

SONY

3-753-481-21 (1)

GPS (Global Positioning System) Receiver

# IPS-360

## Operating Instructions

Before operating the unit, please read this manual thoroughly and retain it for future reference.

### PYXIS



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## WARNING

### INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the equipment with respect to the receiver.
- Move the equipment away from the receiver.
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4.

### Owner's Record

The model and the serial numbers are located at the rear, and the serial number in the battery compartment. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. IPS-360 Serial No. \_\_\_\_\_

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\*Use the  (for example, ) button in the section with the .

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## Introduction Features

### Capabilities of this unit

- You can check and store your present latitude and longitude.

POS (position) mode: see page 32 for reference.

- You can store the latitude/longitude data for 100 destination points.
- You can store the titles for the latitude/longitude data.
- The distance is displayed in miles, nautical miles or kilometers.
- The unit shows the precise time (UTC: Coordinated Universal Time or LOCAL: local time) based on the atomic clock in the GPS satellite.

**Note**  
For nautical and aeronautical navigation, use this unit only as a supplement to the navigation charts required by the relevant legislative body.

- You can track distance, direction, altitude and points you have passed.

TRACK mode: see page 39 for reference.

- You can check the distance and direction to your destination point.
- You can plan and store up to nine routes and destinations.
- You can check your absolute direction (the direction in which you are moving) and your absolute velocity (your speed).

NAV (navigation) mode: see page 42 for reference.

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## What is GPS (Global Positioning System)?

### What is GPS?

GPS is a satellite-based navigation system developed and maintained by the United States Department of Defense (DoD). When complete in 1993, the GPS constellation will consist of 24 satellites. The satellites transmit signals which include an identifying code for each satellite, accurate time information, and navigation data. The Sony GPS receiver automatically selects 4 satellites and determines your precise latitude, longitude, and altitude:

- anywhere in the world (at sea, on land, or in the air)
- at any time.
- in any kind of weather.
- with a position accuracy of 30 m to 100 m (98 ft to 328 ft); position accuracy is subject to DoD regulations.
- with an accuracy in time of 10<sup>-4</sup> seconds.

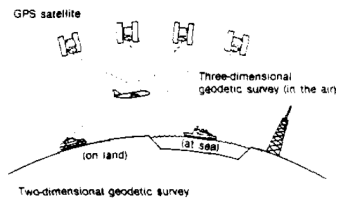
**WARNING:** GPS system signals are controlled, maintained and operated by the Department of Defense of the United States. Without notice, the DoD can change the characteristics of this signal, which will degrade the accuracy of this unit. Use Sony's IPS-360 at your own risk.

### How to determine your position with GPS

- GPS determines latitude, longitude and altitude by defining the whole earth as an ellipsoid which revolves on its axis. This system is called WGS (World Geodetic System) coordinate system.
- Latitude, longitude and altitude of a conventional world atlas are determined by a coordinate system in which the ellipsoids have different centers for each area.
- This unit displays the latitude and longitude determined by the WGS coordinate system which uses a single coordinate system for the world. Therefore, the latitude and longitude displayed in this unit may not be identical with those found in an atlas. (See page 22 "Setting latitude and longitude to a chart")
- GPS indicates the true bearing, not the compass (magnetic) bearing.

### GPS system

- GPS satellites
- 6 orbits x 4 satellites = 24 satellites (including spare satellites)
- Ground control station to track and control the GPS satellites
- GPS receiver



### GPS system specifications

Satellite altitude: About 20000 km  
Satellite orbit: About a 12-hour-cycle elliptical orbit

Signal format:  
P code signals are used for military purposes and C/A code signals are used for civilian purposes. The unit tunes itself to the C/A code signals.

### C/A code:

Frequency	1575.42 MHz
Clock	1.023 Mbps
Orbit data speed	50 bps
Signal strength	-160 dBw

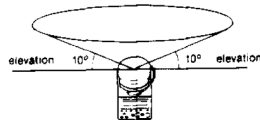
Modulation: Direct sequence

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## Precautions (important)

### Notes on receiving GPS Satellite Signals

- It is not possible to receive the GPS satellite signals indoors. Be sure to install the antenna outdoors, horizontally, with no obstructions. (See page 14 "Antenna connection".)
- GPS signal reception may become poor, when a GPS satellite moves low on the horizon (low elevation angle) or is obstructed by a building, etc.



### To Amplify Antenna Reception Use Care

It takes about 30 minutes for the unit to receive the data from the GPS satellites and determine the location when:

- you use the unit for the first time
- you have not used the unit for long time and the data in the memory has become "too old"
- you use the unit after you have moved a long distance (to abroad, for example) with this unit turned off.

In these cases, you have to initialize the unit before using the unit again.

### To initialize the unit, follow the steps below

- 1 Press the POWER button to turn on the unit.
- 2 Press the SET button.
- 3 Press the  $\Delta/\nabla$  buttons to select "INITIALIZE RCV." display.
- 4 Press the ENTER button.  
"CLEAR/RECALL" display appears.
- 5 Press the CLEAR button.  
The unit is now initialized.

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Features

Introduction

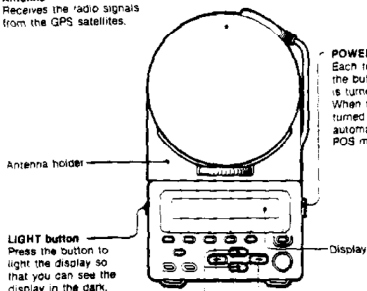
Precautions (important)

Introduction

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## Location and Function of Parts and Controls

**Antenna**  
Receives the radio signals from the GPS satellites.



Antenna holder

**LIGHT button**  
Press the button to light the display so that you can see the display in the dark. The light will switch itself off after 20 seconds, or press the button again to turn it off.

