

QUICK REFERENCE GUIDE

■ Installation

1. Install a ground system for DC noise suppression and RFI suppression
2. Install your DC power supply
3. Install lightning protection. This will help protect more than your gear.

4. Install and connect an antenna system for the appropriate bands of operation
5. Connect other peripheral equipment. This includes microphones, headsets, TNC, amplifiers and any other equipment necessary to make your shack complete.

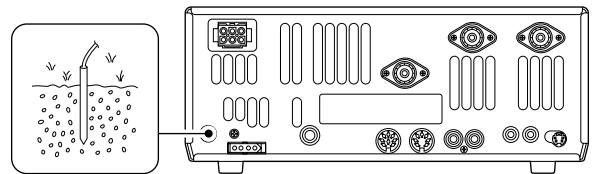
1. Grounding your Shack

Although your radio will operate by connecting the DC power supply and antenna, it is necessary to have a good ground system in your shack. A ground connection is the electrical contact between the common point of an electrical or electronic system and the earth.

A good earth ground is necessary to prevent electrical shock, eliminate problems from RFI and DC noise. With more electronic devices being used today, it is also important to reduce RFI and EMI. Although you may not see interference in your shack, without a grounding system, your neighbors may experience interference. Even though many of these devices, where they must accept interference from their surrounding environment, it is best to eliminate as much of the possible interference from your shack.

If you do not have a grounding system for your shack, depending on the location of your shack, basement or ground floor, a good ground system can be as simple as a couple of ground rods driven 2 to 2.5 meter into the soil. When installing your IC-7400 to your grounding system, the shortest most direct connection is recommended.

NOTE: There are many publications covering proper grounding techniques. Check with your local dealer for more information and recommendations.



WARNING! NEVER ground station equipment or antennas to house gas lines. NEVER attach ground lines to plastic (pvc) pipe.

◆ Some Symptoms if inadequate grounding

a. Poor DC Ground

50/60 Hz hum on the audio either Rx or Tx without the antenna connected.

If you feel a tingling sensation when you touch a metal surface. Surfaces such as the cover of your radio or power supply.

b. Poor RF Ground

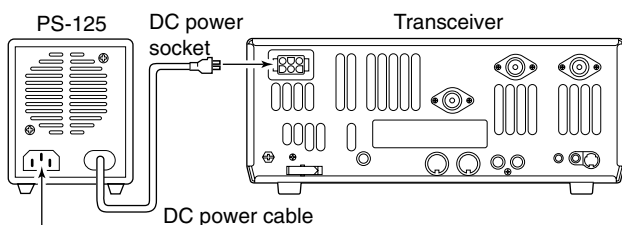
While transmitting and you feel a tingling sensation when you touch a metal surface. Surfaces such as the cover of your radio or power supply.

While transmitting, you experience interference to other electronic devices, such as the telephone, television or stereo audio systems.

2. Installing your DC Power Supply

The DC power supply is a device used to convert 110/220 V AC, also know as Household current, to a steady source of 13.8 V DC.

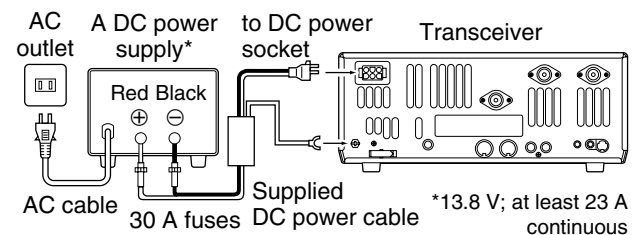
The perfect match to your IC-7400 is the PS-125. This compact switching power supply is the matching power supply for your IC-7400 with a current rating of 25 A continuous duty. This plug and play unit plugs into the DC jack located on the rear of the radio.



Connect to an AC outlet using the supplied AC cable.

•If you are not using the PS-125:

Connect the supplied DC power cable to the appropriate color coded terminals, then insert the DC connector into the DC jack located on the rear of the radio. (The diagram below describes the connection with OPC-639. OPC-025D has no filter box and GND cable.)



NOTE: Although the power supply current requirement is quite low during receiving, this not the case when you transmit. With many electrical devices in the shack, it is very important to verify the electrical circuit is not overloaded.

3. Installing lightning protection

Although you may not live in an area with high occurrence for lightning storms, it is always wise to take precautions for lightning or static discharges. Proper lightning protection not only offers protection to the ham gear, but the shack and most importantly the operator.

