

**ICOM**

INSTRUCTION MANUAL

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GPS RECEIVER UNIT  
**GP-2000**

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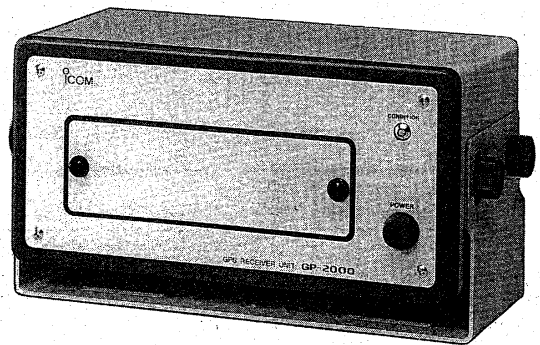
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**Icom Inc.**

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## IMPORTANT

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This receiver unit is a **SUPPLEMENTAL AID TO NAVIGATION ONLY** and is not intended to be a substitute for accurate and current nautical charts.

**READ THIS INSTRUCTION MANUAL CAREFULLY** before attempting to operate the receiver unit.

**SAVE THIS INSTRUCTION MANUAL** – This instruction manual contains important safety and operating instructions for the GP-2000.

Until all planned satellites have been launched, you may not be able to obtain continuous information with your GPS receiver depending on your area of operation and the time of day.

The GPS system is operated by the U.S. Government. Therefore, availability and accuracy are not guaranteed.

The GP-2000 may require more than 30 min. to output the first positioning data after power ON.

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## PRECAUTIONS

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**NEVER** connect the GP-2000 to an AC outlet. This will ruin the receiver unit.

**NEVER** let metal, wire or other objects touch any internal components in the receiver unit. Electric shock could occur.

**NEVER** place the receiver unit within the reach of children or infants.

**NEVER** expose the receiver unit to rain or any other liquids.

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## INTRODUCTION

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Thank you for purchasing the **GP-2000 GPS RECEIVER UNIT**. The **GP-2000** is designed as an optional unit for an Icom plotter or plotter/sounder such as the FP-100, FP-601 or VP-21 and has the following advanced features:

- Choice of map datums to match your chart.
- Ease of operation:  
Once you make all settings when first applying power, you may not need to adjust the unit again.
- 3 data output formats, RS-232C, RS-232C continuous output, and NMEA0183 are available. Even your personal computer can initialize and display data which the GP-2000 receives.

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## EXPLICIT DEFINITIONS

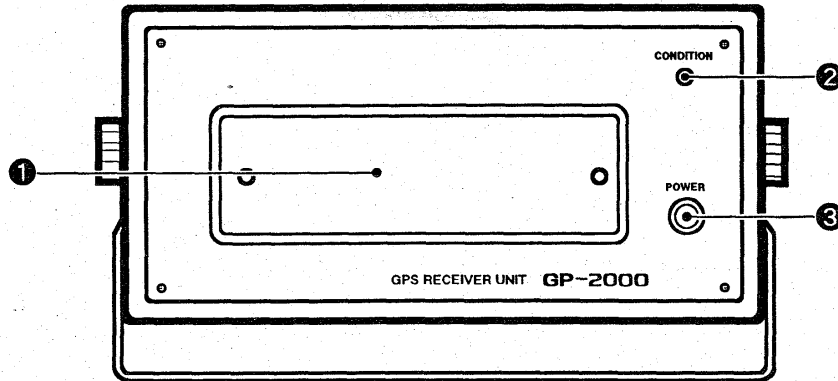
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The following explicit definitions apply to this instruction manual.

WORD	DEFINITION
<b>WARNING</b>	Personal injury, fire hazard or electric shock may occur.
<b>CAUTION</b>	Equipment damage may occur.
<b>NOTE</b>	If disregarded, inconvenience only. No personal injury, risk of fire or electric shock.

# 1 PANEL DESCRIPTION

## Front panel



### 1 HATCH COVER

Initial setting switches are located under this cover.

### 2 POWER INDICATOR [CONDITION]

Lights up in green while power is ON.