**POWER button**  
Each time you press the button, the power is turned on or off. When the power is turned on, the unit automatically enters POS mode (page 32).

Display

**(←) (→) cursor control buttons**  
Use these buttons to move the cursor to input or select.

**(Δ) (▽) character search buttons**  
Use these buttons to select the characters to input or to select the function.

**TRACK button**  
Press this button to enter TRACK mode (page 39).

**NAV (navigation) button**  
Press this button to enter NAV mode (page 42).

**POS button**  
Press this button to enter POS mode to display your present position (page 32).

**CLEAR button**  
Press this button to delete any unnecessary latitude/longitude data or titles or to initialize the receiver.

**RECALL button**  
If you make a mistake, press this button. The previous display will appear.

**EXTENSION display select button**  
In NAV and TRACK modes, press this button to select the graphic or character display (page 41, 54). In POS mode, date and time will be displayed (page 33).

**EDIT button**  
Press this button to enter the EDIT (latitude/longitude data editing) mode (page 60).

**SET button**  
Press this button to change the power saving function, clock display (world time or local time) selecting function, or distance display (kilometers, miles or nautical miles) selecting function.

**ENTER button**  
Press this button to enter the data or titles or to execute a command.

**MARK button**  
Press this button to store the latitude/longitude of your present position (page 33).

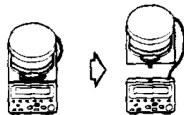
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## Preparation Antenna Connection

### Installing the Antenna manually

Using the extension antenna cable (supplied), you can install the antenna about 7 meters (23 ft) apart from the unit.

#### ● Disconnecting the antenna



#### ● Replacing the cord with the extension antenna cable (supplied)

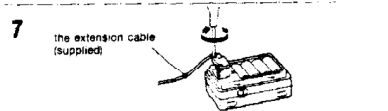
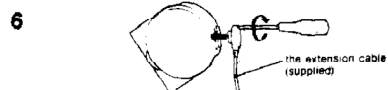
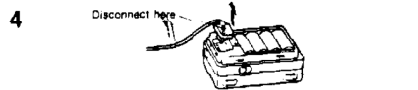
Make sure that the power is turned off.



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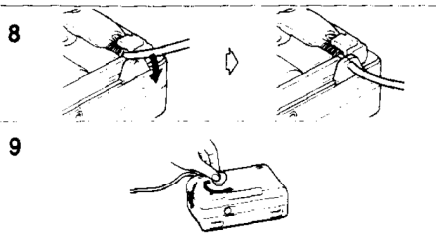


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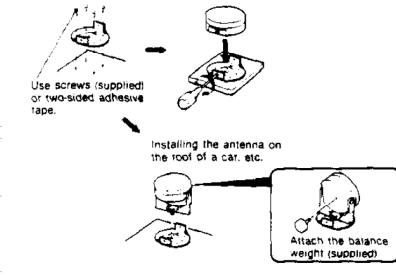
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### ● Installing the Antenna



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## Power Sources

### Operating the unit on DC 6 V

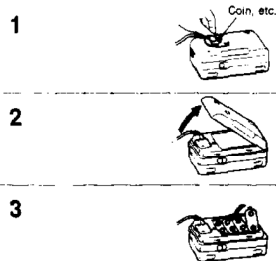
Battery	4 size AA (R6) alkaline batteries
Boat or car battery	Use the supplied power adaptor DCC-360P (for 12/24 V operation)

Use only Sony supplied accessories.

#### Notes

- The unit uses alkaline battery power to store the latitude/longitude data in memory. **Keep the alkaline batteries installed in the unit, even when operating the unit with a boat or car battery.**
- The memory in the receiver (antenna) is kept by a lithium battery. The battery life is about five years.

### How to insert the batteries

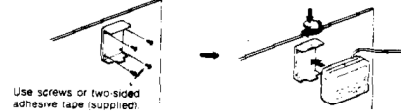


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### ● Installing the keyboard/display unit

Install the unit on the wall of a car (inside) or in a boat cabin, etc.

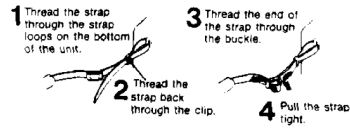


Use screws or two-sided adhesive tape (supplied).

#### Note

If the antenna is disconnected from the unit, "NO ANT. UNIT" appears in the display. The latitude and longitude of your present position will not appear. Make sure that the antenna cable is firmly connected during navigation.

### Attaching the shoulder strap

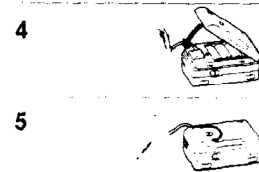


When carrying the unit, pass the shoulder strap around your neck or shoulder to prevent accidentally dropping the unit.

Antenna connection

Preparation

(Continued)



### If the voltage decreases during operation

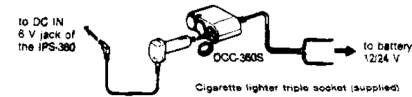
If the voltage becomes less than 4.0 V during operation, "BATTERY LOW" appears on the display, then after a while, "BATTERY EMPTY" appears. When you see "BATTERY LOW" display, turn off the power first, and replace the alkaline batteries with new ones.

#### Note

To prevent memory loss, insert the new batteries within 30 minutes of removing the old ones.



DCC-360P Cigarette lighter power adaptor (supplied)



Cigarette lighter triple socket (supplied)

Power Sources

Preparation

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