



IC-201

2 METER BAND

SSB FM CW TRANSCEIVER



INSTRUCTION
MANUAL



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SECTION I - SPECIFICATIONS

GENERAL:

Frequency Coverage	144.00 to 146.00 MHz
Number of Solid State Devices	Transistors 53 FET 16 IC 10 Diode 66
Modes	SSB (A3J), FM (F3), CW (A1)
Supply Voltage	DC 13.8V \pm 15% AC 117V or 220V \pm 10% (IC-3PU)
Current Drain	Transmit: A3J (PEP 10W) 2.3A A1, F3 2.8A Receive: Max output 0.9A
Antenna Input	50ohms Unbalanced
Frequency Stability	Less than \pm 2KHz at -10°C to $+60^{\circ}\text{C}$
Size	111 (H) x 230 (W) x 260 (D) mm
Weight	5.4 Kg

TRANSMITTER:

Frequency Range	144.00 to 146.00 MHz VFO control with 4 fixed channels (11.385 to 12.385 MHz)
Modes	A3J (USB, LSB) A1, F3
TX Output	A3J 10W (PEP) A1, F3 10W
Carrier Suppression	40 dB or better
Side Band Suppression	40 dB or better/1KHz Mod (A3J)
Spurious Radiation	-60dB or less
Modulation System	A3J Balanced Modulation F3 Variable Reactance Phase Modulation
SSB Generation System	Filter Type
CW Keying System	Bias control (with monitor)
Maximum Frequency Deviation	\pm 15 KHz (adjusted to \pm 5KHz)
Microphone Impedance	500 ohms

RECEIVER:

Frequency Range	144.00 to 146.00 MHz
Modes	A3J (USB, LSB) A1, F3
Reception System	A3J, A1, Single Superheterodyne F3, Double Superheterodyne
Intermediate Frequencies	A3J, A1 10.7 MHz F3, 1st 10.7 MHz, 2nd 455 KHz
Sensitivity	A3J, A1 -6dB/ μ V S+N+D/N+D 30dB or more F3 -4dB/ μ V at 20dB quieting S+N+D/N at 1 μ V input, 30dB or more
Squelch Threshold	-8dB or less (F3)
Spurious Response	-60dB or better
Selectivity	A3J, A1 \pm 1.2KHz or more/-6dB \pm 2.4KHz or less/-60dB F3 \pm 8KHz or more/-6dB \pm 16KHz or less/-60dB

SECTION II - DESCRIPTION



The ICOM IC-201 transceiver for 2m Band is a precision built high performance transceiver, providing SSB (USB and LSB), FM and CW modes of operation with an output power of 10 watts.

This is an extremely durable transceiver which has state of the art devices such as integrated circuits, field effect transistors, varactor and zener diodes engineered into a tight knit straight forward electronic design throughout both transmitter and receiver. Reliability, low current demand, compactness and ease of operation are the net result.

The dual conversion receiver with its FET front end and high-Q helical resonators boasts low noise and sensitivity of $-6\text{dB}/\mu\text{V}$ or less. Audio reproduction is of an unusually high order of distortion free clarity. High stability is obtained by using permeability-tuned VFO and double tuning system (50KHz or 16KHz/T). The HC-attenuator is highly effective for crossmodulation interference.

The IC-201 FM and SSB modes have individual filters. Other features include tone control, marker for calibration 0, 500, 1000KHz, wide band linear amplifier, VOX, Break-in circuit, CW monitor, dual power supplies (DC 13.8V and AC117V or 220V) and an ingenious final PA transistor protection device, APC (automatic protection circuit) is also incorporated in the final output circuitry. Should difficulties occur, (high SWR, ANT mismatch) the APC instantaneously disables the final PA.

All circuitry is constructed in a series of modules which are easily removable for servicing. The modules are housed in a sturdy plated brass frame, which is in turn housed in a rigid metal case, providing an extremely durable and rugged unit. Test points are brought up from all major circuits to facilitate maintenance checks and trouble shooting should the necessity arise.

