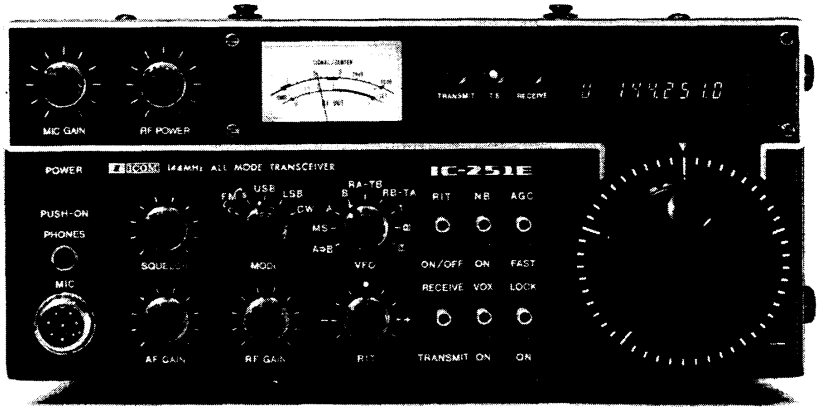
# IC-251A/E

## 144MHz ALL MODE TRANSCEIVER

## INSTRUCTION MANUAL

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# SECTION I SPECIFICATIONS

## GENERAL

| | | |
|---|---|---|
| Numbers of semi-conductors | : | Transistor 99<br>FET 12<br>IC 36 (IC-251A : 35)<br>Diode 133 (IC-251A : 132) |
| Frequency coverage | : | 144.0000 ~ 145.9999MHz<br>(IC-251A : 143.8000 ~ 148.1999MHz) |
| Frequency resolution | : | SSB 100Hz steps FM 5KHz steps<br>1KHz steps with TS button depressed |
| Frequency Control | : | Microcomputer based 100Hz step Digital PLL synthesizer.<br>Independent Transmit-Receive Frequency Capability. |
| Frequency Readout | : | 7 digit Luminescent display 100Hz readout. |
| Frequency stability | : | Within ±1.5KHz |
| Memory channels | : | 3 channels, any inband frequency programmable |
| Usable conditions | : | Temperature: −10°C ~ 60°C (14°F ~ 140°F)<br>Operationable time: Continuous |
| Antenna impedance | : | 50 ohms unbalanced |
| Power supply requirement | : | 13.8V DC ±15% (negative ground) 3A Max. or 117V/240V AC ±10% |
| Current drain (at 13.8V DC) | : | Transmitting<br>SSB (PEP 10W) Approx. 2.3A<br>CW, FM (10W) Approx. 2.3A<br>FM (1W) Approx. 1.0A<br>Receiving<br>At max, audio output Approx. 0.6A<br>Squelched Approx. 0.4A |
| Dimensions | : | 111mm (H) x 241mm (W) x 264mm (D) |
| Weight | : | Approx. 5.0 Kgs |

## TRANSMITTER

| | | |
|---|---|---|
| Output power | : | SSB 10W (PEP)<br>CW 10W<br>FM 1 ~ 10W (Adjustable) |
| Emission mode | : | SSB (A3J, USB/LSB), CW (A1), FM (F3) |
| Modulation system | : | SSB Balanced modulation<br>FM Variable reactance frequency modulation |
| Max. frequency deviation | : | ±5KHz |
| Spurious emission | : | More than 60dB below peak power output |
| Carrier Suppression | : | More than 40dB below peak power output |
| Unwanted Sideband | : | More than 40dB down at 1000Hz AF input |
| Microphone | : | 1.3K ohm dynamic microphone with built-in preamplifier and push-to-talk switch. |
| Operating mode | : | Simplex, Duplex<br>(Any inband frequency separation programmable) |
| Tone Burst | : | 1750Hz ±0.1Hz (IC-251A : Not installed) |

## RECEIVER

| | | | |
|---|---|---|---|
| Receiving system | : | SSB, CW | Single conversion superheterodyne |
| | | FM | Double conversion superheterodyne |
| Receiving Mode | : | SSB (A3J, USB/LSB), CW (A1), FM (F3) | |
| Intermediate Frequency | : | SSB, CW | 10.7MHz |
| | | FM | 10.7MHz, 455KHz |
| Sensitivity | : | SSB, CW | Less than 0.5 microvolts for 10dB S+N/N |
| | | FM | More than 30dB S+N+D/N+D at 1 microvolt |
| | | | Less than 0.6 microvolts for 20dB Noise quieting |
| Squelch sensitivity | : | SSB, CW | Less than 0.6 microvolts |
| | | FM | Less than 0.4 microvolts |
| Spurious response rejection ratio | : | More than 60dB | |
| Selectivity | : | SSB, CW | More than ±1.2KHz at –6dB point |
| | | | Less than ±2.4KHz at –60dB point |
| | | FM | More than ±7.5KHz at –6dB point |
| | | | Less than ±15KHz at –60dB point |
| Audio output power | : | More than 1.5W | |
| Audio output impedance | : | 8 ohms | |

# SECTION II DESCRIPTION

## 144MHz ALL-MODE TRANSCEIVER INCORPORATING A MICROCOMPUTER

CPU control with ICOM's original programs provides various operating capabilities. No-backlash dial controlled by ICOM's unique photo-chopper circuit. Band-edge detector and Endless System provides out-of-band protection. No variable capacitors or dial gear, giving problem-free use. The IC-251A/E provides FM, USB, LSB, CW coverage in the 144～146MHz (IC-251A:143.8～148.2MHz) frequency range. Thus the IC-251A/E can be used for mobile, DX, local calls, and satellite work.

