

HOW TO USE YOUR
JOPIX ICARIA
40 CHANNEL
CITIZENS BAND
2-WAY MOBILE RADIO

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Introduction

Frequency Range

Your ICARIA CB radio provides high-level, trouble-free performance over the following frequency assignments:

Frequency Channel	Channel Frequency		Chann in MHz
	in MHz	Channel	
1	26.965	21	27.215
2	26.975	22	27.225
3	26.985	23	27.255
4	27.005	24	27.235
5	27.015	25	27.245
6	27.025	26	27.265
7	27.035	27	27.275
8	27.055	28	27.285
9	27.065	29	27.295
10	27.075	30	27.305
11	27.085	31	27.315
12	27.105	32	27.325
13	27.115	33	27.335
14	27.125	34	27.345
15	27.135	35	27.355
16	27.155	36	27.365
17	27.165	37	27.375
18	27.175	38	27.385
19	27.185	39	27.395
20	27.205	40	27.405

These frequencies are generated and accurately controlled by a phase lock loop (PLL) circuit, comprised of the latest state-of-the-art integrated circuit technology, ensuring high reliability and excellent frequency stability on the above channels.

To obtain maximum performance please read carefully the descriptions and operating instructions in this manual.

Specifications

GENERAL

Channels	40.
Frequency Range	26.965 to 27.405 MHz.
Frequency Control	Phase-Locked Loop (PLL) synthesizer.
Frequency Tolerance	0.005%
Operating Temp. Range	-30° C to +50° C.
Microphone	Plug-in type; Electret condenser.
Input Voltage	13.8V DC nom. (negative ground)
Current Drain	Transmit: AM full mod., 1.5A (maximum). Receive: (Squelched, 0.115A, full audio output 1.0A (nominal).
Size	6-5/8"D x 4-9/16"W x 1-13/16"H (165mm x 116 mm x 44 mm.)
Weight	3 lbs., 4 oz. (1.0 kg.).
Antenna Connector	UHF, SO-239.
Semiconductors	22 transistors, 17 diodes, 3 integrated circuits, 7 LEDs.
Meter	Indicates relative power output and received signal strength.

TRANSMITTER

Power Output	4 watts.
Modulation	High- and low-level Class B amplitude.
Frequency	300 to 3000 Hz.
Output Impedance	50 ohms, unbalanced.
Output Protection	Output transistors protected against mismatch up to 20:1

RECEIVER

Sensitivity	Less than 1 μ V for 10dB(S + N)/N.
Selectivity	6 dB @ 7 KHz, 55dB @ 15 KHz.
Image Rejection	60 dB typical.
Adjacent CH. Rejection	50 dB, typical.
IF Frequencies	Double conversion, 1st: 10.7MHz 2nd: 450 KHz.
Automatic Gain Control (AGC)	Less than 10dB change in audio output for inputs from 10 to 50,000 μ V
Squelch	Adjustable; threshold less than 1 μ V.
Audio Output Power	3 watts.
Frequency Response	300-3000Hz.
Distortion	Less than 10% @ 3 watts @ 1000 Hz.
Built-in Speaker	16 ohms, round.
External Speaker (Not Supplied)	8 ohms; disables internal speaker when connected.

PA SYSTEM

Power Output	4 watts into external speaker.
External Speaker for PA (Not Supplied)	8 ohms; a separate jack is provided.

(Specifications subject to change without notice.)

Installation

Location

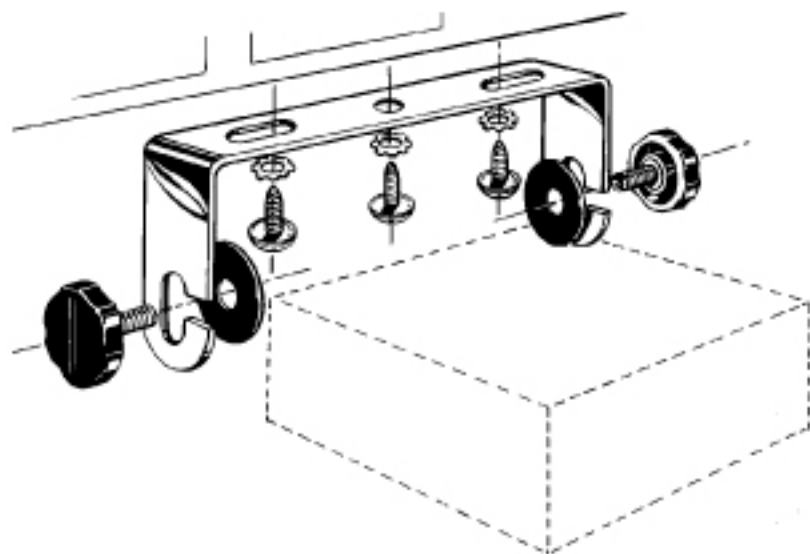
Plan the location of the transceiver and microphone bracket before starting the installation. Select a location that is convenient for operation and does not interfere with the driver or passengers in the vehicle. In automobiles, the transceiver is usually mounted to the underneath of the dash panel, with the microphone bracket beside it.

