IC-505

50 MHz SSB CW (FM) TRANSCEIVER

OPERATION MANUAL

ICOM

The IC-505 is a 50 MHz band SSB, CW (FM) transceiver developed by ICOM that engages the latest computer technology and high-precision VHF engineering.
In order to fully enjoy the complete benefits of this high performance transceiver, be sure to read and study this operation manual thoroughly before operation, and feel free to contact your authorized ICOM dealer to answer any questions you may have.

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SECTION I SPECIFICATIONS

GENERAL

Frequency coverage:	50 to 54 MHz
Operating temperature range:	−10° C to +50° C (+15° F to +125° F)
Frequency stability:	Within ±1 kHz
Antenna impedance:	50 ohms unbalanced
Operating voltage range:	13.8V DC ±20%
Grounding:	Negative
Current consumption:	Receive Mode: 250 mA max., at min. audio level 300 mA max., at max. audio level Transmit Mode: 2.9 A max., at CW 10W output 0.9 A max., at CW 3W output 600 mA at CW low power (0.5W)
Dimensions:	76 mm (H) × 230 mm (W) × 188.5 mm (D) (3.0" × 9.1" × 7.4")
Weight:	3.2 kg (7.05 lbs) including batteries

TRANSMITTER

Emission Modes:	A1 (CW), A3J (USB/LSB) and F3 (FM)*
Power output:	10W when power amp on (at 13.8V DC) 3W when power amp off (at 13.8V DC) 0.5W in Low Power mode.
Modulation System:	SSB: Balanced modulation FM*: Variable reactance frequency modulation
Max. Frequency Deviation*:	±5 kHz
Spurious Emission:	−60 dB or less
Unwanted sideband suppression:	40 dB or greater
Microphone:	1.3 kohm dynamic microphone with built-in preamplifier and push-to-talk switch

RECEIVER

Receiving Mode:	A1 (CW), A3J (USB/LSB) and F3 (FM)*
Receiving System:	SSB, CW: Single conversion superheterodyne FM*: Double conversion superheterodyne
Intermediate frequency:	SSB, CW: 13.99 MHz FM*: 1st 13.99 MHz 2nd 455 kHz
Sensitivity:	SSB, CW: −6 dBμ (0.5μV) for 10 dB S+N/N FM*: −4 dBμ (0.6μV) for 20 dB noise quieting
Spurious response:	−60 dB or less
Selectivity:	SSB, CW: More than ±1.1 kHz at −6 dB point Less than +2.5 kHz, −2.7 kHz at −60 dB point FM*: More than ±7.5 kHz at −6 dB point Less than ±15 kHz at −60 dB point
Squelch threshold:	SSB: 1μV
Audio output power:	More than 1.5W at 10% THD and 8 ohm load
Audio output impedance:	8 ohms

*Only when FM unit is installed.

SECTION II FEATURES

1. Versatility

The IC-505 accepts either standard dry cell pack or optional rechargeable nickel-cadmium battery pack, IC-BP10, as well as external 13.8V DC power supply. Output power can be selected between 10W for fixed use and 3W for portable use, increasing its versatility.

2. Highest receiver performance

RF amplifier dual-gate MOS FET (3SK74)—featuring ultra high gain and low noise—with PLL-circuit control voltage added to band-pass filter provide theoretically flat and optimum sensitivity. Moreover, high-performance crystal filter at IF stage assures ideal pass-band characteristics.

3. Distortion-free radio transmitter

The advanced circuit configurations including exclusive purpose IC's in the balanced modulator circuit, double-balanced mixer in transmission mixer circuit, and a number of quality-assured band-pass filters and low-pass filters generate a pure signal with minimum spurious.

4. Microprocessor frequency control functions

The Dual VFO system and 1 MHz UP function have been developed utilizing highly advanced computer and PLL technology. The IC-505 features 6-channel memories which can be used independent of emission modes, unique CALL channel, Memory Scan which sequentially searches memory channels, Program Scan which searches only specified frequency band, and other useful frequency control functions.

