

RTK Sports Navigation



User's Manual

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Chapter 1 Features and Specifications

1.1 RoyalTek BV-3200 PND features

The RoyalTek BV-3200 Portable Navigation Device is a powerful multifunction GPS/multimedia navigation and entertainment device.

- **3.5"with TSP (Touch Screen Panel)**
- **Sun light readable**
- **High sensitivity Broadcom GPS**
- **2.4GHz ANT+ communication**
- **Bluetooth audio communication**
- **MP3 player/Photo viewer**
- **Recharge and replace battery**
- **IPX7 water proof in out door application**
- **Installation available on bicycle/motorcycle/car.**

1.2 General Usage

1.2 General usage	
Environment	The BV-3200 is mainly intended for Outdoor GPS navigation, Bluetooth, and 2.4G ANT+ SPORT communication functionality.
Temperature	Operating Temperature : -10 °C to +55 °C Storage Temperature : -30 °C to +70 °C
Operation	The BV-3200 will be carried with bike player. The screen shall be 3.5" TFT LCD transfective type and sun-readable panel, in addition, it include big size flash memory to record navigation map data.
Language	English / Simplified Chinese / Traditional Chinese / German / French / Spanish / Italian / Japanese
Weight	190 g
Dimension	L: 105 mm, W: 81.9 mm, H: 26.2 mm

1.3 Specification

1.3.1 Chassis

Chassis	
Form Factor	Embedded GPS patch Antenna, Minimalist design
Material	ABS+PC with UV-proof.
Specifications	Chassis is made of sunlight/UV-proof material and coating. Meet IPX7 waterproof standard
Color	Green and Gray

1.3.2 System overview and description

Component	BV-3100 hardware specification
CPU	Samsung S3C2416@400MHz
Operation System	Windows CE 5.0 core version
GPS	Broadcom BCH-4750 host based chipset + external patch antenna. (Patch size : 20mm X 6mm)
TFT LCD	LG TFT, 3.5", 240x320 QVGA
SDRAM	Samsung 64/128 MB 1.8 V Mobile DDR
NAND Flash memory	Samsung MLC 2 GB
Battery	1800 mAh rechargeable and replaceable Li-ion
Power Management	Maxim 8662 and Atmel mega 48 MCU
I/O	MiniUSB Client connector MicroSD card
Button	Power button x 1

1.3.3 Display

Display	
Supplier	LG or Casio
Screen Type	TFT-LCD with touch panel
Screen Size	3.5"
Resolution	240 x 320 pixel QVGA
Color	65536 colours
Backlight	Most 6 LED backlight
Touch Panel	Yes

1.3.4 USB Function

USB	
USB Device Controller	Embedded in Samsung SC32416A USB 2.0
USB Connector	MiniUSB B-type connector for factory test, battery charging, and power supply

1.4 Button / I/O/Slot

Button / Slot	
Power button	Yes for power on and off
Mini-USB Slot	Yes for factory test, battery charging and power supply
Micro SD/MMC Slot	Yes for software update and data copy
External GPS Antenna Connector	No
Earphone Connector	No
External Power Jack	No

1.5 RF Function

1.5.1 GPS Specification

GPS receiver	
Module	Broadcom
Chipset	BCM-4750 host based
Firmware	Broadcom supplied with library and virtual com port driver
Channel	24
Time to Fix First time (Open sky)	Hot: 5 Sec Warm: 60 Sec Cold: 90 Sec
Accuracy	10M @ 90% on open sky
Protocol	NMEA v3.0
Baud Rate	38400 bps
Sensitivity	Acquisition: -157 dBm, Tracking : -162 dBm
Embedded Antenna	Patch Antenna; Dimension: 20mm x 6mm

1.5.2 2.4GHz Wireless Data Communication Specification

2.4GHz Wireless Data/Audio Transceiver	
Frequency band	2.4~2.5 GHz
Application	Short range ANT+ data communication
Air data rate	<2M bps
Tx power consumption	11.3mA@0dBm
Rx power consumption	13.5mA@ 2Mbps
Standby current	26uA

1.6 Power function

1.6.1 Power management

Power management	
Chipset	Maxim 8662
Efficiency	Totally 90% above
Protect function	a. Over Voltage protect b. Over Current Protect c. Power Reverse Protect.
Charger IC	Build in Li-Ion Battery charger
Backlight Driver	Yes
DC-Jack	No
Power input	Power supplied from USB
Power management	Atmel mega 48 MCU
Power Consumption	<450mA/3.3V typical on turning on default back light with GPS locked, 2.4G RF, and BT

Chapter 2 Getting Started

This chapter describes the hardware interface of the RoyalTek BV-3200 and its peripherals. Instructions for setting up the device and some basic system operations are also discussed.

2.1 Hardware overview

This section introduces the BV-3200 PND external features and hardware components.