Mounting Connection

The transceiver is held in the universal mounting bracket by two thumb screws, permitting adjustment at the most convenient angle.

A universal mounting bracket is supplied along with self tapping screws and star washers. The mounting must be mechanically strong and also provide a good electrical connection to the chassis of the vehicle. To mount the transceiver:

1. Determine the most convenient location in your vehicle. Hold the ICARIA radio with mounting bracket in the exact location desired. If nothing will interfere with mounting it in the desired position, remove the mounting bracket and use it as a template to mark the location for the mounting screws.
2. Drill necessary holes and secure mounting bracket in location.



Installation (Cont.)

3. Connect the antenna cable plug to the standard receptacle on the unit. Most CB antennas are terminated with a type PL-259 plug which mates with the receptacle marked "ANT."
4. Connect the red lead of DC power cord to +13.8VDC. In automobile installations, +13.8VDC is usually obtained from the accessory contact in the fuse box. This prevents the set being left on accidentally and also permits operating the unit without the vehicle's engine running.

Before installing the CB radio, visually check the vehicle battery connections to determine which battery terminal, positive or negative (positive is the larger of the two) is grounded to the engine block (or chassis).

5. Connect the black lead to the negative side of the automobile. This is usually the chassis of the car. Any convenient location with good electrical contact (remove paint) may be used.
6. Mount the microphone bracket on right side of the transceiver, or near it using two screws supplied. When mounting in an automobile, place the bracket under the dash so the microphone is readily accessible.

Installation (Cont.)

CB Antenna

Since the maximum allowable power output of the transmitter is limited by the FCC, the antenna is one important factor affecting transmission distance. Only a properly matched antenna system will allow maximum power transfer from the 50-ohm transmission line to the radiating element. In mobile installations (cars, trucks, boats, etc.), an antenna system that is non-directional should be used.

A vertically polarized, quarter-wavelength whip antenna provides the most reliable operation and greatest range. The shorter, loaded-type whip antennas are more attractive, compact and adequate for applications where the maximum possible distance is not required. Also, the loaded whips do not present the problems of height imposed by a full quarter-wavelength whip.

Mobile whip antennas utilize the metal body of the vehicle as a ground plane. When mounted at a corner of the vehicle they are slightly directional, in the direction of the body of the vehicle. For all practical purposes, however, the radiation pattern is nondirectional. The slight directional characteristic will be observed only at extreme distances. A standard antenna connector (type SO-239) is provided on the transceiver for easy connection to a standard PL 259 cable termination. Cobra loaded-type antenna models ATW-500, AT-55, ATW-1000 and ATW-400 are highly recommended for most installations. Consult your Cobra dealer for further details.

When installed in a boat, the transceiver will not operate at maximum efficiency without a ground plate, unless the vessel has a steel hull. Before installing the transceiver in a boat, consult your dealer for information regarding an adequate grounding system and prevention of electrolysis between fittings in the hull and water.

3-Way Combinations Antennas are available which allow operation of all three bands (AM-FM & CB), using a single antenna. However, use of this type of antenna usually results in less than normal transmit and receive range when compared to a standard-type "Single Band" antenna designed for CB only.

Installation(Cont.)

Ignition Noise Interference

Use of a mobile receiver at low signal levels is normally limited by the presence of electrical noise. The primary source of noise in automobile installations is from the alternator and ignition system in the vehicle. Under most operating conditions, when signal level is adequate, the background noise does not present a serious problem. Also, when extremely low level signals are being received, the transceiver may be operated with vehicle engine turned off. The unit requires very little current and therefore will not significantly discharge the vehicle battery.

