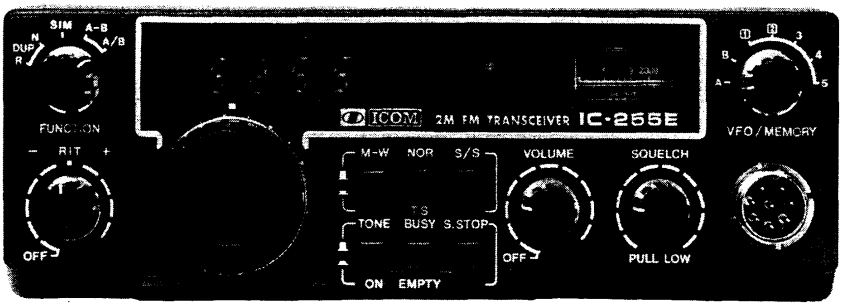
IC-255E

144MHz FM TRANSCEIVER

INSTRUCTION MANUAL



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SECTION I SPECIFICATIONS

GENERAL

Numbers of semi-conductors	:	Transistors	49
		FET	4
		IC	30
		Diode	81
Frequency coverage	:	144.000 ~ 146.000MHz	
Frequency resolution	:	25KHz steps	
		5KHz steps with TS switch depressed	
Frequency Control	:	Microcomputer based Digital PLL synthesizer.	
		Independent Transmit-Receive Frequency Capability	
Memory channels	:	5 channels, any inband frequency programmable	
Usable conditions	:	Temperature: −10°C ~ 60°C (14°F ~ 140°F)	
		Operationable time: continuous	
Frequency stability	:	Within ±1.5KHz	
Antenna impedance	:	50 ohms unbalanced	
Power supply requirement	:	13.8V DC ±15% (negative ground) 5.5A Max.	
Current drain	:	Transmitting	
		HIGH (25W)	Approx. 5.5A
		LOW (1W)	Approx. 1.5A
		Receiving	
		At max audio output	Approx. 0.7A
		Squelched	Approx. 0.5A
Dimensions	:	185mm (W) x 64mm (H) x 223mm (D)	
Weight	:	Approx. 2.5kg	

TRANSMITTER

Output power	:	25W (HIGH), 1W (LOW)
Emission mode	:	$16F_3$
Modulation system	:	Variable reactance frequency modulation
Max. frequency deviation	:	±5KHz
Spurious emission	:	More than 60dB below carrier
Microphone	:	1.3K ohm dynamic microphone with built-in preamplifier and push-to-talk switch
Operating mode	:	Simplex, Duplex (±600KHz from receive frequency and any inband frequency separation programmable)

RECEIVER

Receiving system	:	Double-conversion superheterodyne
Modulation acceptance	:	$16F_3$
Intermediate frequency	:	1st: 10.75MHz
		2nd: 455KHz
Sensitivity	:	More than 30dB S+N+D/N+D at 1μV
		Less than 0.6μV for 20dB Noise quieting
Squelch sensitivity	:	Less than 0.4μV
Spurious response rejection ratio	:	More than 60dB
Selectivity	:	More than ±7.5KHz at −6dB point
		Less than ±15KHz at −60dB point
Audio output power	:	More than 2.0W
Audio output impedance	:	8 ohms

144MHz FM TRANSCEIVER INCORPORATING A MICROCOMPUTER

CPU control with ICOM's original programs provides various operating capabilities. Frequency control, band-edge detection, and the display are accomplished by the microcomputer. The 5-channel memory is controlled electrically by the use of a 256-bit RAM area. The circuits for these IC-255E functions are equivalent in capability to conventional circuits having a large number of C-MOS MSI's.

TWO VFO'S BUILT-IN

No extra equipment needed for split-frequency operation. Easy writing and reading of the five memory channels. Smooth and easy tuning with 25KHz and 5KHz steps.

MULTI-PURPOSE SCANNING

Memory Scan allows you to monitor five different memory channels. Program Scan provides scanning between two programmed frequencies. Adjustable scanning speed. Auto-stop stops scanning when a signal is received, or a frequency is not being used.