2.1.1 Packing list

Standard package	1	Device, BV-3200
	2	Cradle
	3	USB cable
	4	AC adapter
	5	Quick Start Guide
	6	User Manual CD
	7	Warranty Statement Card(Optional Document)
Motorcycle	1	Handlebar base accessories
	2	Double-socket arm
	3	Knob
	4	Base Plate
Bike	1	Bike mount
Car	1	Car mount
	2	Car Charger

2.2 Basic Operation, Knowing your BV-3200

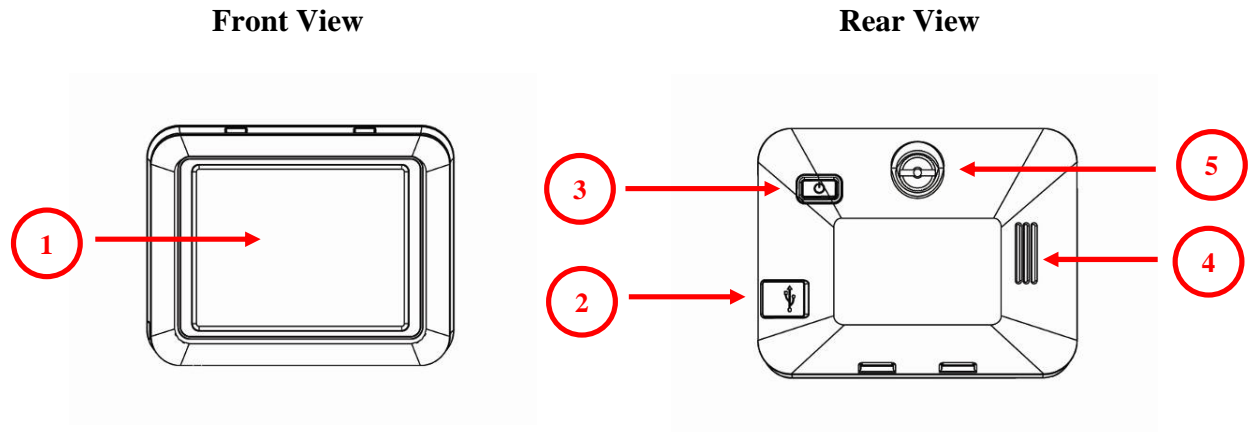
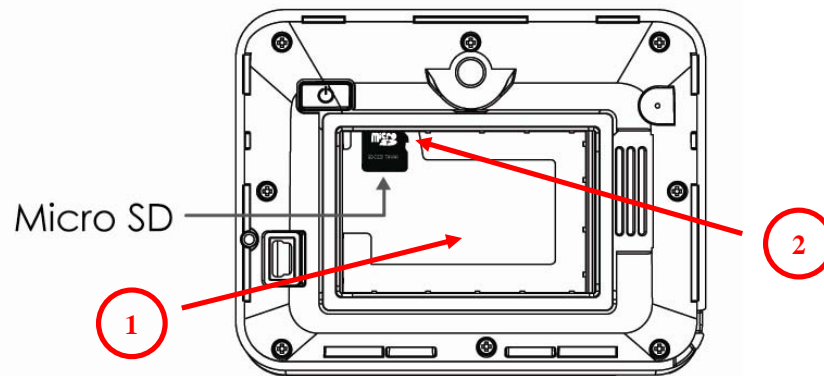


Table 1: Function controls

NO	Function	Description
1	Touch Screen	Displays the applications, data, and map images.
2	USB Port/Docking connector	Mini-USB connector serves as the power connector for charging the device or as the dock for uploading files from computers.
3	Power Button	Long press 5 seconds to turn on/off the PND.
4	Speaker	Emits system sounds.
5	Coin-Plug	To tighten the rear cover.

Rear View (without rear cover)



	Component	Description
1	Battery Slot	Put the battery on the slot, before use the device.
2	Micro SD slot	Accepts Micro SD storage cards, allowing you use audio and image files stored in it for use with internal applications

Assembly your BV-3200:

1. Put the battery on your BV-3200
2. Insert the Battery in your BV-3200 (Photo 1-1)
3. Put on the rear cover on your BV-3200 (Photo 1-2)
4. Fix the lock button

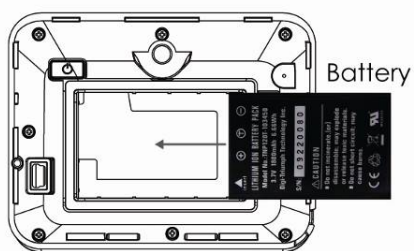


Photo 1-1

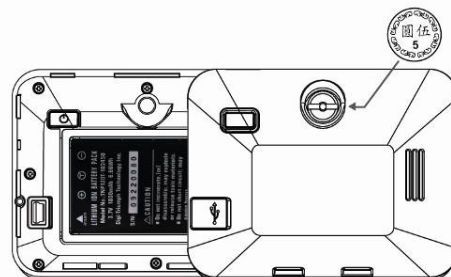


Photo 1-2

2.3 Starting Operation on your bicycle

To Install the U-Bolt and Handlebar bas:

1. Place the U-Bolt around the handlebar, and thread the ends through the handlebar base. (Photo 2-1)
2. Tighten the nuts to secure the base. Do not over tighten.
3. Press down the cradle on the mount. (Photo 2-2)