Even though the **JOPIX** radio has an automatic noise limiter, in some installations, ignition interference and other forms of automobile generated noise may be high enough to make good communications difficult. The electrical noise may come from several sources. Many possibilities exist and variations between vehicles require different solutions to reduce the noise. Consult your **VOYAGER** dealer or a 2-way radio technician for help in locating and correcting the source of severe noise.

Base Station Operation (Operation from 120VAC, House Current)

To operate your transceiver from your home or office, using the regular house current as the power source, you will require a 12VDC power pack that has been specially designed for the purpose. It is available as optional equipment from your voyager dealer. It consists of a 120-volt, 60 Hz AC to 12-volt DC power converter with a 3A rating. Simply connect the red (+) and black (-) leads of the transceiver to the corresponding terminals of the power packs.

DO NOT ATTEMPT TO OPERATE THIS TRANSCEIVER BY CONNECTING DIRECTLY TO 120 VAC. SERIOUS DAMAGE WILL RESULT.

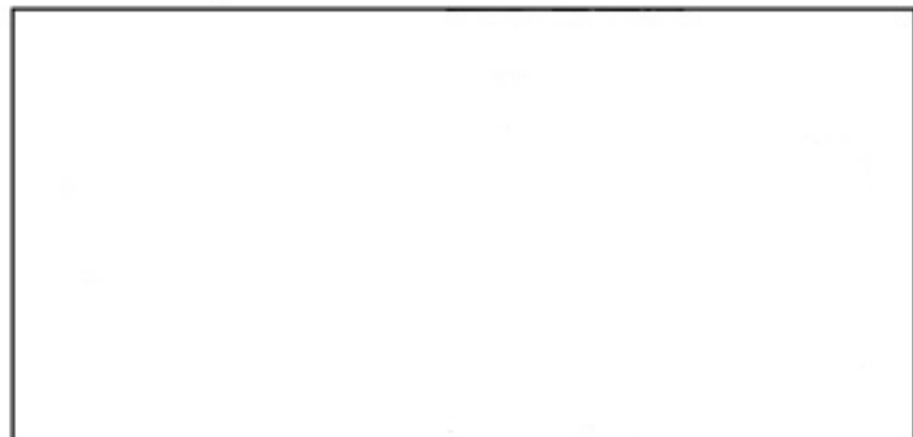
Temporary Mobile Operations

To operate your voyager transceiver from a car on a temporary basis, you may want to purchase an optional cigar lighter adapter from your voyager dealer. This adapter and a magnetic mount antenna allow you to quickly "install" your transceiver for temporary use.

Operation

Controls and Indicators

Refer to controls, indicators and connectors as illustrated below:



A. Front Panel

- 1. Off/On/Volume.** Turn clockwise to turn power on and set the desired listening volume.
- 2. Squelch.** This control is used to cut off or eliminate receiver background noise in the absence of an incoming signal. For maximum receiver sensitivity, it is desired that the control be adjusted only to the point where the receiver background noise or ambient background noise is eliminated. Adjust until the receiver noise disappears. This will require the incoming signal to be slightly stronger than the average receiver noise. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signals will be heard at a maximum clockwise setting.
- 3. Microphone Connector.** This front mounted, screw-on connector allows for convenient removal of the microphone plug when storage is required. The microphone **MUST** be connected to the unit at all times when in use, for proper operation. The screw-on connection enhances the life of the microphone cord as well.
- 4. Channel 9/Normal Switch.** Used for instant selection of emergency channel 9 (CH.9 position). In NOR position, all 40 CB channels are selected by the UP/DOWN CHANNEL BUTTONS.

Operation (Cont.)

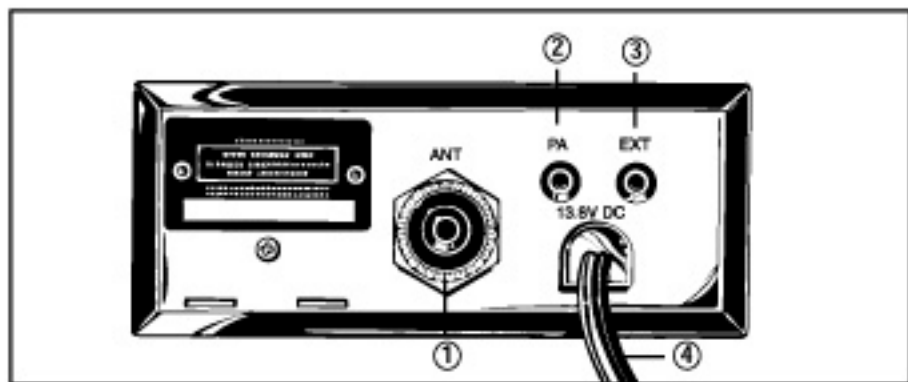
- 5. CB/PA Switch.** Selects mode of operation. In the CB position, the PA function is disabled and the unit will transmit and receive on the selected channel. The PA function should not be used unless a PA speaker is connected.
- 6. S-RF/Power Meter.** Shows relative transmitter RF output power and input signal strength when receiving. The five LED (Light Emitting Diode) segments glow to indicate receive or transmit activity.
- 7. TX Indicator .** This indicator will light red when in the transmit mode.
- 8. Channel Display.** The selected operating channel will be displayed here.
- 9. Channel Selector Switch.** When turned, this knob is used to select any one of the forty citizens band channels desired.