SUPERIOR RECEIVING CHARACTERISTICS

The use of newly developed low-noise and large dynamic range junction FET's (for the RF amplifier and the first mixer) and of helical cavity filters (for the antenna and RF circuits) provides excellent sensitivity and intermodulation distortion characteristics. A pair of high quality monolithic crystal filters and ceramic filters facilitates very stable receiving and excellent durability.

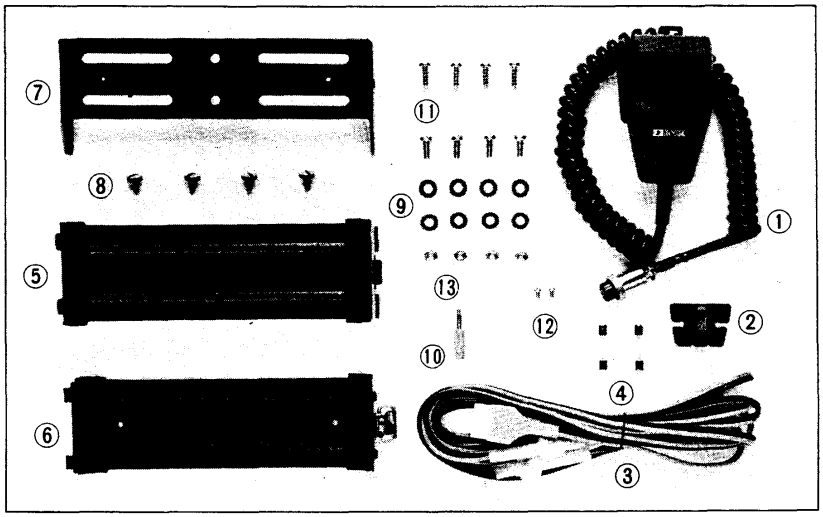
HIGHLY STABLE TRANSMITTING CHARACTERISTICS

Both the directly amplified VCO output without the use of multipliers or mixers and the use of a power module in the PA unit produce very clean transmitting signals without spurious radiation. RF power is selectable 25W (HIGH) and 1W (LOW). 25W HIGH output power will increase your QSO range.

SECTION III INSTALLATION

UNPACKING

Carefully remove your transceiver from the packing carton and examine it for signs of shipping damage. Should any be apparent, notify the delivering carrier or dealer immediately, stating the full extent of the damage. It is recommended you keep the shipping cartons. In the event storage, moving, or reshipment becomes necessary, they come in handy. Accessory hardware, cables, etc., are packed with the transceiver. Make sure you have not overlooked anything.

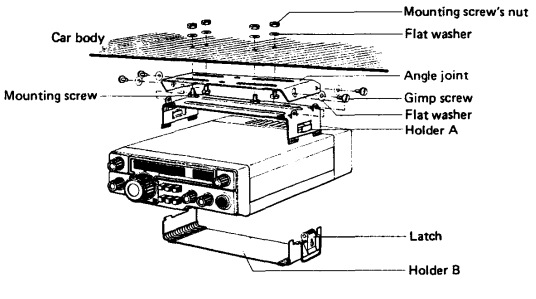


1. Microphone (dynamic type) 1
2. Microphone hook 1
3. Power cord. 1
4. Spare fuses (10A) 2
5. Installing holder A. 1
6. Installing holderB 1
7. Installing angle joint. 1
8. Gimp screws. 4
9. Flat washers. 12
10. Plug for speaker 1
11. Mounting screws 8
12. Screws for additional bracket. . . . 2
13. Mounting screw's nuts 4

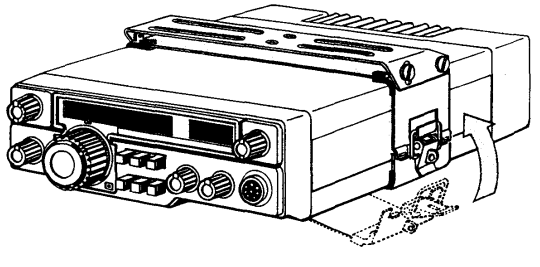
LOCATION

Where you place the transceiver in your automobile is not critical and should be governed by convenience and accessibility. Since the unit is so compact, many mobile possibilities present themselves. In general, the mobile mounting bracket will provide you with some guide as to placement. Any place where it can be mounted with metal screws, bolts, or pop-rivets will work. For fixed station use, a power supply should be designed to produce 6 amps for the transceiver.