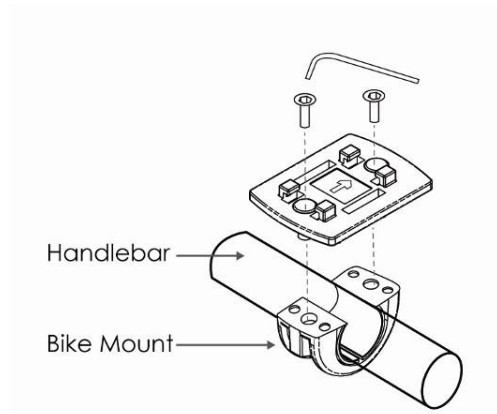


Photo 2-1

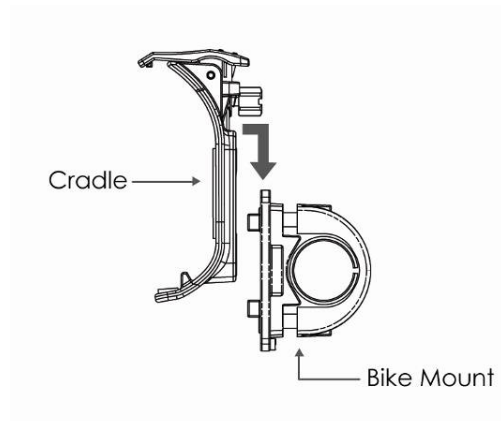


Photo 2-2

Install the BV-3200 in the Cradle:

1. Flip the lever up
2. Place the BV-3200 in to the cradle, and flip the lever down.(Photo 2-3)
3. Tighten the security screw.

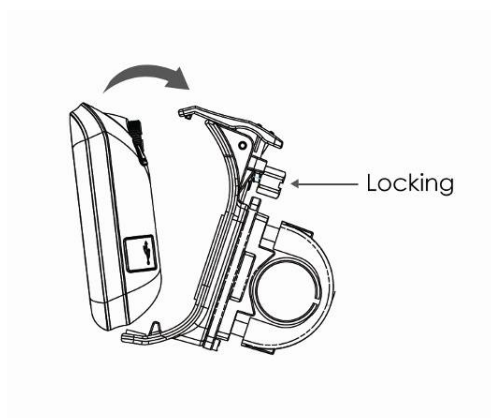


Photo 2-3

2.4 Starting Operation on your Motorcycle.

Install the U-Bolt ,Holder and Handlebar base:

1. Place the U-Bolt and the holder around the handlebar, and thread the ends through the handlebar base. (Photo 3-1)
2. Tighten the nuts to secure the base. Do not over tighten.

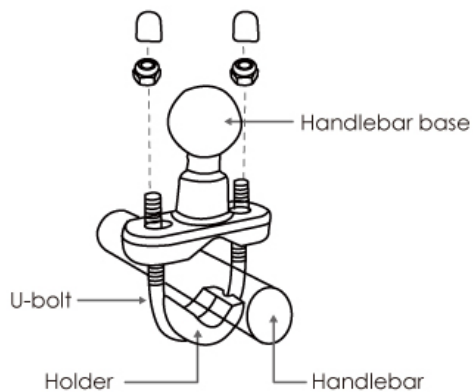


Photo 3-1

Fix the double-socket arm to knob:

1. Thread the bolt through double-socket arm to knob. (Photo 3-3)

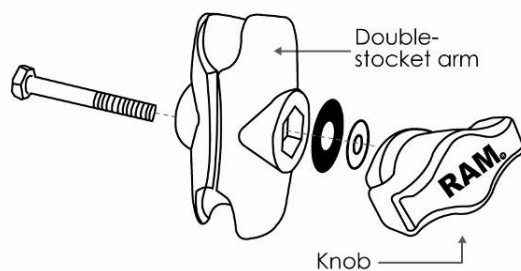


Photo 3-3

Attach the Base Plate to the BV-3200 Mount

1. Thread the M4 X 40 mm flathead bolts and nuts to attach the base plate to the BV-3200 cradle. (Photo 3-4)

Attach the Base Plate to the Handlebar Base

1. Align the Base of the handlebar base and the ball of the base plate with the double-socket arm. (Photo 3-5)
2. Tighten the knob slightly
3. Adjust for better viewing and operation.
4. Tighten the knob to secure the mount.