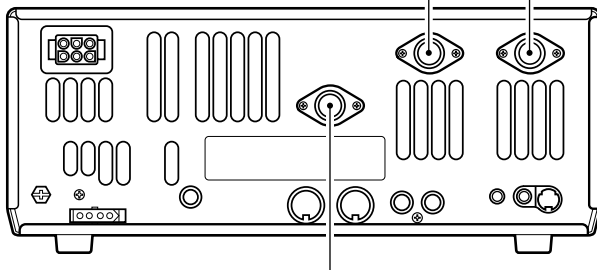
NOTE: There are many publications covering proper lightning protection, check with your local dealer for more information and recommendations.

4. Installing your antenna system

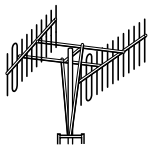
Whether your IC-7400 is your first radio or one of many, one of your key elements in a great shack is the antenna system. There are three connections on the back of your IC-7400, two for HF and 6 m and one for 2 m. If you are using one antenna for HF and 6 m, for simplicity, connect the antenna coax to ANT 1.

ANTENNA 1, 2

[Example]: ANT1 for 1.8–18 MHz bands
ANT2 for 21–50 MHz bands



144 MHz ANTENNA



Connect a VHF (60–144 MHz) antenna; impedance: 50 Ω.

Your IC-7400 is equipped with an internal antenna tuner (ATU) for operation on 160–6 m. This ATU is designed to work with an unbalanced 50 Ω feedline. The purpose of the internal antenna tuner is to match the impedance of your antenna system to as close to a 50 Ω load as possible. This ATU will not operate with a long wire or ladder line (450 Ω or other balanced feedlines). An external ATU such as the AH-4 would be necessary for this kind of operation.

Antenna SWR

Each antenna is tuned for a specified frequency range and SWR may be increased out-of-range. When the SWR is higher than approx. 2.0:1, the transceiver's power drops to protect the final transistors. In this case, an antenna tuner is useful to match the transceiver and antenna. Low SWR allows full power for transmitting even when using the antenna tuner. The IC-7400 has an SWR meter to monitor the antenna SWR continuously.

PL-259 CONNECTOR INSTALLATION EXAMPLE

- ① Slide the coupling ring down. Strip the cable jacket and soft solder.
 - ② Strip the cable as shown at left. Soft solder the center conductor.
 - ③ Slide the connector body on and solder it.
 - ④ Screw the coupling ring onto the connector body.
- 30 mm ≈ 9/16 in 10 mm ≈ 3/8 in 1–2 mm ≈ 1/16 in

WARNING: Although a mag mount antenna works great on a vehicle, **DO NOT** use the IC-7400 with this type of antenna.

CAUTION: Although your IC-7400 has protection to drop down power with a high SWR, this does not completely protect the transceiver from transmission without an antenna. Make sure you have an antenna connected whenever you transmit with your radio.

NOTE: There are many publications covering proper antennas and their installation, check with your local dealer for more information and recommendations.

■ Unpacking

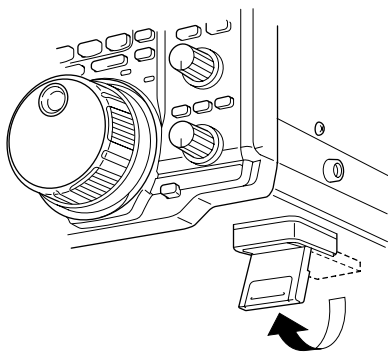
After unpacking, immediately report any damage to the delivering carrier or dealer. Keep the shipping cartons.

For a description and a diagram of accessory equipment included with the IC-7400, see 'Supplied accessories' on p. ii of this manual.

■ Selecting a location

Select a location for the transceiver that allows adequate air circulation, free from extreme heat, cold, or vibrations, and away from TV sets, TV antenna elements, radios and other electromagnetic sources.

The base of the transceiver has an adjustable stand for desktop use. Set the stand to one of two angles depending on your operating conditions.

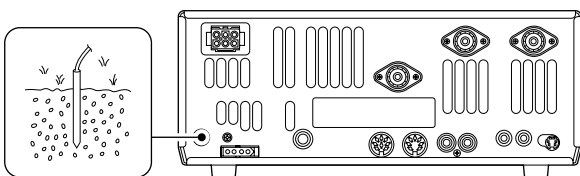


■ Grounding

To prevent electrical shock, television interference (TVI), broadcast interference (BCI) and other problems, ground the transceiver through the GROUND terminal on the rear panel.