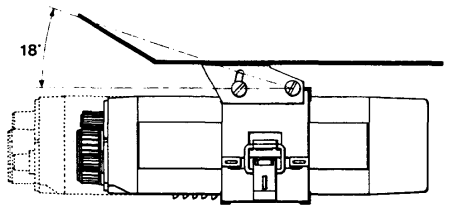
Mounting bracket installation



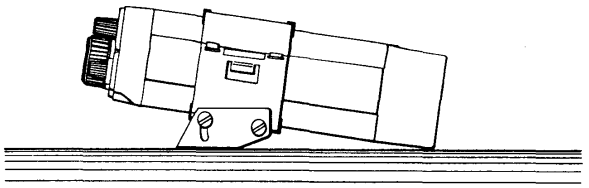
Transceiver installation



Angle adjustment



Optional installation

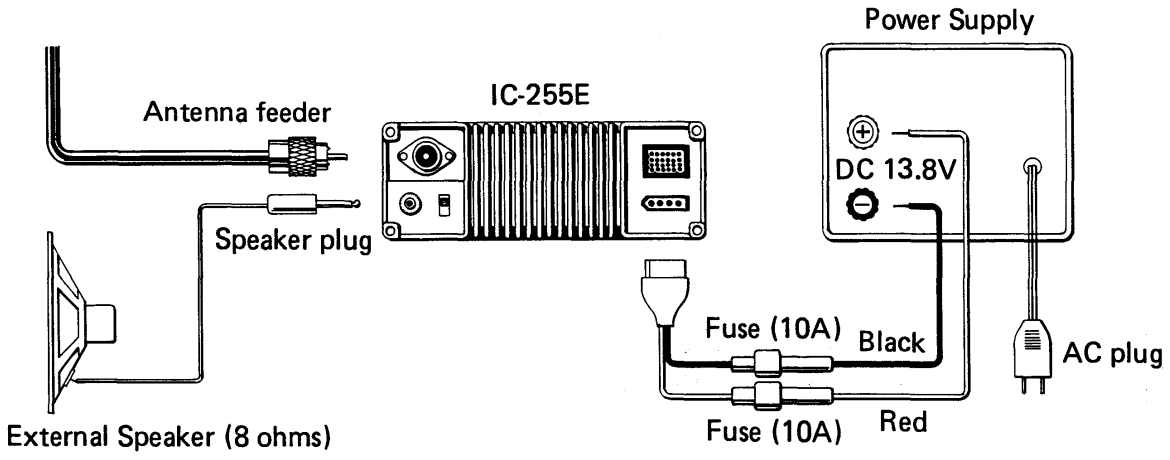


POWER REQUIREMENTS

The transceiver is supplied ready to operate from any regulated 13.8V DC, 6 ampere negative ground source. An automobile 12 volt, negative ground, system is usually more than adequate. Some note must be taken, however, of the condition of the vehicle's electrical system. Items such as low battery, worn generator/alternator, poor voltage regulator, etc., will impair operation of your transceiver as well as the vehicle. High noise generation or low voltage delivery can be traced to these deficiencies. If an AC power supply is used with your transceiver, make certain it is adequately regulated for both voltage and current. Low voltage while under load will not produce satisfactory results from your transceiver. Receiver gain and transmitter output will be greatly impaired. Caution against catastrophic failure of the power supply should be observed.

CAUTION: Excessive Voltage (above 15VDC) will cause damage to your transceiver. Be sure to check source voltage before plugging in the power cord.

Included with your transceiver is a DC power cable with plug attached. The Red Wire is positive (+), the Black, negative (–). If your mobile installation permits, it is best to connect these directly to the battery terminals. This arrangement eliminates random noise and transient spikes sometimes found springing from automotive accessory wiring. If such an arrangement is not possible, then any convenient B+ lead in the interior of the vehicle and the negative frame can be utilized. Remember, the unit operates on a negative ground system only; it cannot be used in a positive ground automobile. After making your connections, simply insert the plug into your transceiver.



ICOM INCORPORATED

1-6-19, KAMI KURATSUKURI, HIRANO-KU,
OSAKA JAPAN