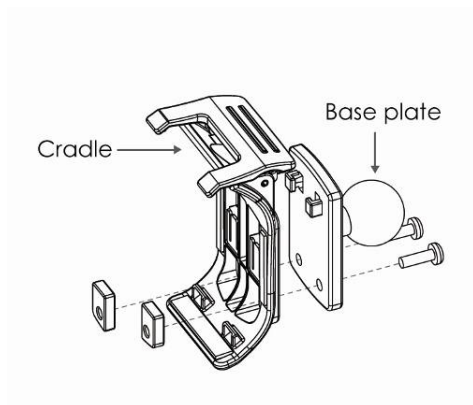


Photo 3-4

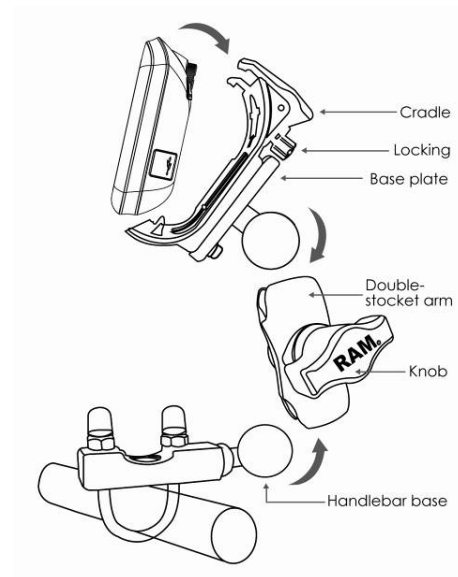


Photo 3-5

Install the BV-3200 in the Cradle

1. Flip the lever up
2. Place the BV-3200 in to the cradle, and flip the lever down.
3. Tighten the security screw.

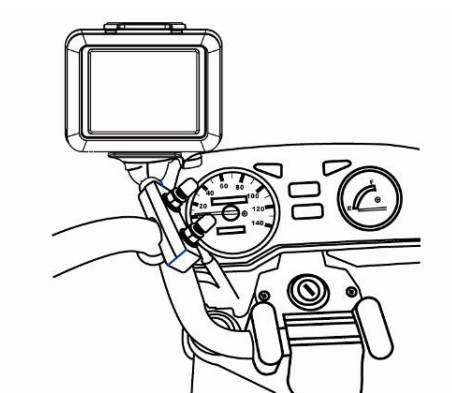


Photo 3-6

2.5 Starting Operation on your Automobile

Install the car mount on the selected area.

1. Press the suction cup of the car mount firmly against to the windshield.(Photo 4-1)
2. Press down the lever to fix the suction cup in place.
3. Adjust the angles of the arm to your proper viewing position. (Photo 4-2)

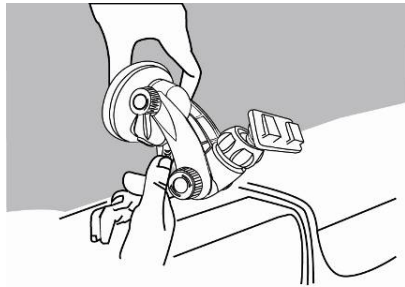


Photo 4-1

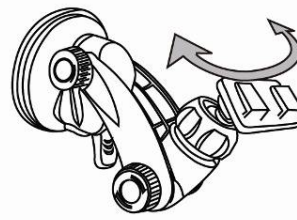


Photo 4-2

Install the BV-3200 in the Cradle

1. Press down the cradle on the mount.(Photo 4-3)
2. Flip the lever up
3. Place the BV-3200 in to the cradle, and flip the lever down. (Photo 4-4)
4. Tighten the security screw.

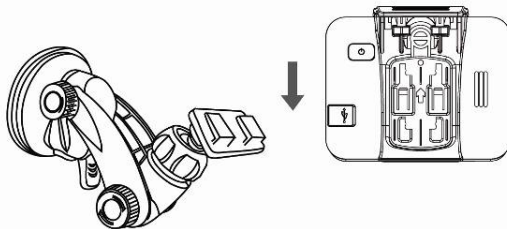


Photo 4-3

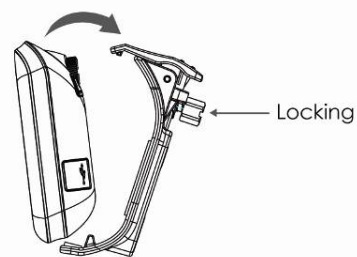


Photo 4-4

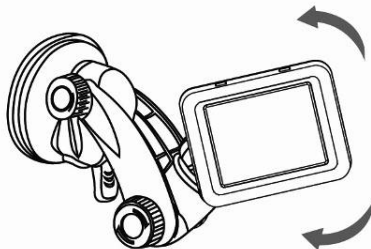


Photo 4-5

2.6 Charging your BV-3200 device

1. Plug the car charger to the 12 V outlet of your car and then connect the charger cable to the Mini USB port of the BV-3200.(Photo 5-1)
2. You now can let your BV-3200 have the continuous power by the car charger.