For best results, connect a heavy gauge wire or strap to a long earth-sunk copper rod. Make the distance between the [GND] terminal and ground as short as possible.

WARNING: NEVER connect the [GND] terminal to a gas or electric pipe, since the connection could cause an explosion or electric shock.



■ Antenna connection

For radio communications, the antenna is of critical importance, along with output power and sensitivity. Select antenna(s), such as a well-matched 50 Ω antenna, and feedline. 1.5:1 or better of Voltage Standing Wave Ratio (VSWR) is recommended for your desired band. Of course, the transmission line should be a coaxial cable.

When using 1 antenna, use the [ANT1] connector.

CAUTION: Protect your transceiver from lightning by using a lightning arrester.

PL-259 CONNECTOR INSTALLATION EXAMPLE

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 - ② Strip the cable as shown at left. Soft solder the center conductor.
 - ③ Slide the connector body on and solder it.
 - ④ Screw the coupling ring onto the connector body.
- 30 mm ≈ 1 1/8 in 10 mm ≈ 3/8 in 1-2 mm ≈ 1/16 in

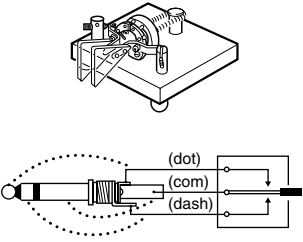
Antenna SWR

Each antenna is tuned for a specified frequency range and SWR may be increased out-of-range. When the SWR is higher than approx. 2.0:1, the transceiver's power drops to protect the final transistor. In this case, an antenna tuner is useful to match the transceiver and antenna. Low SWR allows full power for transmitting even when using the antenna tuner. The IC-7400 has an SWR meter to monitor the antenna SWR continuously.

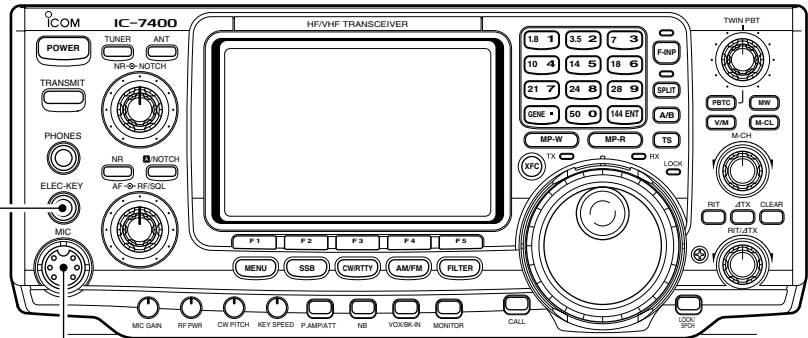
Required connections

• Front panel

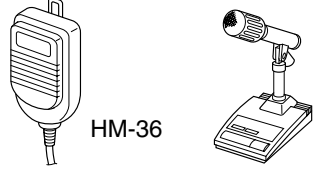
CW KEY



A straight key can be used when the internal electronic keyer is turned OFF in keyer set mode. (p. 34)



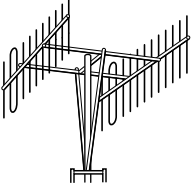
MICROPHONES (p. 100)



HM-36
SM-20 (optional)

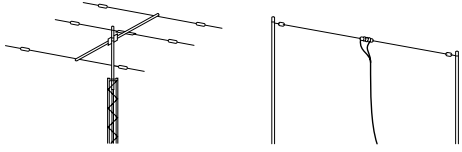
• Rear panel

144 MHz ANTENNA (pgs. 13, 74)

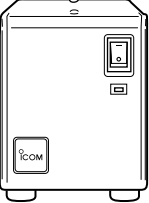


Connect a VHF (60–144 MHz) antenna; impedance: 50 Ω.