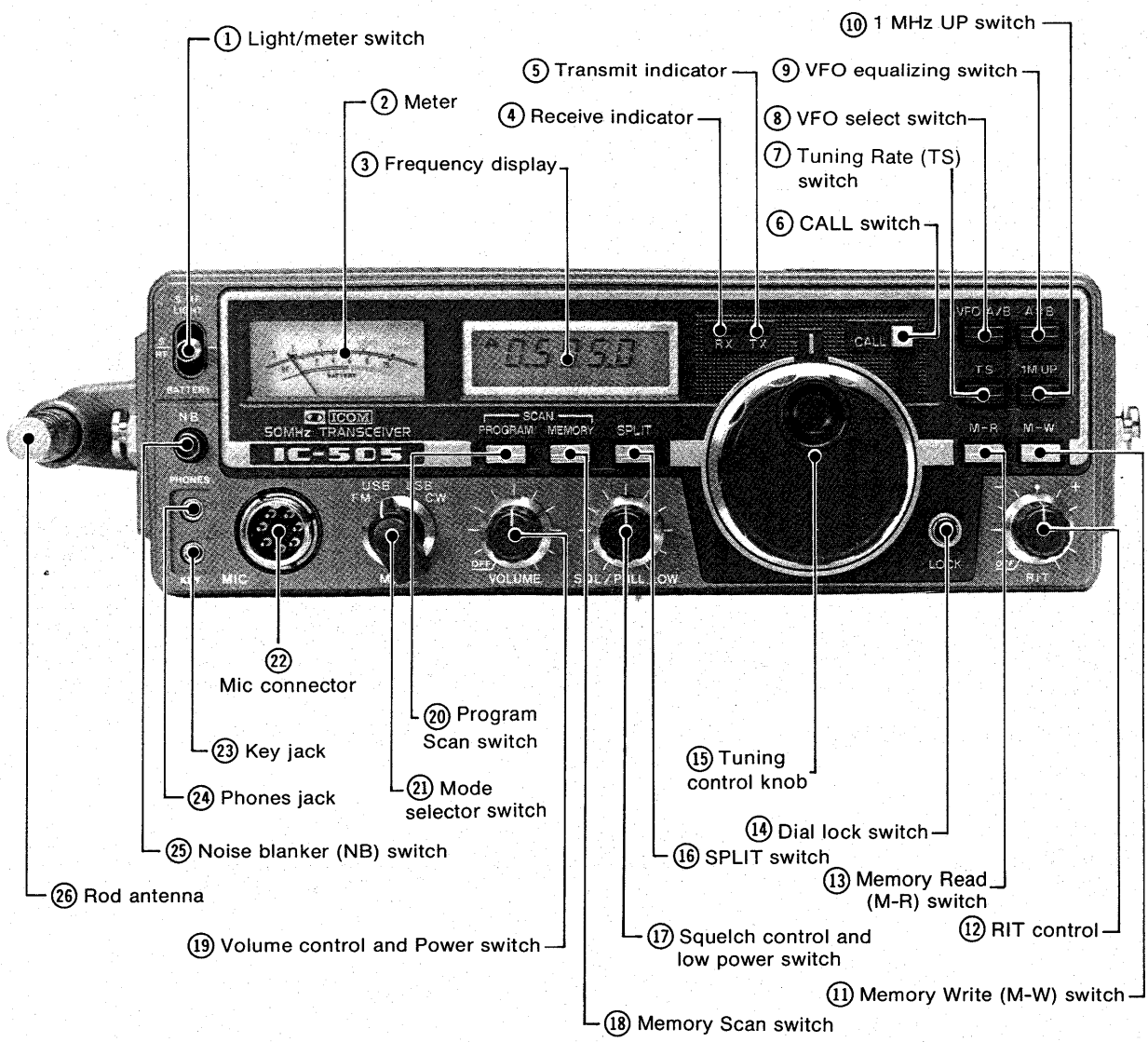
5. New liquid-crystal display panel provides clear visibility in sunlight. At night, simply turn on the switch for illumination

6. Helpful accessory circuits provide quick action

Standard accessory circuits such as a split switch for split frequency QSO, noise blanker circuit which eliminates pulse noise, squelch circuit which functions even in SSB CW modes, dial-lock switch, and CW break-in circuit make the IC-505 the finest set for the amateur radio operator.