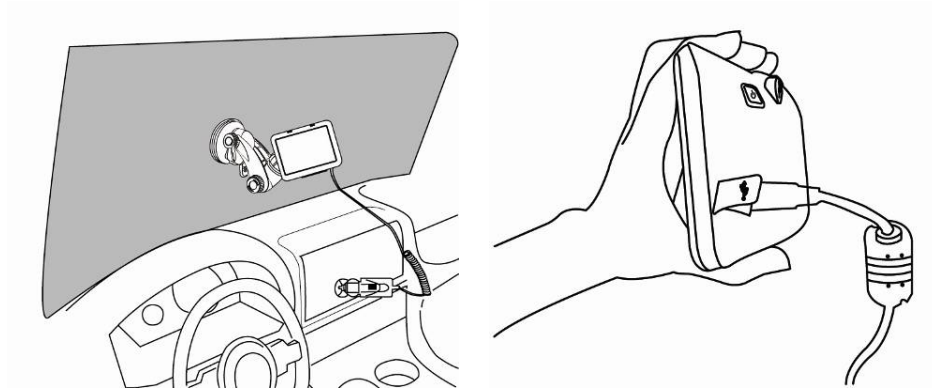


Photo 5-1

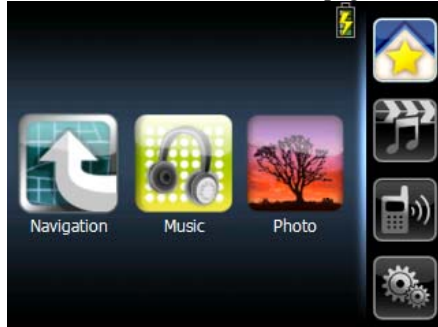
NOTE: Your car may be required to switch the vehicle ignition into the accessories position to power the cigarette lighter. Your BV-3200 will not charge with the ignition off.

Chapter 3 Using the BV-3200

3.1 BV-3200 Operating Basics

After fully charging the BV-3200 it is ready to be used. You can now turn it on and proceed to system settings configuration.

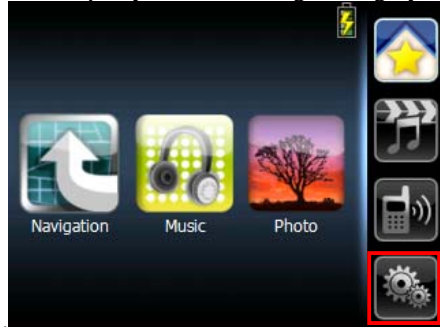
After turn on the device, main page will display. This is also referred to the Favorite page.



3.2 To configure system settings:

If you intend to start using your BV-3200 at once, we recommend that you configure the language and time zone settings first. The rest of the user preferences can be set up later.

1. Tap "System" in the right category bar



2. Tap "Language" on the System page.



3. It will display current language in central area.


4. To drag wheel scroll language tags.




5. To set the system time zone, tap "Time Zone" in System Menu.



6. Tap the  icon to set up the function of daylight saving s time.

a.  represent enable the function of daylight savings time.

b.  represent disable the function of daylight savings time.

7. Drag the Map to adjust the time zone.



3.3 Additional System settings

Other system settings can be used to view and adjust your device current preferences. Navigate from the System Menu.



3.4 Reset

- GPS Reset : When user wonder if GPS receiver perform properly or not .(ex : Change the region)
- Factory Reset : The factory reset function not only resets the operating system settings to default factory values, but also reset the GPS settings.
- Calibration : When the touch screen does not respond well, calibrate the screen of your device.

1 Tap the “Reset” icon in the System Menu.



2 Tap the “GPS Reset” icon in the Reset Menu.



- 3 Tap the “YES” to reset the GPS.



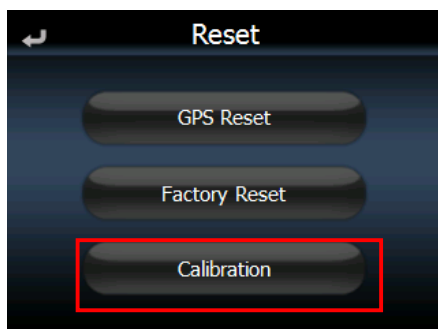
- 4 Tap the “Factory Reset” icon in the Reset Menu.



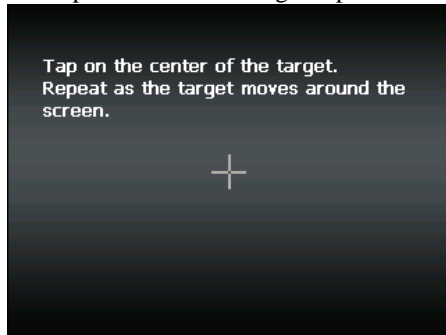
- 5 Tap the “YES” to do the Factory Reset.



- 6 Tap the “Calibration” icon in the Reset Menu.



- 7 Tap on the center of the target. Repeat as the target moves around the screen.



3.5 System Information

1. Tap the Sys Info. icon in the System Menu.



2. You can view the OS version, GPS firmware version and other system information..

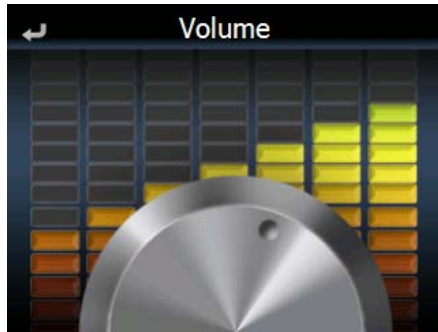


3.6 Volume

1. Tap the Volume icon in the System Menu.



1. To adjust the volume by drag the wheel.
2. Drag to left will become silent else will become noisy.

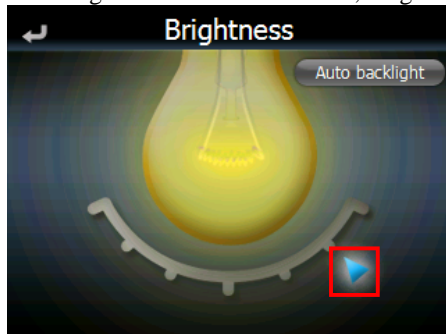


3.7 Backlight

1. Tap the Backlight icon in the System Menu.



2. Adjust the Backlight brightness by drag triangle icon.
3. Drag to left will become dark, drag to right will become light.