A modern styled face plate, easy-to-read meters, and convenient controls with specialized design complete the unit's styling. The IC-201 is a welcome addition to any fixed station or automobile.

SECTION III - INSTALLATION

3.1 UNPACKING

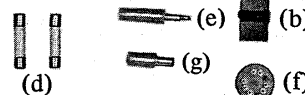
Carefully remove your transceiver from the packing carton and examine for signs of damage. Should any damage be apparent, notify the delivering carrier or dealer immediately, stating the full extent of the damage. It is recommended you keep the shipping cartons. In case storage or reshipment is necessary, they come in handy.

3.2 ACCESSORIES

The following accessories are packed with the transceiver.

- (a) Microphone (500 ohms)1
- (b) Microphone hook1
- (c) DC power cord1
- (d) Spare fuse (5A)2
- (e) Speaker plug.1
- (f) 9 pin plug1
- (g) Key plug1
- (h) IC-3PU AC Power supply1

Fig. I



(h)

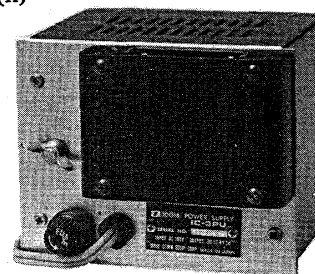
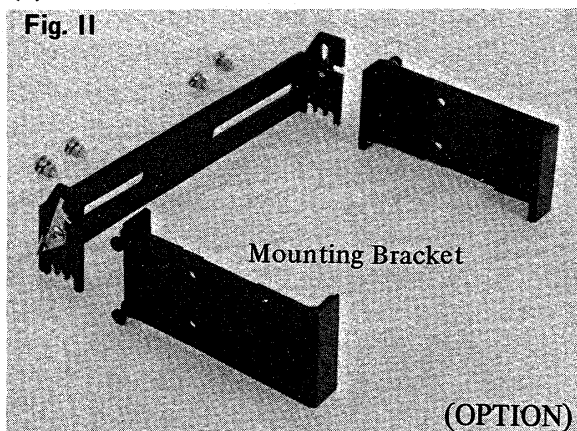


Fig. II



3.3 LOCATION

The IC-201 is designed for high convenience in fixed station use. Beneath the front of the cabinet is a foldway stand that can be used to tilt the set up, or folded flat when not in use. An optional automobile bracket matched with this transceiver is available for use in your automobile. Any place where it can be mounted with metal screws and bolts will work.

3.4 POWER REQUIREMENT

The transceiver is supplied ready to operate from regulated 13.8V DC, 3 ampere negative ground source, by simply plugging the DC cord provided in the same receptacle into the transceiver. AC source can be used by plugging the AC power supply, IC-3PU, into the transceiver.

When used as a fixed station, plug the IC-3PU in the space provided in the back of the case, tighten the locking screw, and then plug in the AC socket. Removing the IC-3PU when using the IC-201 in mobile operation, will make the IC-201 quite a bit lighter.

A convenient mobile Mounting Bracket is available as an option. It can be ordered from your dealer or distributor.

If an AC power supply other than the matching IC-3PU is used, be sure it is adequately regulated for both voltage and current. Low voltage while under load will not give satisfactory results from your transceiver. Receiver gain and transmitter output will be greatly impaired.

If supply voltage happens to decrease to less than 10.5V DC, the operation of the receiver will be suspended in order to prevent misoperation. This indication will be shown by the center meter light going out.

Inserting the IC-3PU in the transceiver automatically switches the supply source from external to the IC-3PU. The IC-3PU must be removed from the transceiver when a DC power supply is used.

CAUTION: EXCESSIVE VOLTAGE (ABOVE 15V DC) WILL CAUSE DAMAGE TO YOUR TRANSCEIVER. BE SURE TO CHECK THE SOURCE VOLTAGE BEFORE PLUGGING IN THE SUPPLY CORD.

Included with your transceiver is a DC power cord 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 in 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. Your transceiver provides an internal DC filter that will take out most of the transient noise. 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.