For a "RAPID" change of channels, depress and hold the desired button (up and down). This allows all 40 channels to be covered in about 6 seconds.

Other Operation Features

- **Automatic Noise Limiter.** This is a non-switchable feature that is always on to reduce background noise.

Operation (Cont.)



C. Rear Panel

- 1. ANTENNA CONNECTOR:** This SO-239 connector permits connection of the transmission line cable male connector to the transceiver.
- 2. PUBLIC ADDRESS:** An external 8-ohm 4.0 watt PA speaker may be connected to the PA Speaker Jack when this unit is used as a public address system. The speaker should be directed away from the microphone to prevent acoustic feed-back. Physical separation or isolation of the microphone and speaker must be employed when operating the PA at high output levels.
- 3. EXTERNAL SPEAKER:** The External Speaker Jack is used for remote receiver monitoring. The external speaker should have 8-ohm impedance and be rated to handle at least 4.0 watts. When the external speaker is plugged in, the internal speaker is automatically disconnected.
- 4. POWER:** These wires supply power to the CB radio. See page 5 for installation.

Operation (Cont.)

Operating Procedure to Receive

1. Be sure that the power, antenna and microphone are properly connected before proceeding further. The CB/PA switch should be in the CB mode. The Channel 9/NOR Switch should be in the NOR mode.
2. Turn the radio ON by rotating the VOLUME CONTROL clockwise.
3. Rotate SQUELCH CONTROL counterclockwise until incoming signal is heard.
4. Turn the CHANNEL SELECTOR KNOB to select the desired operating channel.
5. Set the VOLUME CONTROL to a comfortable listening level.

Listen to the background noise from the speaker. Turn the SQUELCH CONTROL slowly clockwise until the noise JUST disappears (no signal should be present). Leave the control at this setting. The squelch is now properly adjusted. The receiver will remain quiet until a signal is actually received. Do not advance the control too far, or some of the weaker signals will not be heard.

Operating Procedure to Transmit

1. Select the desired channel.
2. **Press-to-Talk Switch.** The receiver and transmitter are controlled by the press-to-talk switch on the microphone. Press the switch and the transmitter is activated; release switch to receive. When transmitting, (on a clear channel), hold the microphone two inches from the mouth and speak in a clearly normal voice.

Be sure the antenna is properly connected to the radio before transmitting. Prolonged transmitting without an antenna, or a poorly matched antenna, could cause damage to the transmitter.

Operating Procedure for Public Address

1. Connect a PA speaker to the PA jack provided on the rear panel.
2. Set the CB/PA switch to the PA position.
3. Depress the push-to-talk switch on the microphone and speak in a normal voice.
4. Adjust the volume of the PA speaker using the Volume control on the front panel.

Maintenance and Adjustment

Your ICARIA CB transceiver is specifically designed for the environment encountered in mobile installations. The use of all solid state circuitry and its light weight result in high reliability. Should a failure occur, however, review the following, then if necessary replace parts only with identical parts. Do not substitute. Refer to the schematic diagram and parts list.

1. Check connections to the source of power and make sure it is the 13.8 VDC required to operate your radio.
2. Check the fuse in the DC power cord. The main power lead (red wire) has a 2 Amp 3 AG type fuse installed. Use only the above specified type and size fuse for maximum protection. Failure to do so, will void the warranty.
3. Make certain the microphone is properly plugged in.
4. Make certain the antenna is properly connected and tuned for minimum SWR. NOTE: _____ antennas include full instructions for tuning your antenna. If you're still in doubt about the procedure, contact the _____ dealer from whom you purchased your radio and antenna, for advice. If you hired an installer to install your radio and antenna, contact him.