3.8 To set the favorite application category:

Otherwise, provide more organized and friendly application management interface for user organize their own favorite application category by drag-and-drop, the maximum number of favorite application shortcut is 6.

Add icon to the favorite page

1. Drag the icon to the category bar of favorite.



2. That will show the icon in favorite page.



Delete icon to the favorite page

1. Drag the icon from Favorite page to category bar and drop it. Confirm dialog will pop up, just tap "YES" to delete.



3.9 Power Supply

BV-3200 has a complete power management system, and enhances its standby time. In addition, it can make end-users more convenient to carry it for entertainment purpose, not only using in cars but also at home, outdoor activities.

3.10 Charge

While end-users use our standard car charger or AC adapter to charge BV-3200, the main screen would remind you.



Chapter 4 Entertainment

4.1. BV-3200 Multimedia Player

The BV-3200 is a fully capable multimedia player that can enhance your portable entertainment. In addition to its navigating function, the BV-3200 is also a mobile entertainment tool to let you enjoy digital music, view photos. These functions make the BV-3200 a true multimedia device.

To enable access of multimedia files from your device's mass storage folder and transfer these files, do either of the following:

- Using the USB cable to connect the device to your computer, and then use File Explorer to copy digital music and image files into the device's MyflashDisk folder.
- Using a compatible card reader, directly copy digital music and image files to the Micro SD card.

It is recommended to organize files into subfolders. These folders will make files easier to find and play.

4.2. Music player

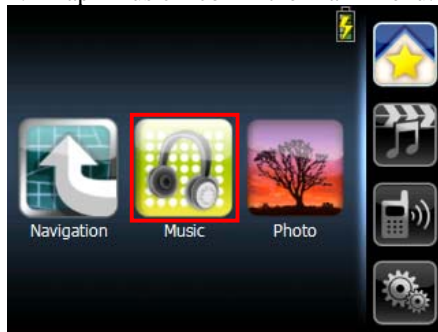
Enjoy your favorite music on the road. The program features:

- Support for MP3 files Constant bit rate only (Sampling Rate: 8 -48 KHz, Bit Rate: 8- 320 Kbps)
- Auto-scanning of supported files in the device's Micro SD card and Flash memory
- Separate volume control enabling you to adjust the playback sound level while retaining the volume level set for system sounds

Each sub directory containing compatible music files is treated as an individual playlist. For a more organized file search, it is advisable to named sub directories based on genre or listening preferences.

4.2.1. Using the Music player

1. Tap "Music" icon in the Main Menu.








NOTE: You can also enter the music player by right category bar.

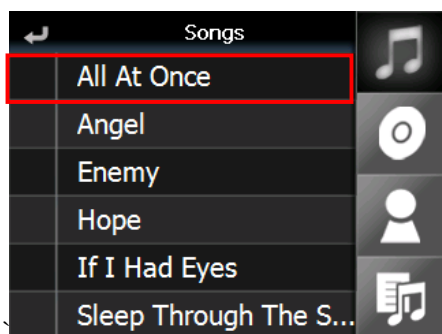
The MP3 player window below controls playback.



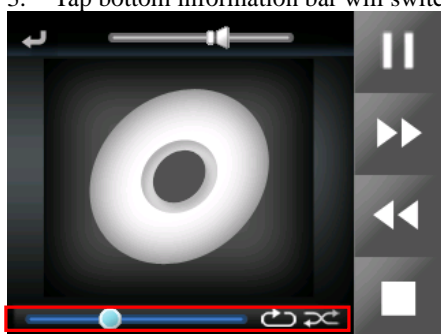
Table 4-2-1: MP3 player functions

NO	Function		
1		Return	Return to list page
2		Songs	List all song by alphabet
3		Album	List all albums by alphabet.
4		Artist	List all Artists by alphabet
5		Search	Current play list