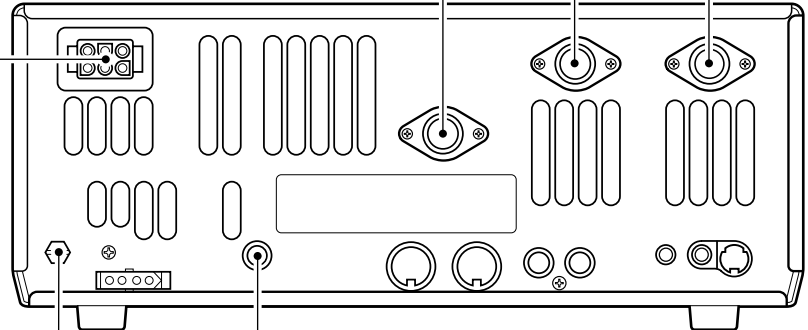
ANTENNA 1, 2 (pgs. 13, 74)
[Example]: ANT1 for 1.8–18 MHz bands
ANT2 for 21–50 MHz bands



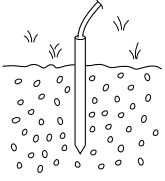
DC POWER SUPPLY



PS-125 (Optional)



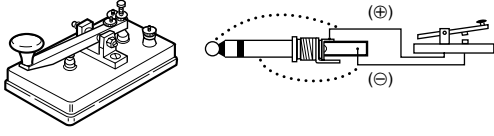
GROUND (p. 13)



Use the heaviest gauge wire or strap available and make the connection as short as possible.

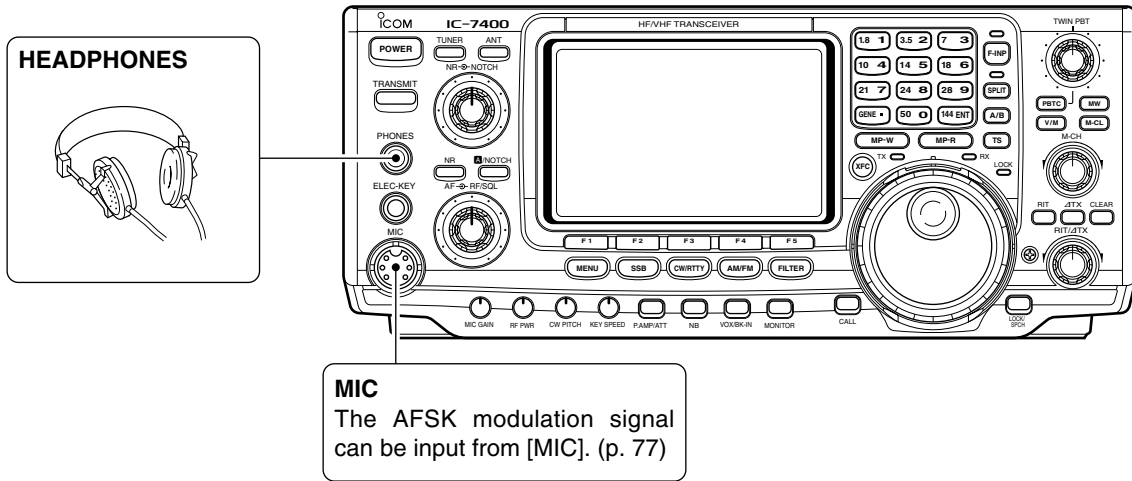
Grounding prevents electrical shocks, TVI and other problems.

