



# VHF AIR BAND TRANSCEIVER **IC-A1**



**OWNER'S MANUAL**

## **FOREWORD**

Thank you for choosing the IC-A1, one of the finest VHF AM Air Band Transceivers on the market today. It was designed and built by ICOM INCORPORATED utilizing the latest computer technology and precision VHF engineering. This transceiver incorporates state-of-the-art technology, and it was built specifically for Air Band applications.

Please read this owner's manual carefully before using your IC-A1 transceiver. With proper care, the IC-A1 will provide years of dependable and enjoyable communication.

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## **SECTION 1 FEATURES**

### **SYNTHESIZED HANDHELD TRANSCEIVER**

The ICOM IC-A1 is a compact, synthesized, 5 watt PEP, VHF handheld transceiver. Using the latest in electronic design, the IC-A1 offers keyboard frequency selection with extremely good stability and frequency accuracy.

### **ALL CHANNELS**

The IC-A1 has all 720 COM channels and 200 NAV channels PLUS 720 additional COM channels and 200 additional NAV channels at 12.5kHz spacing. Wherever you are in the world, you'll be able to communicate with the ICOM IC-A1.

### **RUGGED CONSTRUCTION**

Metal case construction and stainless steel rails for the battery contacts contribute to the ruggedness and long-life of the IC-A1.

### **12 VOLT OPERATION**

The IC-A1 can be operated directly from the aircraft's 12V power panel without draining the battery pack. Also, the standard IC-CM7 battery pack charges in-flight while you operate the transceiver.

### **10 MEMORY CHANNELS**

The IC-A1 has ten memory channels to store your most-used frequencies. An internal lithium battery maintains programmed memory channels.

## SECTION 2 SPECIFICATIONS

### GENERAL

Number of Semiconductors	:	Transistors	35
		FETs	4
		ICs	10
		Diodes	55
Memory Channels	:	10	
Frequency Control	:	Digital PLL synthesizer with keyboard input	
Channel Spacing	:	12.5kHz, 25kHz or 50kHz	
Frequency Stability	:	$\pm 0.002\%$ ( $-20^{\circ}\text{C} \sim +50^{\circ}\text{C}$ )	
Usable Temperature	:	$-20^{\circ}\text{C} \sim +50^{\circ}\text{C}$ ( $-4^{\circ}\text{F} \sim +122^{\circ}\text{F}$ )	
Antenna Impedance	:	50 ohms unbalanced	
Power Supply Requirement	:	DC 13.8V within +15% or -20%	
		Attendant power pack, IC-CM7 (negative ground necessary)	
Current Drain at 13.8V	:	Transmitting : High Power	Approx. 0.9A
		Low Power	Approx. 0.6A
		Receiving : Standby	Approx. 55mA
		Max. audio output	Approx. 220mA
Dimensions	:	65(74)mm(W) x 167(178)mm(H) x 35(41)mm(D)	
		( ) shows dimensions including projections.	
Weight	:	595g including power pack, IC-CM7 and flexible antenna	

## RECEIVER

Frequency Range	: 108.000 ~ 135.975MHz
Receiving System	: Double-conversion superheterodyne
Modulation Acceptance	: A3E 6K00 (6A3)
Sensitivity (with 50 ohm load)	: Less than $2\mu\text{V}$ for 6dB S/N with 1kHz, 30% modulation on 108.000 ~ 117.975MHz Less than $1\mu\text{V}$ for 6dB S/N with 1kHz, 30% modulation on 118.000 ~ 135.975MHz
Squelch Sensitivity (with 50 ohm load)	: Less than $0.5\mu\text{V}$ at threshold point at frequencies higher than 118.000MHz with 1kHz, 30% modulation.
Spurious Response Rejection Ratio	: More than 60dB
Selectivity	: More than 60dB at adjacent channel
Audio Output Power	: More than 500mW at 10% distortion
Audio Output Impedance	: 8 ohms

## TRANSMITTER

Frequency Range	: 118.000 ~ 135.975MHz
Output Power	: High: 1.5W carrier power (4.8W PEP) Low: 0.5W carrier power (1.6W PEP) ( ) shows PEP with 80% modulation by a 1kHz audio tone.
Emission Mode	: A3E 6K00 (6A3)
Modulation System	: Low level modulation
Spurious Emission	: More than 45dB below carrier
Microphone	: Built-in electret condenser microphone