3.5 ANTENNA

The most important single item that will influence the performance of any communication system is the antenna. For that reason, a good high quality gain antenna of 50 ohms impedance is recommended for fixed or mobile use, presuming low VSWR, of course.

When adjusting your antenna whether mobile or fixed, by all means follow the manufacturer's instructions. There are some pitfalls to be aware of. For example, do not attempt to adjust an antenna for lowest VSWR when using a diode VSWR meter not engineered for VHF applications. Such readings will invariably have error of 40% or more. Rather, use an in line watt meter similar to Drake WV-4 or Bird Model 23 with VHF cartridge. Further, when adjusting a mobile antenna, do with the motor running preferably above normal idling speed. This will insure proper voltage level to the transceiver.

Do not become alarmed if your transceiver fails to transmit at times during the antenna tune-up procedure. Remember, your transceiver has a built-in Automatic Protection Circuit (APC) that will disable the transmitter if excessive VSWR, a short coaxial line or connector, or other antenna deficiency is present. A quick check on a good 50 ohms dummy load will show the transceiver to be working. The difficulty will lie with the antenna or its transmission line.

3.6 MICROPHONE

A high quality dynamic microphone is supplied with your transceiver. Merely plug it into the proper receptacle on the front panel.

This microphone is of 500 ohms impedance with a normal output of 6mV. Should you wish to use a different microphone, make certain it is of equal impedance and output level.

3.7 EXTERNAL SPEAKER

An external speaker jack and plug is supplied with your unit, if another speaker or headset use is desired. In either case, the impedance should be 8 ohms. The use of external speaker jack will disable the internal speaker.

3.8 EXTRA CRYSTAL SOCKETS

The VFO provides transmit and receive operation on any frequency between 144.00MHz and 146.00MHz. It is convenient, however, to install a crystal for a regularly used frequency such as a club or a repeater frequency. There are 4 external crystal sockets under the Access Cover. They work at A, B, C, & D positions of the Function Switch. When the Course Switch is in the 144 or 145 position on the panels, the frequencies are given as follows:

$$F_x (\text{MHz}) = R_x \text{ freq} - \text{Chart freq}$$

COURSE	MODE		
	USB	LSB	FM. CW
144	132.6135	132.6165	132.6155
145	133.6135	133.6165	133.6155

The frequencies are tuned with the trimmers shown in Fig. VII. If the frequency counter can read as far as 144MHz, the frequencies may be tune in transmission status.

To order additional crystals, the following correlation data is provided. Remember to specify high activity as a prerequisite to your acceptance.

CRYSTAL SPECIFICATION:

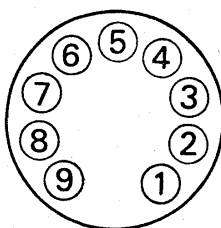
Calibration tolerance:	20×10^{-6} or less
Holder type:	HC-25/u
Load capacitance:	20 pF
Effective resistance:	40 ohms or less
Driving level:	4mW
Temperature:	-10°C to +60°C