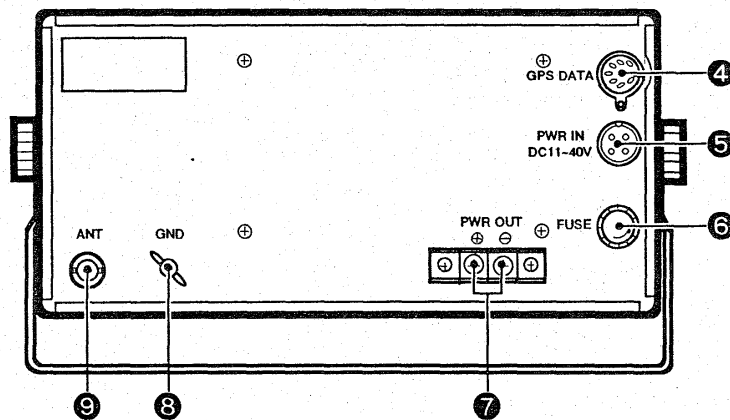
### 3 POWER SWITCH [POWER]

- Turns the power ON and OFF when no display device (such as a plotter) is connected.

- When a display device is connected, the ON/OFF condition of the GP-2000 is controlled by the display device.

- In this case, set this switch to the OFF position.

## Rear panel



### 4 GPS DATA SOCKET [GPS DATA]

Data input/output socket. The GP-2000 has 3 output formats, RS-232C, RS-232C continuous output, and NMEA0183.

### 5 POWER IN SOCKET [PWR IN]

Connect to an 11 ~ 40 V DC power source.

### 6 FUSE HOLDER [FUSE]

Holds a 1 A fuse for internal circuit protection.

### 7 POWER OUTPUT TERMINALS [PWR OUT]

Provide DC output to a display device (4 A max.). These terminals control the ON/OFF condition of the GP-2000 via a display device.

### 8 GROUND TERMINAL [GND]

To prevent electrical shock and other problems, connect this terminal to a ground.

### 9 ANTENNA CONNECTOR [ANT]

Connect the supplied GPS antenna via the supplied antenna cable.

When first applying power, the following initial settings are needed. After initialization, no further adjustment of the GPS receiver is necessary during operation.

Pull the cover latches and open the hatch cover on the front panel. Then, perform the initial settings described on pgs. 2 and 3.

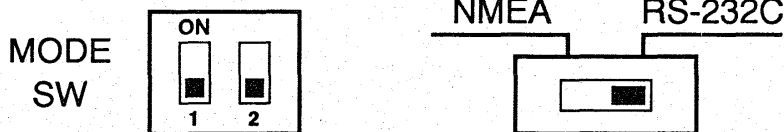
## Output format selection

Depending on the connected display device, output format must be set accordingly.

**CAUTION:** If the output format is incorrectly set, the connected display device may be damaged.

### • When using the Icom FP-100 or FP-601 (RS-232C)

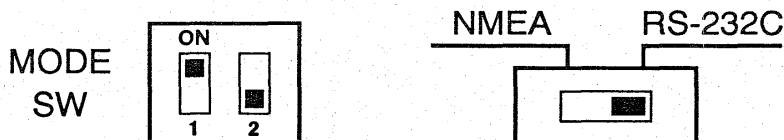
Set the NMEA/RS-232C switch and MODE switch as shown at right.



### • When using the Icom VP-21 (RS-232C continuous output)

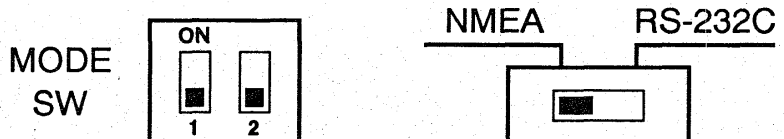
Set the NMEA/RS-232C switch and MODE switch as shown at right.

On the VP-21 side, "EXT.DATA" must be set to "GPS" in the menu 1 screen. If "GPS" cannot be selected, set the GP-2000 to NMEA0183 described in the box below.