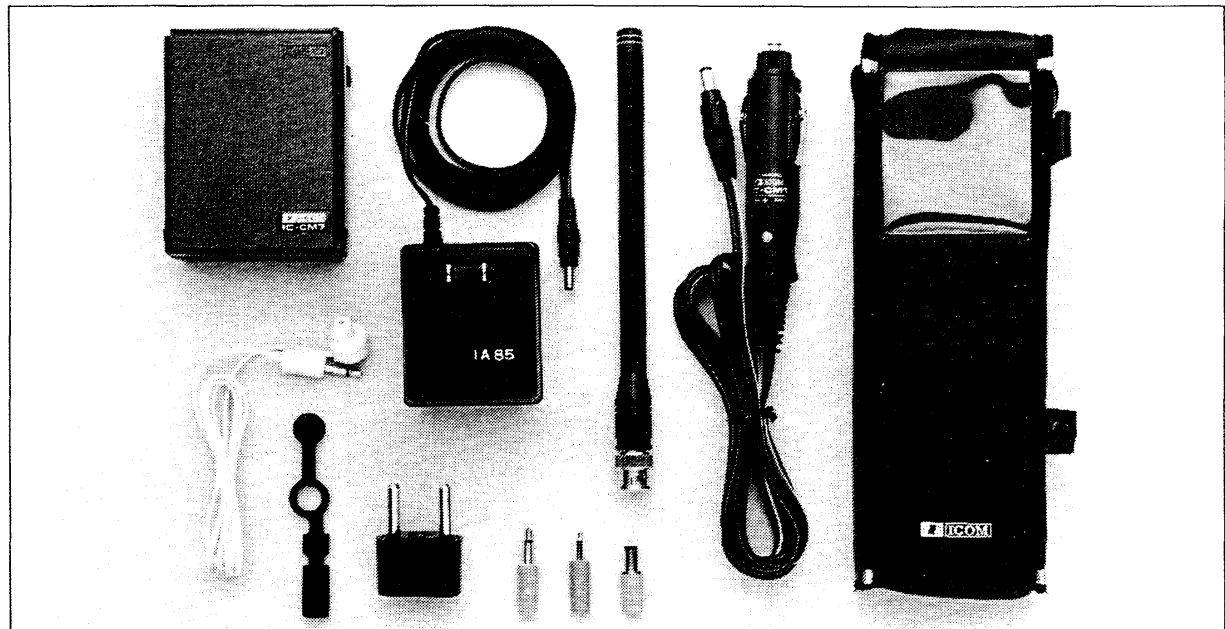
## SECTION 3 ACCESSORIES

### UNPACKING

Carefully remove your transceiver from the packing carton and examine it for signs of shipping damage. Notify the delivering carrier or dealer immediately, stating full details, should any damage be apparent. We recommend you keep the shipping carton for storing, moving or reshipping the transceiver if necessary. Accessory hardware, cables, etc. are packed with the transceiver. Make sure you have removed all equipment and parts before discarding the packing material.

Accessories included with the IC-A1:

1. Power pack IC-CM7. . . . . 1  
(Attached to the set)
2. Wall charger CM-16E . . . . . 1
3. Flexible antenna . . . . . 1
4. Rainproof cap . . . . . 1
5. DC power plug . . . . . 1
6. Earphone. . . . . 1
7. Leatherette case LC-14. . . . . 1
8. Cigarette lighter cable IC-CM1. 1
9. Pin-conversion plug. . . . . 1
10. Earphone plug. . . . . 1
11. Microphone plug . . . . . 1



## SECTION 4 PRE-OPERATION

### BATTERY INSTALLATION

The supplied IC-CM7 is a rechargeable nickel-cadmium power pack which can be slipped on or off the radio very easily. Use the supplied CM-16E wall charger or the optional CM-35 desk charger, or a 12V battery with the supplied IC-CM1 cable for recharging the power pack. Before using the power pack, charge it for 15 hours with the CM-16E or 1.5 hours with the CM-35.

When the IC-CM7 is fully charged, it may be used in the same manner as dry cells. However, the voltage of nickel-cadmium batteries drops rapidly immediately before they are exhausted. For this reason, stop operating and replace or recharge the power pack when the S/BATTERY INDICATOR fails to reach into the silver zone while transmitting. See page 32 for more information.

