobile phone is used near the GPS aerial, GPS reception may be lost temporarily.
- Do not cover the GPS aerial with spray paint or car wax, because this may block the reception of GPS signals. Snow buildup can also degrade the signals, so keep the aerial clear.
- ❑ If a GPS signal has not been received for a long time, your vehicle's actual position and the current position mark on the map may diverge considerably or may not be updated. In such case, once GPS reception is restored, accuracy will be recovered.

Conditions likely to cause noticeable positioning errors

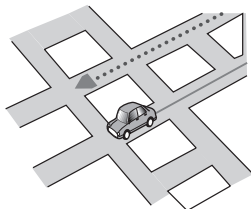
For various reasons, such as the state of the road you are travelling on and the reception status of the GPS signal, the actual position of your vehicle may differ from the position displayed on the map screen.

Appendix

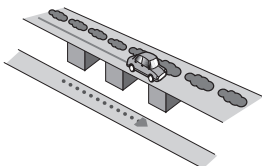
- If you make a slight turn.



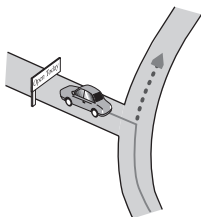
- If there is a parallel road.



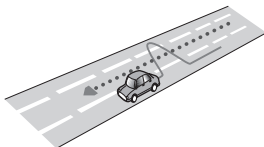
- If there is another road very nearby, such as in the case of an elevated motorway.



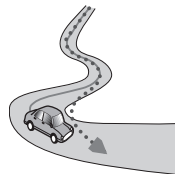
- If you take a recently opened road that is not on the map.



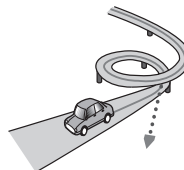
- If you drive in zigzags.



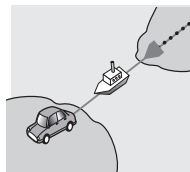
- If the road has a series of hairpin bends.



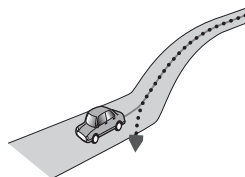
- If there is a loop or similar road configuration.



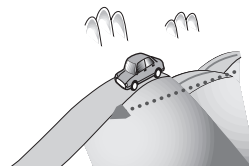
- If you take a ferry.



- If you are driving on a long, straight road or a gently curving road.

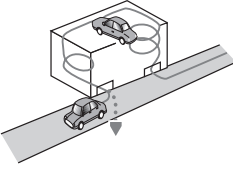


- If you are on a steep mountain road with many height changes.

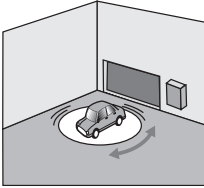


Appendix

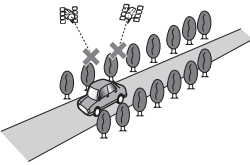
- If you enter or exit a multi-storey car park or similar structure using a spiral ramp.



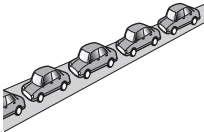
- If your vehicle is turned on a turntable or similar structure.



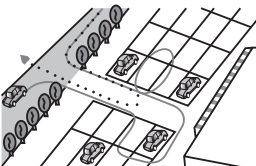
- If trees or other obstacles block the GPS signals for a considerable period.



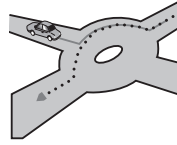
- If you drive very slowly, or in a start-and-stop manner, as in a traffic jam.



- If you join the road after driving around a large car park.



- When you drive around a roundabout.



- When starting driving immediately after starting the engine.

Appendix

Setting list

The customisable settings of this product are listed below. For details about changing each setting, refer to the page for that item.

Audio Settings

	Page
EQ	22
FAD BAL	23

General

Display settings

	Page
Rear Camera	21
Screen OFF	23
Dimmer	23
LCD brightness	23
Black level	23
Safe Mode	24

General settings

	Page
Radio Region	24
Local	24
GPS Check	24
System Reset	27
Software Version	24

Time settings

	Page
Date	24
Clock mode	24

	Page
Time	24
Summer Time	24

Subwoofer settings

	Page
RCA Preout	25
Sub.W LPF	25

Language settings

	Page
Language	25
Keyboard	25

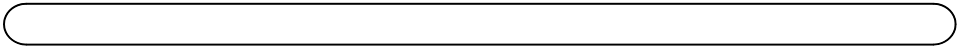
Source level adjustment settings

	Page
Radio	
iPhone	25
Handsfree	

Other settings

	Page
Steering Wheel Control	26
Change Background	26





PIONEER CORPORATION

1-1, Shin-ogura, Saiwai-ku, Kawasaki-shi,
Kanagawa 212-0031, JAPAN

PIONEER EUROPE NV

Haven 1087, Keetberglaan 1, B-9120 Melsele, Belgium/Belgique
TEL: (0) 3/570.05.11

PIONEER ELECTRONICS AUSTRALIA PTY. LTD.

5 Arco Lane, Heatherton, Victoria, 3202, Australia
TEL: (03) 9586-6300

PIONEER ELECTRONICS (USA) INC.

P.O. Box 1540, Long Beach, California 90801-1540, U.S.A.
TEL: (800) 421-1404

PIONEER ELECTRONICS ASIACENTRE PTE. LTD.

253 Alexandra Road, #04-01, Singapore 159936
TEL: 65-6472-7555

PIONEER ELECTRONICS OF CANADA, INC.

340 Ferrier Street, Unit 2, Markham, Ontario L3R 2Z5, Canada
TEL: 1-877-283-5901
TEL: 905-479-4411

PIONEER ELECTRONICS DE MEXICO, S.A. de C.V.

Bldv.Manuel Avila Camacho 138 10 piso
Col.Lomas de Chapultepec, Mexico, D.F. 11000
TEL: 55-9178-4270

先鋒股份有限公司

台北市內湖區瑞光路407號8樓
電話：886-(0)2-2657-3588

先鋒電子（香港）有限公司

香港九龍長沙灣道909號5樓
電話：852-2848-6488

© 2012 PIONEER CORPORATION.
All rights reserved.