SECTION IV - CONTROL FUNCTIONS

4.1 FRONT CONTROL

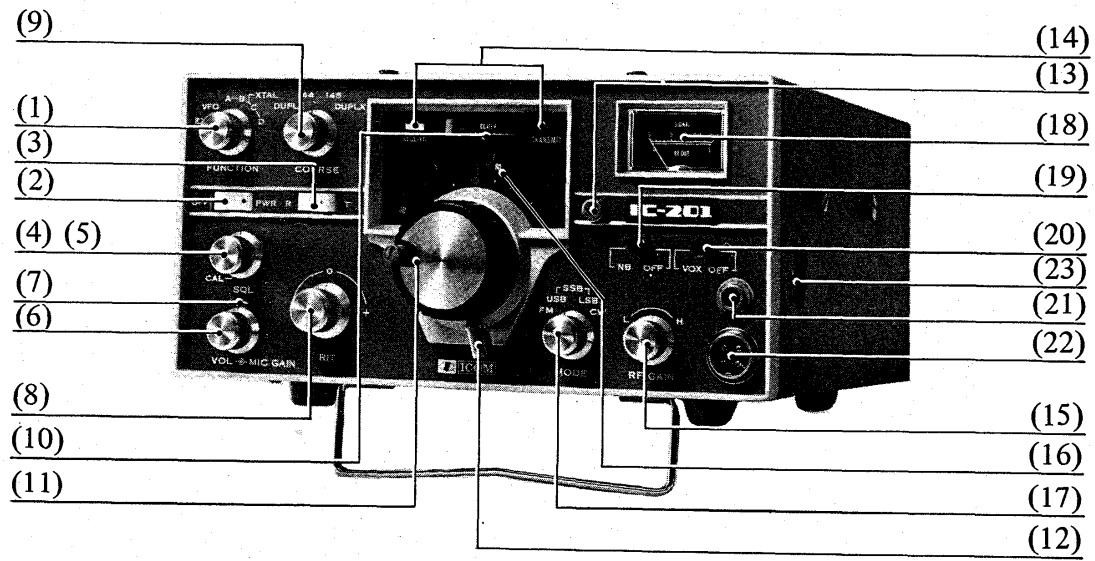
- (1) Function Switch: The Xtal A, B, C & D are for extra crystals. In the EXT position, the output frequency is controlled by another VFO connected to the accessory 9 pin-socket. VFO position is the Main VFO.
- (2) Power Switch: for AC and DC.
- (3) T-R Switch: T for Transmit and R for Receive.
- (4) SQL Control: Adjusts squelch threshold.
- (5) CAL: For calibration.
- (6) VOL: Controls audio volume.
- (7) MIC Gain: For adjusting modulation level.
- (8) RIT: For adjusting the receive frequency about $\pm 4\text{KHz}$.
- (9) COURSE: 144 position is for 144 to 145 MHz, 145 position is for 145 to 146MHz. The Duplx position, is for repeater use.
- (10) Center Meter: Indicates the error against the receive frequency for FM.
- (11) Tuning Knob: 1MHz is covered by a special dual speed system. One revolution of the knob covers 50KHz or 16KHz, depending on the speed.
- (12) Tuning Speed Ratio Selector: For selecting speed ratio.
- (13) Dial Plate Disengage Knob: Dial calibration can be fixed by turning to the left.
- (14) Indication Lamps: RED for Transmit and GREEN for Receive.
- (15) RF GAIN: For adjusting coupling ratio of Helical Cavity attenuator.
- (16) Tuning Dial: When the indication of the dial slips off with the actual frequency, the red indicator on the right or left slightly by the knob after removing in the counter clockwise direction. If the knob is removed, it must be replaced after the adjustment.
- (17) Mode Switch: For selection of either FM, USB, LSB and CW modes.
- (18) Meter: In the S & RF positions, the meter indicates the strength of an input signal in receive and the output power in transmit. As to the standing wave ratio, after the meter indicator is adjusted to the SET position on the meter by the SWR Set located inside (see Fig. VI), you can read the standing wave ratio on the meter by switching the SWR Switch to the SWR position.
- (19) Noise Blanking Switch:
- (20) VOX Switch: For voice control and CW keying control.
- (21) Head Phone Jack: Connects headset here.
- (22) MIC Socket: A 500 ohm microphone with push to talk switch is connected.
- (23) ACC Socket: For connecting accessories (see Fig. III)