### • When using a non-Icom display device (NMEA0183)

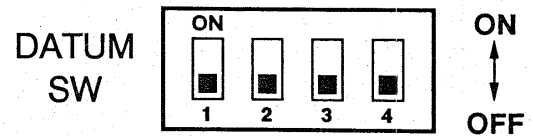
Select the required output format and set the NMEA/RS-232C switch and MODE switch as shown at right.



## 2 INITIAL SETTINGS

### ■ Datum selection

A datum is a coordinate system with an associated ellipsoid upon which a given chart is based. Use the 4 switches to set the datum number which corresponds to the chart in use.



SWITCH	1	2	3	4	CHART NAME
CONDITION	OFF	OFF	OFF	OFF	WGS-84
	ON	OFF	OFF	OFF	TOKYO
	OFF	ON	OFF	OFF	NORTH AMERICAN 1927 (CONUS)
	ON	ON	OFF	OFF	NORTH AMERICAN 1927 (ALASKA/CANADA)
	OFF	OFF	ON	OFF	NORTH AMERICAN 1927 (CENTRAL AMERICA)
	ON	OFF	ON	OFF	EUROPEAN 1979
	OFF	ON	ON	OFF	AUSTRALIAN GEODETIC 1984
	ON	ON	ON	OFF	GEODETIC 1949 (NEW ZEALAND)
	OFF	OFF	OFF	ON	SOUTH AMERICA 1969
	ON	OFF	OFF	ON	GUAM 1963
	OFF	ON	OFF	ON	IRELAND 1965
	ON	ON	OFF	ON	DJAKARTA
	OFF	OFF	ON	ON	LUZON (PHILIPPINES)
	ON	OFF	ON	ON	LIBERIA 1964
	OFF	ON	ON	ON	OLD HAWAIIAN
	ON	ON	ON	ON	INDIAN (THAILAND & VIETNAM)

- If you use the GP-2000 in areas not included in the above table, select WGS 84.
- When changing a datum, turn power OFF and set the datum switches, then turn power ON. When power is ON, new datum cannot be selected.

### ■ Position offset

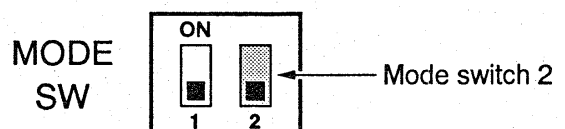
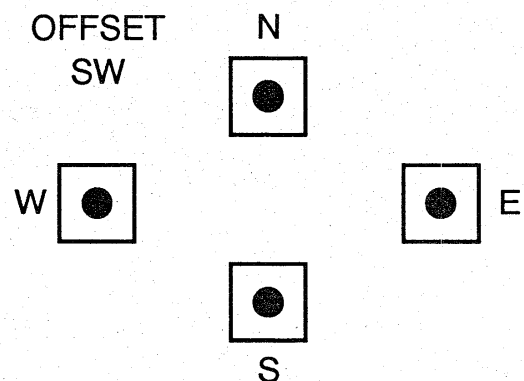
Depending on satellite receiving conditions, the calculated location data may differ from your actual position. (e.g., when your vessel is in a creek). This offset will compensate for differences between your calculated and actual locations.

Push [N], [W], [S] and [E] to move your displayed vessel position to its actual position using a marine chart.

- One push of each switch moves your position 0.001 min.
- Pushing and holding a switch moves your position continuously.
- Pushing two switches moves your position diagonally. (e.g. pushing [N] and [E] moves your position northeast.)
- Maximum offset value in each direction is 9.999 min.

To clear the offset setting, set the mode switch 2 to the ON position and wait for more than 1 sec. Then, set the switch to the OFF position.