2. Tap the song on the music list.



3. Tap bottom information bar will switch to song's progress.



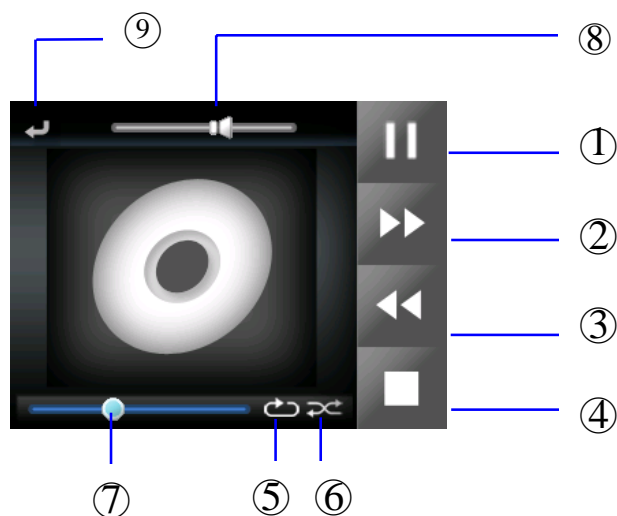











Table 4-2-2: Play sound functions

NO	Function		
1		Play/Pause	P/ay/Pause song
2		Forward	Forward to next song.
3		Previous	Reward to previous song
4		Stop	Stop music play.
5		Repeat	Repeat play songs.
6		Random	Random play songs.
7		Sound bar	To adjust the sound.
8		Bottom info. bar	No even: This place will scroll song's name and total play time. Tap: Tap this bar. Will switch to song's progress.
9		Return	Return to list page.

4.3. Photo Viewer

The BV-3200 has a great photo viewing option that makes it easy to share and view digital photos anywhere on the go. The program features:

- Support for JPEG files (Support Max. 500 photos)
- Auto-scanning of supported files in the device's Micro SD card & Flash disk
- Three viewing modes: Thumbnail, Full Screen, and Slide Show

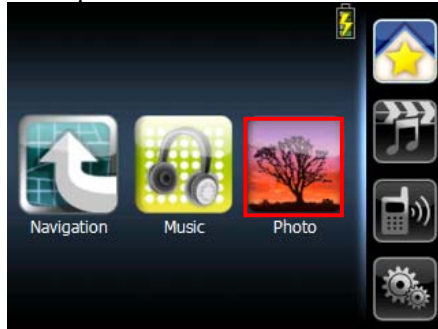
Each subdirectory can hold multiple images and be used as an individual album. For a more organized file search, it is advisable to sort image files into sub directories based on meaningful name or date. An example could be "summer vacation pictures" or "New baby" or "2005 Best."

4.3.1. Viewing files in Slide Show mode

You have the option to view images in a slide show much like viewing a Power- Point presentation in your computer. Images are adjusted to fit the entire display area and are shown in a 5-second interval.

4.3.2. Using the Photo Album

1. Tap "Photo" icon in the Main Menu.



2. Will list all thumbnails in SD card and store in PND mass storage & SD folder.
3. Drag all screen area will cause photo move to next or previous page



4. Tap specific thumbnail will enlarge thumbnail.



5. Tap the screen will cause control bar display

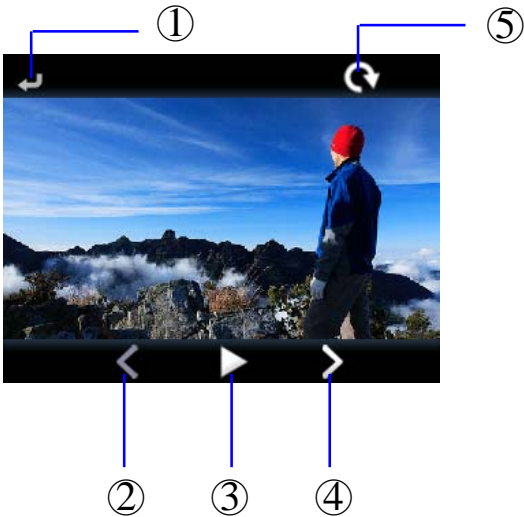







Table 4-3-1: Photo Album Viewer

NO	Function		
1		Return	Return to thumbnail page
2		Previous page	Display previous photo.
3		Auto Play mode	Auto play all photos.
4		Next page	Display next photo.
5		Rotate	Rotate photo

Chapter 5 Communications

5.1. BV-3200 Bluetooth

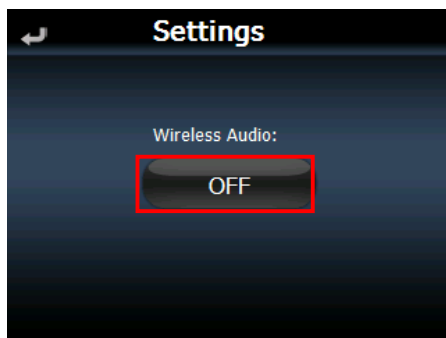
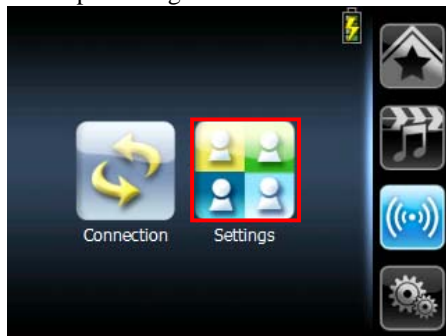
Once your Bluetooth-enabled Headset is paired with your BV-3200, you can enjoy listening to the music through the Bluetooth headset.

NOTE : Make sure the Bluetooth settings of your Bluetooth headset.