SECTION III CONTROL FUNCTIONS

FRONT PANEL



1. Light/Meter switch:
When switch lever is in upper (LIGHT) position the meter functions as an S-meter in receive mode and a relative RF output meter in transmit mode, and the meter and frequency display light up. When using battery to power the IC-505, keep switch lever at center (S/RF) position to save power. At this time, the meter functions as S/RF meter and illumination is turned off. When switch lever is in lower position (BATTERY) illumination lamp turns on and meter functions to check battery voltage.
NOTE: If battery check is done with squelch closed it may temporarily open up.

2. Meter:
Shows signal strength on the S scale in receive mode, relative power output on the RF in transmit mode, and battery voltage at the bottom.
Replace cells if meter pointer moves out of red zone during transmission.

3. Frequency display:
Indicates operating frequency, VFO in use, selected memory channel, CALL channel, and Split and Scan operation modes.
The tilted LCD polarizing panel provides easy reading of display information.

4. **Receive indicator:**
The LED glows when squelch is opened in receive mode.

5. **Transmit indicator:**
The LED lights when PTT switch on the microphone is pressed during SSB or FM (optional) mode. This indicates that IC-505 is in transmit mode.
In CW mode. the LED lights when the CW break-in circuit is activated by keying.

6. **CALL switch:**
Press this switch to "read" the frequency stored in CALL channel. The frequency data in CALL channel can be re-written in the same manner as in other memory channels.

7. **Tuning Rate (TS) switch:**
This switch sets tuning rate to 1 kHz regardless of operating mode.

8. **VFO select switch:**
Selects either A or B VFO frequencies.

9. **VFO equalizing (A=B) switch:**
Press this switch to transfer A or B VFO's frequency to the other VFO. Also this can be used to reset scan stop timer.
Press this switch while the scan is stopping on a frequency.

10. **1 MHz UP (1M UP) switch:**
Each push increases the operating frequency in 1 MHz steps. The lower digits remain the same. When the frequency is in the 53 MHz range, by pressing this switch, the frequency will change to the 50 MHz range.

11. **Memory Write (M-W) switch:**
Allows you to store any desired frequency into either Memory or CALL channel.

12. **RIT control:**
Offsets the receiving frequency ±1 kHz either side of the transmitting frequency without changing transmitting frequency. If the RIT control is at the OFF position or at the top (12 o'clock) position, both transmitting and receiving frequencies are the same.
Rotate RIT control clockwise to increase receiving frequency, and counterclockwise to decrease the receiving frequency.

13. **Memory Read (M-R) switch:**
Press this switch to select the frequency stored in one of the six memory channels (M1-M6). Each push selects a memory channel having the next higher number. (When the operating channel is M6, the next push selects M1.)

14. **Dial Lock switch:**
Electrically locks the operating frequency. This eliminates dial rotation by misoperation during long QSO or portable operation.

15. **Tuning Control knob:**
Tunes the transmitting/receiving frequency. Rotate clockwise to increase the frequency, and counterclockwise to decrease the frequency. The tuning rate is 100 Hz for SSB or CW, 10 kHz for FM, and 1 kHz for all modes when TS switch is turned on.
When this control knob rotated clockwise beyond the upper limit frequency, the lower limit frequency will be selected. When the control is rotated counterclockwise below the lower limit, the upper limit frequency will be selected.

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