STRAIGHT KEY

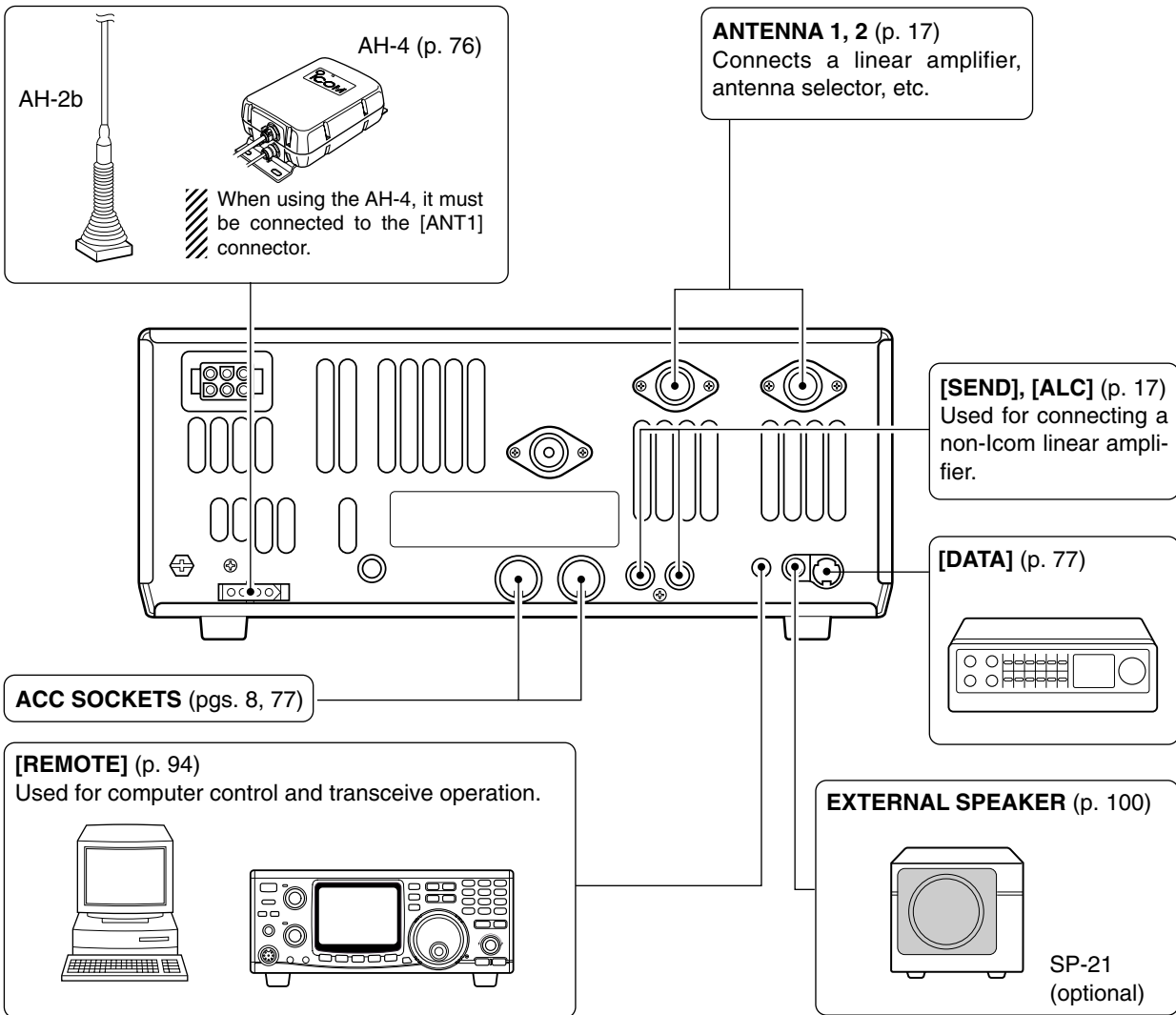


■ Advanced connections

• Front panel



• Rear panel



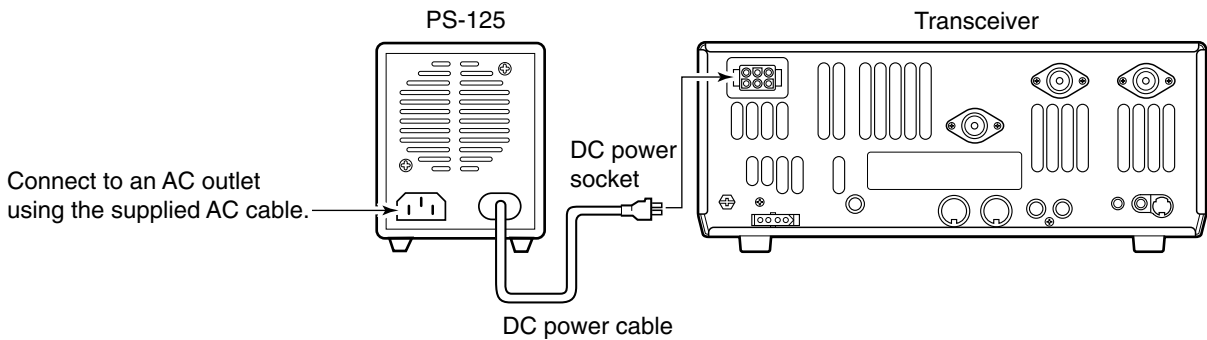
Power supply connections

Use an optional DC power supply with a 25 A capacity and above when operating the transceiver with AC power. Refer to the diagrams below.