If you are unable to correct the problem, refer to the WARRANTY SERVICE INSTRUCTIONS at the end of this manual for the correct procedure for warranty and post-warranty service from

Adjustment Warning

Replacement or substitution of certain parts with replacements other than those recommended by PIHERNZ COM. may be a violation of the technical regulations of Part 95 of the FCC Rules, or the Type Acceptance requirements of Part 2 of said rules.

When making adjustments other than transmitter adjustments, be sure to re-read applicable portions of this instruction manual to make certain you are following correct procedure and that the radio was properly installed, etc.

Appendix

Citizens Band radio operators have largely adopted the "10-code" for standard questions and answers. Its use permits faster communications and better understanding in noisy areas. The following table lists some of the more common codes and their meanings:

Code	Meaning	Code	Meaning
10-1	Receiving poorly	10-35	Confidential information
10-2	Receiving well	10-36	Correct time is
10-3	Stop transmitting	10-37	Wrecker needed at
10-4	OK, message received	10-38	Ambulance needed at
10-5	Relay message	10-39	Your message delivered
10-6	Busy, stand by	10-41	Please turn to channel
10-7	Out of service, leaving air	10-42	Traffic accident at
10-8	In service, subject to call	10-43	Traffic Tie up at
10-9	Repeat message	10-44	I have a message for you
10-10	Transmission completed, standing by	10-45	All units within range please report
10-11	Talking too rapidly	10-50	Break channel
10-12	Visitors present?	10-60	What is next message number?
10-13	Advise Weather/Band conditions	10-62	Unable to copy, use phone
10-16	Make pick up at	10-63	Net directed to
10-17	Urgent business	10-64	Net Clear
10-18	Anything for us?	10-65	Awaiting your next message/assignment
10-19	Nothing for you, return to base	10-67	All units comply
10-20	My location is in	10-70	Fire at
10-21	Call by telephone	10-71	Proceed with transmission sequence
10-22	Report in person to	10-77	Negative contact
10-23	Stand by	10-81	Reserve hotel room for
10-24	Completed last assignment	10-82	Reserve room for
10-25	Can you contact	10-84	My telephone number is
10-26	Disregard last information	10-85	My address is
10-27	I am moving to channel	10-91	Talk closer to mike
10-28	Identify your station	10-93	Check my frequency on this channel
10-29	Time is up for contact	10-94	Please give me a long count
10-30	Does not conform to FCC rules	10-99	Mission completed, all units secure
10-32	I will give you a radio check	10-200	Police needed at
10-33	EMERGENCY TRAFFIC		
10-34	Trouble at this station		

Appendix (Cont.)

A Few Rules That Should Be Obeyed

1. You are not allowed to carry on a conversation with another station for more than five minutes at a time without taking a one-minute break, to give others a chance to use the channel.
2. You are not allowed to blast others off the air by overpowering them with illegally amplified transmitter power, or illegally high antennas.
3. You can't use CB to promote illegal activities.
4. You are not allowed to use profanity.
5. You may not play music in your CB.
6. You may not use your CB to sell merchandise or professional service.

How Your CB Can Serve You

- Warn of traffic tie-ups ahead.
- Provide weather and road information.
- Provide help fast in event of emergency or breakdown.
- Suggest good spots to eat and sleep.
- Make long trips more interesting, and help keep you awake.
- Provide direct contact with your office or home.
- Make friends for you as you travel.
- Provide "local information" to find your destination.
- Help law enforcement officers by reporting drunk and reckless drivers.

Appendix (Cont.)

Use Channel 9 For Emergency Message Only

FCC give the following examples of permitted and prohibited types of communications for use on Channel 9. These are guidelines and are not intended to be all-inclusive.

Permitted:

Example Message:

Yes	"A tornado sighted six miles north of town."
No	"This is observation post number 10. No tornado sighted."
Yes	"I am out of gas on Interstate 95 at mile marker 121."
No	"I am out of gas in my driveway."
Yes	"There is a four-car collision at Exit 10 on the Beltway, send police and ambulance."
No	"Traffic is moving smoothly on the Beltway."
Yes	"Base to Unit 1, the Weather Bureau has just issued a thunderstorm warning. Bring the sailboat into port."
No	"Attention all motorists. The Weather Bureau advises that the snow tomorrow will accumulate 4 to 6 inches."
Yes	"There is a fire in the building on the corner of 6th and Main Streets."
No	"This is Halloween patrol unit number 3. Everything is quiet here."