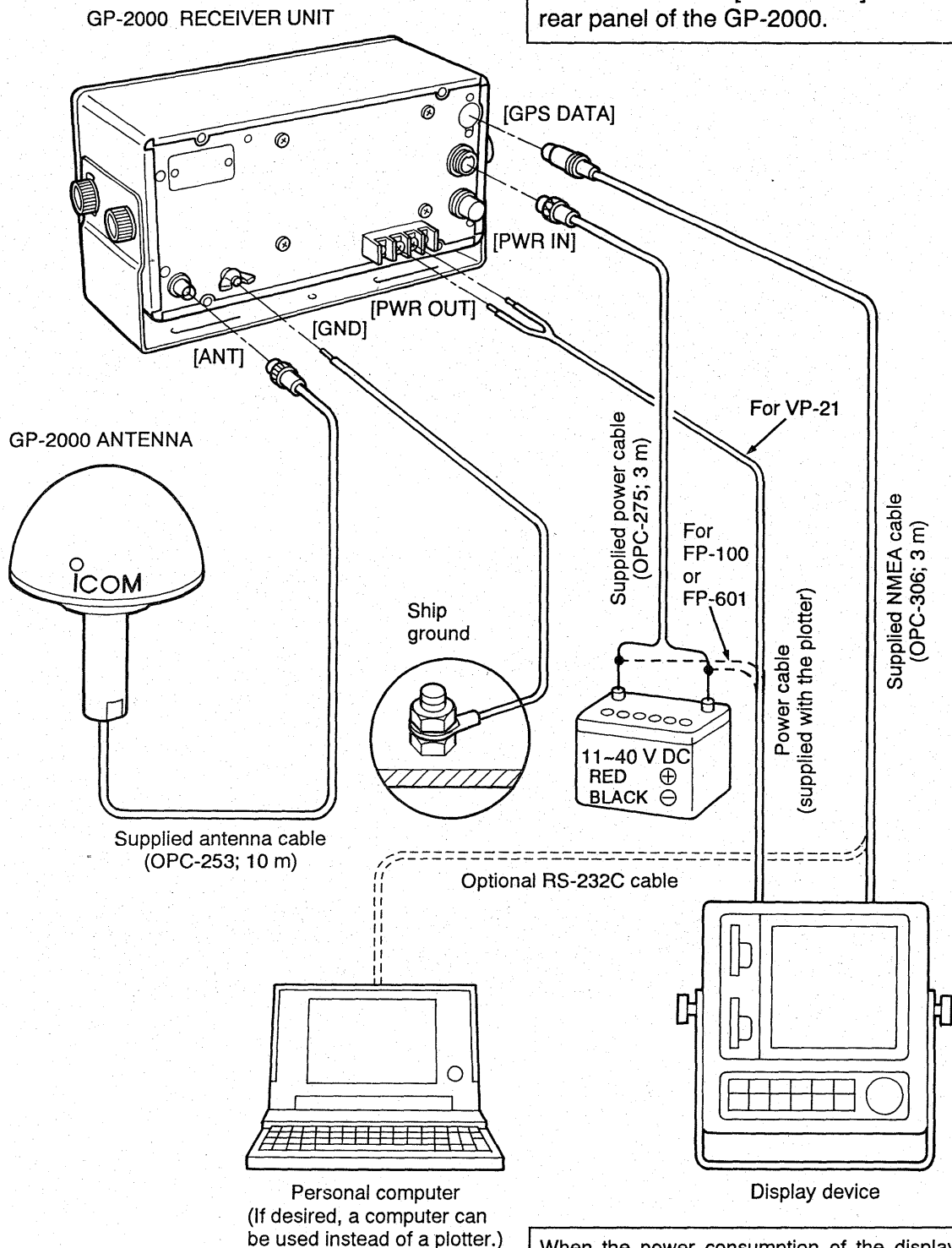
This offset should be performed after all other initial settings are complete and the GP-2000 is outputting positioning data to the connected display device.



## System connection

**CAUTION:** Before connecting the GP-2000 to the following devices, be sure the power switches of all devices are turned OFF.

The power cable from FP-100/601 must be connected to the battery directly. **NEVER** connect it to the [PWR OUT] terminal on the rear panel of the GP-2000.



When the power consumption of the display device is less than 4 A, connect the power cable to [PWR OUT]. Otherwise, connect the power cable to the battery directly.

## ■ Mounting the receiver unit

### • Mounting locations

Once initial settings have been made; the GP-2000 does not require further adjustment. Thus, you need not install the receiver unit in an easy-to-get-to location.