CAUTION: Before connecting the DC power cable, check the following important items. Make sure:

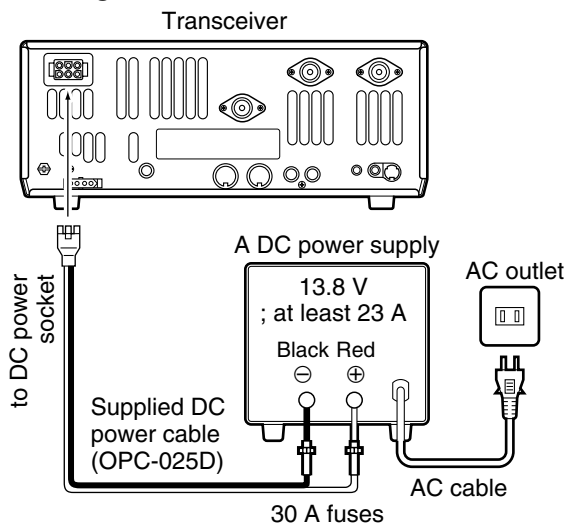
- The [POWER] switch is OFF.
- Output voltage of the power source is 12–15 V when you use a non-Icom power supply.
- DC power cable polarity is correct.
 - Red : positive ⊕ terminal
 - Black : negative ⊖ terminal

CONNECTING PS-125 DC POWER SUPPLY

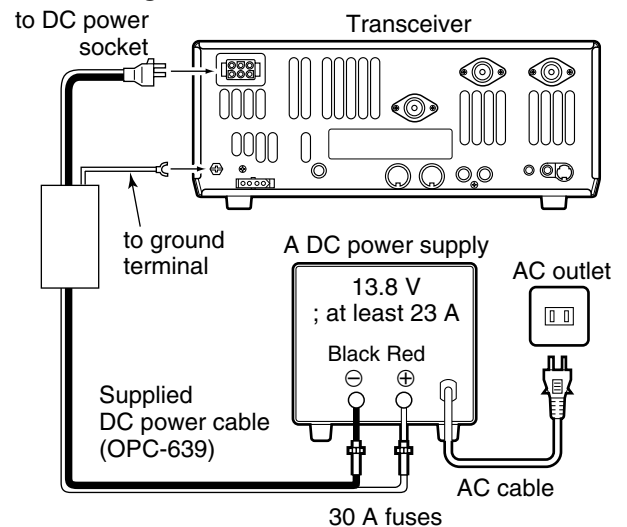


CONNECTING A DC POWER SUPPLY

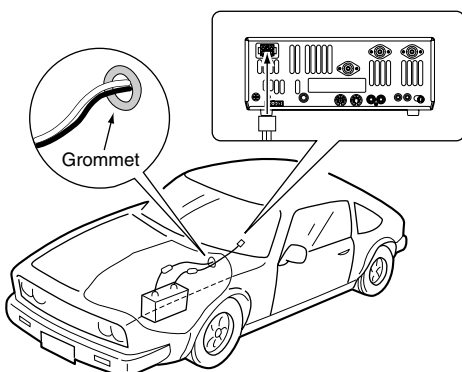
• Connecting with OPC-025D



• Connecting with OPC-639

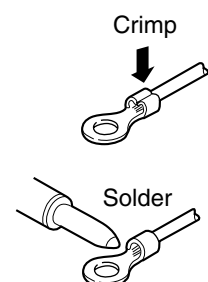
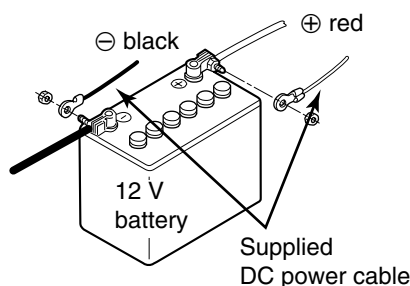


CONNECTING A VEHICLE BATTERY



NEVER connect to a 24 V battery.

NOTE: Use terminals for the cable connections.