### CHARGING METHOD

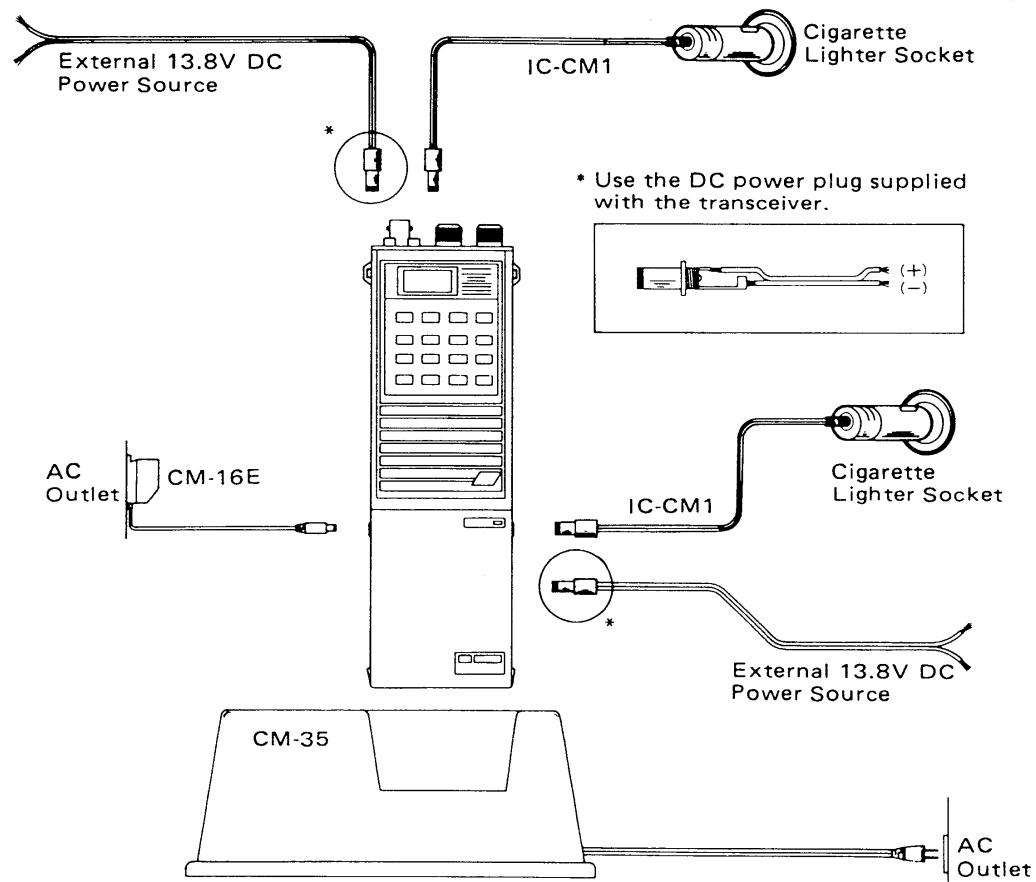
1. Use the supplied CM-16E wall charger or optional CM-35 charger, or a stable power source with an output voltage of 13.8V DC and a current capacity over 100mA. A 12V battery with the supplied IC-CM1 charger cable is also suitable. Output voltage in all cases must be 12 to 15V but it is best to use the specified 13.8V.



**CAUTION:** Voltage greater than 15 volts DC will damage your transceiver. Check the source voltage before connecting the power cord.

2. Turn the IC-A1 POWER SWITCH to the OFF position, or remove the power pack from the transceiver.
3. Connect the output plug from the CM-16E wall charger or other power source to the correct jack on the power pack. The BATTERY CHARGE INDICATOR lights to confirm the charger is working.

### Charger Connections

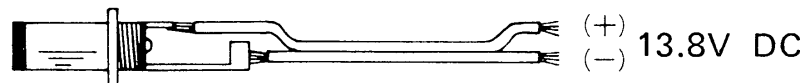


4. Charging time is about 15 hours when using the CM-16E, and about 1.5 hours when using the CM-35. Fully charge the power pack after a long period of disuse, or when it is new.
5. Ambient temperature while charging should be in the range from 0°C to 40°C.
6. Avoid continuous charging after the 15 hour full charge since this excessive charging reduces the power pack life.
7. After charging, unplug the power source from the CHARGER TERMINAL on the power pack.

## EXTERNAL POWER SOURCE

When using the IC-A1 for long periods of time, use an external power source which assures reliable communications without concern for battery consumption.

1. Use either a 13.8V DC regulated power supply or a battery. They must have a minimum current capability of 1.5A.
2. Correctly connect the external supply to the external DC power jack as shown in the figure.



## **PRECAUTIONS FOR USE OF THE NICKEL-CADMIUM BATTERIES**

**(from the JIS C8705 MANUAL)**

- 1. Never short the power pack.**

Since the internal resistance is low, excess current flows when the pack is shorted causing damage to the batteries or conductors. Avoid shorts! The polarity is shown on the power pack.
- 2. Never solder directly to the batteries.**

If the batteries are soldered directly, the separator or insulator may melt or be damaged. Therefore, always use a battery pack equipped with suitable terminals for mechanical or solder connections.
- 3. Confirm polarities to prevent reverse charging.**

Batteries may be damaged if the leads from the charger are connected backwards. It is essential to confirm the polarity of these leads.
- 4. Never charge with excess charging current.**

If an excess charging rate is employed, gas generation will exceed the rate of gas dissipation at the time of charging. The increased internal pressure may damage the batteries. Therefore, be sure to regulate the charging value of current.
- 5. Avoid charging under 0°C or over 40°C.**

At cold temperatures, the rate of gas dissipation reduces causing higher pressure inside the batteries. At hot temperatures, charging efficiency decreases and it becomes difficult to obtain a full charge. Therefore, charge at a temperature in the range from 0°C to 40°C.



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