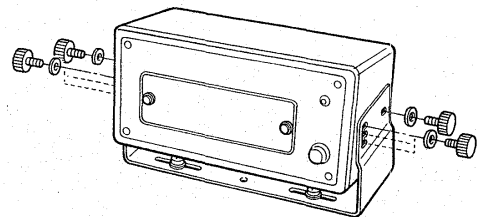
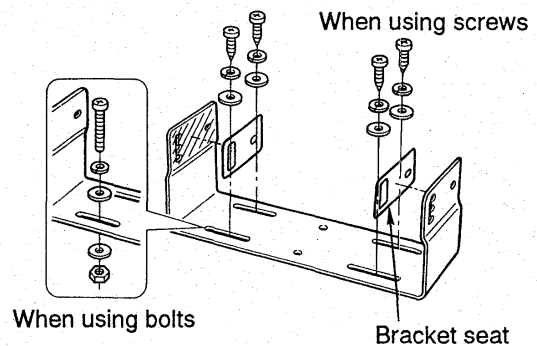
Choose the best location, within the range of the connected cable length, from a display device.

**WARNING: NEVER** mount the receiver unit in the following locations:

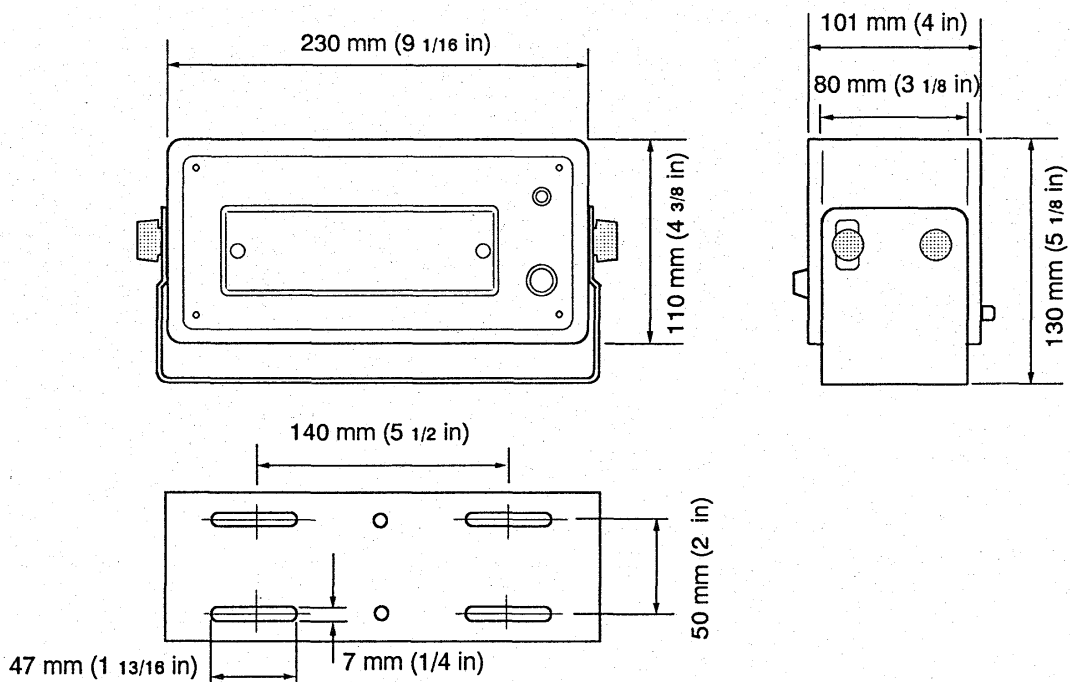
- Where salt or fresh water could spray on it.
- Where extreme heat, cold, vibration, or a dry environment could damage it.
- Where the weight of the receiver unit cannot be supported.
- Where normal ship operation could be hindered.
- Where the unit could cause bodily injury.

### • Installation

- 1) Select the mounting location by referring to "Receiver unit size" below.
- 2) Drill 4 holes for bracket attachment.
  - Diameter: 8 mm (5/16 in) when using bolts;
  - 3 mm (1/8 in) when using screws.
- 3) Attach the supplied bracket seats to the bracket.
- 4) Tighten the receiver unit on the mounting bracket using the supplied knob bolts.
  - The mounting bracket allows 3 mounting angles.