## MULTI-PURPOSE SCANNING

Memory Scan allows you to monitor three different memory channels. Program Scan provides scanning between two programmed frequencies. Adjustable scanning speed. Auto-stop stops scanning when a signal is received, in all modes.

## DUAL VFO'S

Two separate VFO's can be used either independently or together for simplex operation, and any desired frequency split in duplex operation.

## CONTINUOUS TUNING SYSTEM

ICOM's new continuous tuning system features a luminescent display that follows the tuning knob movement and provides an extermely accurate readout. Frequencies are displayed in 7 digits representing 100MHz to 100Hz digits.

Automatic recycling restarts tuning at the top of the band, ie., the high edge when the dial goes below the low edge. Recycling changes the high edge to the low edge as well. Quick tuning in 1KHz steps is available, and fine tuning in 100Hz steps in the SSB and CW modes, and 5KHz steps and 1KHz steps in the FM mode, is provided for trouble free QSO.

## EASIER OPERATION AND LIGHTER WEIGHT

The most compact, lightest weight all-mode 144MHz transceiver. First to use a pulse power supply in communication equipment, for lighter weight. 50mm-diameter large tuning control knob for smooth and easy tuning. Trouble-free controlling knobs for both receiving and transmitting. LED indicator for transmit and receive modes.

## MOST SUITABLE FOR BOTH FIXED AND PORTABLE STATIONS

Built-in 117V/240V AC and DC power supplies. Convenient Dial Lock switch for mobile operation. Easy-carry handle. Effective Noise Blanker to reduce outcoming pulse noise. IC-SM5 high quality stand microphone is suitable for fixed station operation. Powerful audio output, 1.5 watts at 8 ohm, for easy listening even in noisy surroundings.

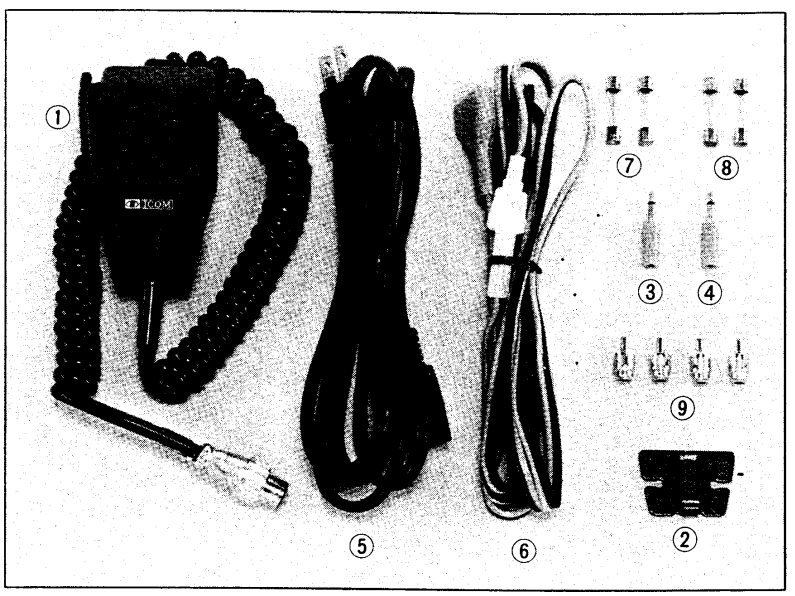
## OUTSTANDING PERFORMANCE

The RF amplifier and first mixer circuits using MOS FET's, and other circuits provide excellent Cross Modulation and Two-Signal Selectivity characteristics. The IC-251A/E has excellent sensitivity demanded especially for mobile operation, high stability, and with Crystal Filters having high shape factors, exceptional selectivity.
The transmitter uses a balanced mixer in a single conversion system, a band-pass filter and a high-performance low-pass filter. This system provides distortion-free signals with a minimum spurious radiation level.

# 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. External Speaker Plug . . . . . 1
4. Key Plug . . . . . 1
5. AC Power Cord. . . . . 1
6. DC Power Cord. . . . . 1
7. Spare Fuse (2A) for AC . . . . . 2
8. Spare Fuse (5A) for DC . . . . . 2
9. Pin Plug. . . . . 4
10. Jumper Plug. . . . . 1
    (Inserted in the DC power socket)

## RECOMMENDATIONS FOR INSTALLATION

1. Avoid placing the IC-251A/E in direct sunlight, high temperature, dusty or humid places.
2. Left sides of the unit, function as heatsinks. The temperature there will usually become relatively warm. Any equipment should be at least 1 inch (3cm) away from the unit so as to provide good ventilation. Also avoid places near outlets of heaters, air conditioners etc.
3. Place the unit so that the controls and switches can easily be handled and the frequency indication and meter can easily be read.
   For mobile installation, an optional mounting bracket is available. Select the best location that can stand the weight of the unit and that does not interfere with your driving in any way.
5. Use the Ground Lug!

## POWER SUPPLY

**For AC operation:**

The IC-251A/E has a built-in AC power supply. Connect the supplied AC power cord to the AC power socket on the rear panel of the IC-251A/E, and the opposite side plug of the power cord into any convenient AC power outlet. Be sure that the jumper plug is inserted to the DC power socket on the rear panel.

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OSAKA JAPAN

Printed in Japan