Fig. III

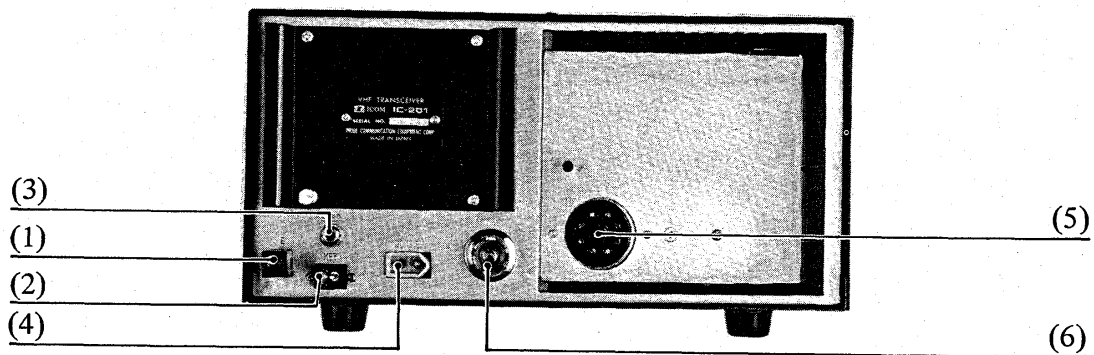


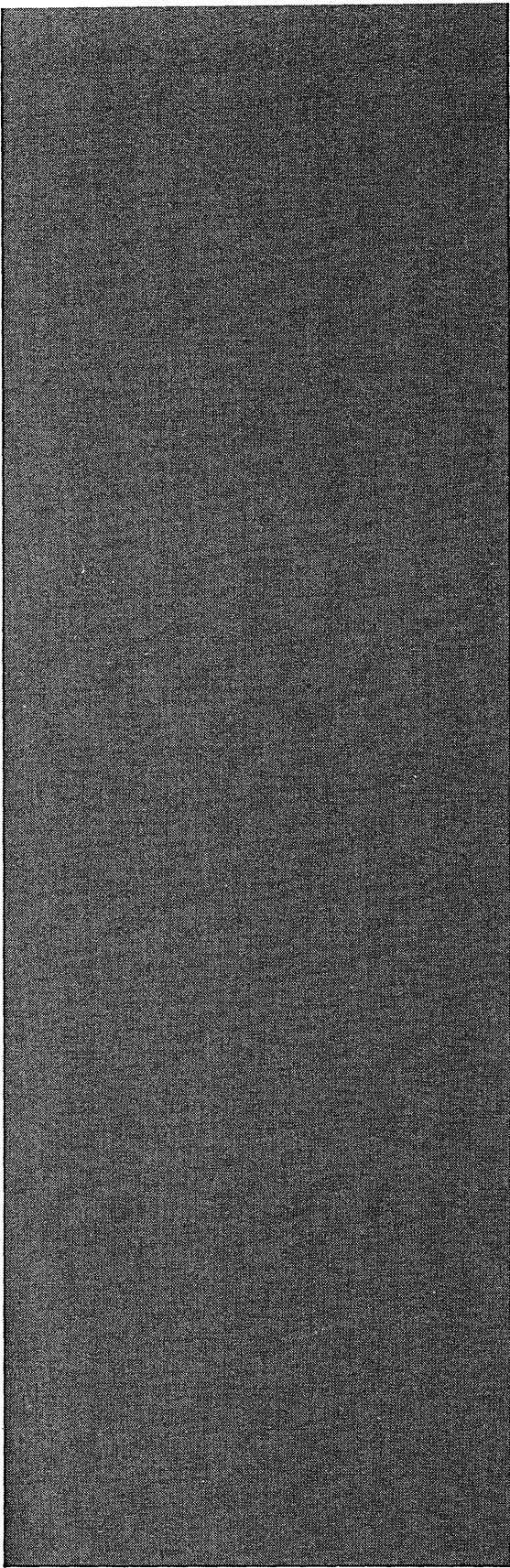
Pin No:	Connection
1.	Discriminator output voltage
2.	Regulated DC 9V
3.	DC 13.8V
4.	External Control
5.	AF detector output has no connection with AF Volume
6.	Modulator input
7.	External VFO
8.	Ground
9.	VFO and fixed channels OSC output

FRONT VIEW (Fig. IV)



BACK VIEW (Fig. V)





INOUE COMMUNICATION EQUIPMENT CORPORATION

**1-6-19, KAMIKURATSUKURI, HIRANO-KU,
OSAKA JAPAN**