### • Receiver unit size



## ■ Mounting the antenna unit

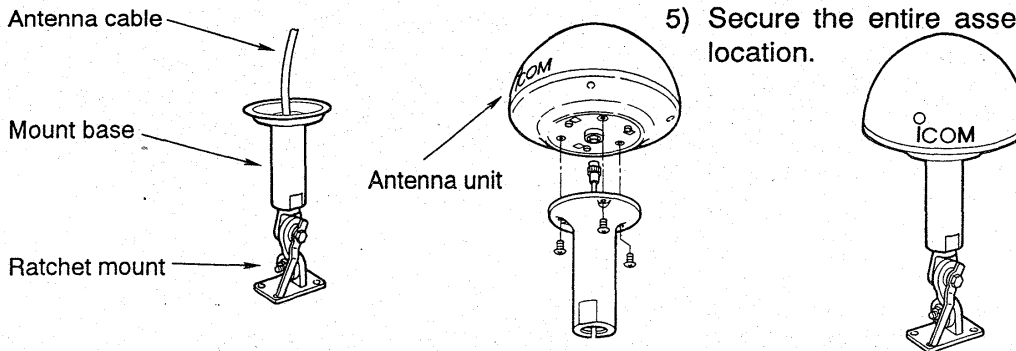
### • Mounting locations

When selecting a mounting location, remember the following:

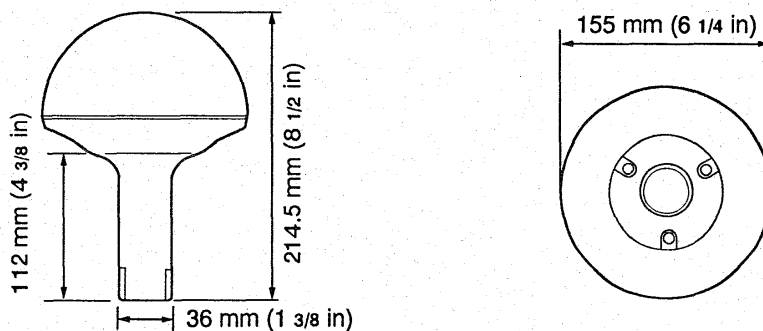
- Higher mounting locations obtain better quality signals from satellites.
- Choose a location at least 4 m (13 feet) away from other transceiver antennas.
- Choose a location at least 5 m (16 feet) away from an inmarsat antenna.
- Be sure the location is out of range of vertical radar beams. The usual vertical beam of a radar is 30° ~ 40°.
- Use as short an antenna cable as possible. DO NOT bundle excess cable.

### • Installation

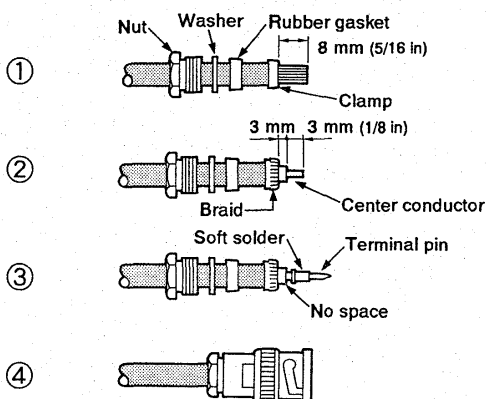
- 1) Pass the antenna cable through the ratchet to the mount base.
- 2) Attach the supplied mount base to the ratchet mount.
- 3) Connect the antenna cable to the antenna unit.
- 4) Attach the antenna unit to the mount base and tighten it with the supplied screws.
- 5) Secure the entire assembly in the desired location.



### • Antenna unit size



### • Antenna connector attachment



- 1) To expose the cable, slide the nut, washer and rubber gasket along the cable as shown at left. Strip the cable jacket and attach a clamp to the end of the cable jacket.
- 2) Fold the braid (outer conductor) over the clamp. Trim the ends of the braid evenly.
- 3) Place the terminal pin inside the center conductor and soft solder the terminal pin.
- 4) Place the plug body over the clamp and tighten the nut.