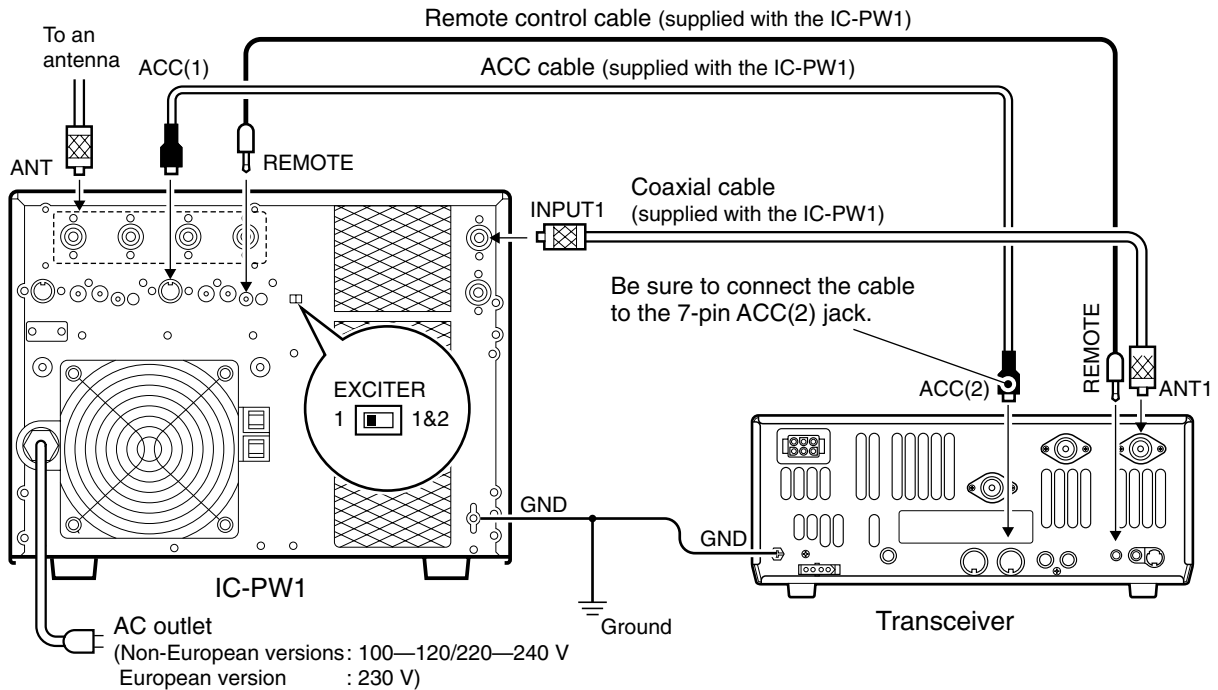


NEVER connect to a battery without supplied DC fuses, otherwise a fire hazard may occur.

Linear amplifier connections (not usable in European countries)

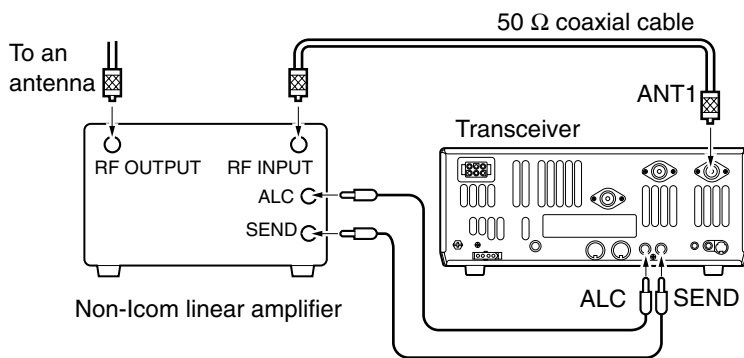
CONNECTING THE IC-PW1

Use the [ANT1] connector when connecting a linear amplifier.



Turn OFF the transceiver's antenna tuner while tuning the IC-PW1's tuner.

CONNECTING A NON-ICOM LINEAR AMPLIFIER



WARNING:

Set the transceiver output power and linear amplifier ALC output level referring to the linear amplifier instruction manual. Be sure the linear amplifier keying circuit control voltage is compatible with the IC-746PRO, before connecting to [SEND] jack.

The ALC input level must be in the range 0 V to -4 V, and the transceiver does not accept positive voltage. Non-matched ALC and RF power settings could cause a fire or ruin the linear amplifier.

The specifications for the SEND relay are 16 V/DC 0.5 A. If this level is exceeded, a large external relay must be used.

External antenna tuner connection

CONNECTING THE AH-4

The AH-4 must be connected to [ANT1].