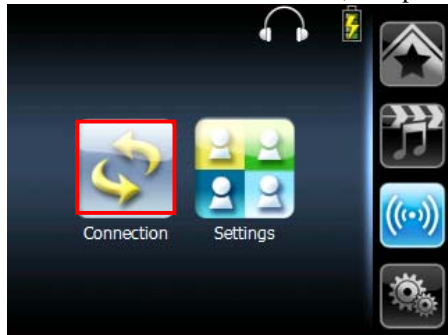
- The Bluetooth switch is set to “ON” or “enable”.

5.2. Bluetooth connection

1. Tap “Settings” to turn on Bluetooth function.



1. Back to “Communication” screen, and tap “Connection”



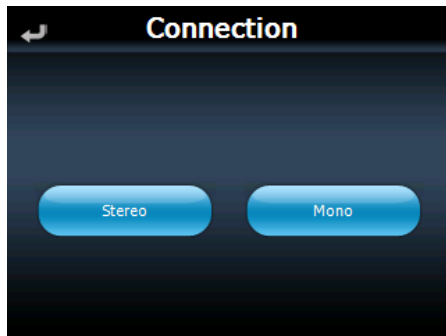
2. Tap “Search” to look for Bluetooth on of mobile phones, and



3. Choose one which you want to connect to, and tap “Connection”



4. Choose “Stereo” or “ Mono”



5. When the connection completes, the name of the connected device is displayed on the title bar of the “communications” screen.

NOTE : Bluetooth function has distance limitation. While the Bluetooth headset is away, and make Bluetooth function disconnect, BV-3200 would try to re-connect within 10 seconds.

Chapter 6 Troubleshooting and Maintenance

6.1. General troubleshooting

6.1.1. If your device does not respond, do a “hard reset.”

- To do a “hard reset,” Disconnect all cables, including the AC adapter, from your device.
By sliding the hard reset switch on the primary ON/OFF switch on the right side of the device from OFF to ON position then tap the power button.

6.1.2. Users can also perform a “system reset.”

- To do a “system reset,” in the Main menu, tap System, then tap System Info. This will allow you to do a factory reset (restore to default set- tings), reset the GPS and recalibrate the touch screen interface.

6.1.3. Screen responds slowly

- Make sure you have enough battery power.

6.1.4. Inaccurate response to taps.

- • Recalibrate the touch screen.

6.1.5. Connection Problems with PC.

- Make sure that the cable is securely plugged into the USB port on your computer and on the device. Connect the USB cable directly to your computer—do not run the cable through a USB hub.
- Reset your device before connecting the cable. Always disconnect your device before you restart your computer.

6.1.6. No GPS connection

- Make sure that the GPS antenna has a clear view of the sky.
- Note that the GPS reception can be affected by:
 - Bad weather
 - Dense overhead obstacles (e.g. trees and tall buildings)
 - Other wireless devices in the car

6.1.7. No sound coming from the device.

- Make sure mute is not selected for Volume in system settings. The built-in speaker turns off when the headphone jack is being used.

6.1.8. Can't I see my photos.

- Make sure you are using supported image formats JPG

6.1.9. Takes longer than normal time to get a GPS fix.

- If the previous GPS fix position was more than 500 km or 12 hours apart from your current position and time, it will also take significantly longer than the standard TTFF time to get a GPS fix. This is due to the nature of the GPS algorithm and rotational velocity between the satellites and planet Earth, and deemed normal.
- Perform a GPS reset in the main/system/system info menu to get a faster GPS fix.

6.1.10. Factory reset does mean a GPS reset.

- Yes. The Factory Reset function resets the OS settings to their default factory values and it will reset the GPS settings.

6.2. Maintenance

- Avoid exposing your device to direct sunlight or strong ultraviolet light for extended periods of time.
- - Do not drop your device or subject it to severe shock.
- Do not subject your device to sudden and severe temperature changes. This could cause moisture condensation inside the unit, which could damage your device. In the event of moisture condensation, allow the device to dry out completely before use.
- The screen surface can be easily scratched. Sharp objects may scratch the screen. You may use non-adhesive generic screen protectors designed specifically for use on portable devices with LCD panels to help protect the screen from minor scratches.
- Never clean your device with it powered on.
- Never use organic solvents such as benzene or paint thinner to clean your device. Use of these solvents can cause deformation or discoloration.
- Use a soft, clean, lint-free cloth to clean the display screen. Moistened LCD screen wipes could also be used as required.
- Never attempt to disassemble, repair or make any modifications to your device. Disassembly, modification or any attempt at repair could cause damage to your device and even bodily injury or property damage and will void any warranty.

6.2.1. Storage precautions

- Do not store your device anywhere it may be exposed to water or in conditions of high humidity.
- When the device is not in use for an extended period of time, bring it indoors and store it in cool dry area.

6.2.2. Accessories and repair precautions

- Only authorized accessories should be use with the device. The use of incompatible accessories could result in bodily injury and/or damage to the device.
- The use of unauthorized accessories will also void your warranty.
- Never attempt to disassemble, repair or make any modification to your device.