# 4 MAINTENANCE

## ■ Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
<ul style="list-style-type: none"><li>• Power does not come on.</li></ul>	<ul style="list-style-type: none"><li>• Power cable is improperly connected.</li><li>• Blown fuse.</li></ul>	<ul style="list-style-type: none"><li>• Reconnect the cable securely.</li><li>• Check for cause, then replace the fuse with a spare one.</li></ul>
<ul style="list-style-type: none"><li>• Power of the GP-2000 does not turn OFF even though the connected display device is turned OFF.</li></ul>	<ul style="list-style-type: none"><li>• The [POWER] switch is in the "ON" position.</li></ul>	<ul style="list-style-type: none"><li>• Push [POWER] to turn the power OFF. The [POWER] switch on the GP-2000 must be OFF in order for the display device to control power ON/OFF for the GP-2000.</li></ul>
<ul style="list-style-type: none"><li>• GPS data is incorrect when first applying power.</li></ul>	<ul style="list-style-type: none"><li>• Internal CPU has malfunctioned as a result of static electricity or other factors.</li></ul>	<ul style="list-style-type: none"><li>• Turn power OFF, then set the mode switch 2 to the ON position and turn power ON. Then, immediately set the mode switch 2 to the OFF position.</li></ul>

## ■ Fuse replacement

If the fuse blows or the [CONDITION] indicator does not light:

- ① Turn the GP-2000 power OFF.
- ② Unplug the connector from the [PWR IN] socket.
- ③ Disconnect the power cable from the [PWR OUT] terminal.
- ④ Replace the damaged fuse with a new rated (5 A) one.

## ■ Cleaning

If the receiver becomes dusty or dirty, wipe it clean with a dry, soft cloth.

**AVOID** the use of strong chemical agents such as thinner, benzine or alcohol to clean the cabinet, as they may damage the receiver's surfaces.

## ■ Backup battery

Programmed and acquired data in the internal CPU are backed up by a lithium battery even when the power is OFF.

The usual life of the backup battery is approximately 5 years. When the battery is exhausted, positioning data becomes very inaccurate. In this case the battery should be replaced with a new one.

**WARNING:** Backup battery replacement must be done by an authorized Icom Dealer or Service Center.

After battery replacement, initial settings are required again. The GP-2000 requires approx. 30 min. (or more depending on the condition) to output the first positioning data after initial setting.

# SPECIFICATIONS 5

- **Receive frequency** : 1575.42 MHz C/A code
- **Receive sensitivity** : Less than  $-130$  dBm
- **Antenna impedance** :  $50 \Omega$
- **Receive system** : 3 channel multiplexed
- **Number of satellites tracked** : 8  
Data output is from 5 satellites out of the 8.
- **Accuracy** : Position: 15 m RMS\*  
Velocity: 0.1 knot RMS\*  
\*Accuracy subject to change in accordance with U.S. D.O.D. policy on Selective Availability.
- **Acquisition and tracking** : Automatic
- **Memory data storage** : Built-in lithium backup battery
- **Power requirement** : 11 ~ 40 V DC
- **Power consumption** : 6 W (approx.)
- **Dimensions** : **Receiver** 230(W) × 110 (H) × 101(D) mm  
9.1(W) × 4.3(H) × 4.0(D) in  
(Projections and mounting bracket are not included.)  
**Antenna** 155(DIA) × 104(H) mm  
6.1(DIA) × 4.1(H) in  
(Mounting parts are not included.)
- **Weight** : **Receiver** 3 kg; 6.6 lb (approx.)  
**Antenna** 1 kg; 2.2 lb (approx.)
- **Usable temperature range** : **Receiver**  $0^{\circ}\text{C} \sim +50^{\circ}\text{C}$ ;  $+32^{\circ}\text{F} \sim +122^{\circ}\text{F}$   
**Antenna**  $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$ ;  $-4^{\circ}\text{F} \sim +140^{\circ}\text{F}$
- **NMEA 0183 sentence format** : GPGLL (Lat/Lon)  
GPVTG (speed and course over ground)  
GPZDA (time and date)  
GPXTE (used for err signal)

All stated specifications are subject to change without notice or obligation.

**Count on us!**

