

IC-271H

144MHz ALL MODE TRANSCEIVER

INSTRUCTION MANUAL

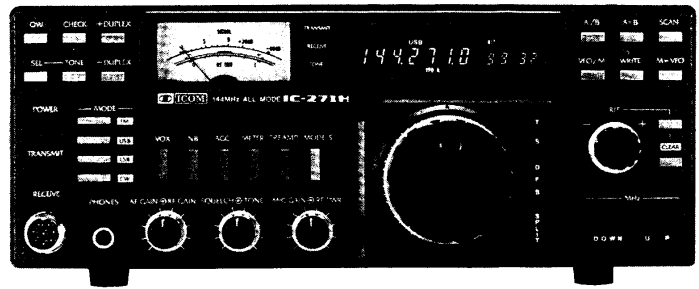


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SECTION 1 SPECIFICATIONS

GENERAL

Number of Semiconductors:

Transistors	112 (Australian version: 111)
FET	14
IC (Includes CPU)	51 (European version: 52) (Australian version: 50)
Diodes	180 (European version: 182)

Frequency Coverage:

U.S.A. version	143.8 ~ 148.2MHz
European version	144.0 ~ 146.0MHz
Australian version	144.0 ~ 148.0MHz

Frequency Control:

CPU based 10Hz step PLL synthesizer.
Independent Transmit-Receive Frequency Capability
32 Memory Channels provided
Programmed Scan, Memory Channel Scan and Mode-Selective Scan Capability

Frequency Resolution:

SSB 10Hz steps (Automatic 100Hz steps shift)
FM 5KHz steps
1KHz steps with TUNING RATE switch depressed

Frequency Readout:

7 digit Luminescent display 100Hz readout

Frequency Stability:

Within $\pm 1.5\text{KHz}$ in the range of $-10^{\circ}\text{C} \sim +60^{\circ}\text{C}$

RIT Frequency Coverage:

$\pm 9.9\text{KHz}$ from displayed receive frequency

Power Supply Requirements:

DC 13.8V $\pm 15\%$ Negative ground Current drain 20A max.
AC power supply is available for AC operation.

Current Drain (at 13.8V DC):

Transmitting	100 watts output	Approx. 18.0A
	10 watt output	Approx. 7.0A
Receiving	At max. audio output	1.4A
	Squelched	1.2A

Antenna Impedance:

50 ohms Unbalanced

Weight:

6.9 Kg

Dimensions:

110(125)mm(H) x 285(300)mm(W) x 275(324)mm(D)

(): Shows the dimensions including projections

TRANSMITTER

RF Output Power:

SSB (A_3J) 100 Watts PEP
CW (A_1), FM (F_3) 100 Watts
Continuously Adjustable Output power 10 watts ~ Max.

Emission Mode:

SSB (A_3J USB/LSB), CW (A_1), FM (F_3)

Modulation System:

SSB: Balanced modulation
FM: Variable reactance frequency modulation

Max. Frequency Deviation:

$\pm 5\text{KHz}$

Harmonic Output:

More than 60dB below peak power output

Spurious Output:

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:

600 ohm electret condenser microphone with push-to-talk switch and scanning buttons.

Operating Mode:

Simplex, Duplex (Any in-band 10KHz steps frequency separation programmable)

RECEIVER

Receiving System:

SSB, CW Single conversion superheterodyne
FM Double conversion superheterodyne

Receiving Mode:

A_1 , A_3J (USB, LSB), F_3

IF Frequencies:

SSB, CW 10.75MHz
FM 10.75MHz, 455KHz

Sensitivity:

SSB, CW Less than 0.3 microvolts for 10dB S+N/N
FM Less than 0.3 microvolts for 12dB SINAD
Less than 0.6 microvolts for 20dB noise quieting

Squelch Sensitivity:

SSB, CW Less than 1 microvolt
FM Less than 0.3 microvolts

Spurious response rejection ratio:

More than 60dB

Selectivity:

SSB, CW More than 2.4KHz at -6dB point
Less than 4.8KHz at -60dB point
FM More than 15KHz at -6dB point
Less than 30KHz at -60dB point

Audio Output Power:

More than 2.0 watts (at 8 ohm 10% distortion)

Audio Output Impedance:

8 ohms

Specifications are approximate and are subject to change without notice or obligation.

SECTION 2 FEATURES

144MHz ALL-MODE 100 WATTS TRANSCEIVER INCORPORATING A MICROCOMPUTER

CPU control with ICOM's original programs provides various operating capabilities. A no-backlash dial controls by ICOM's unique rotary encoder circuit. The Band-edge detector and the Endless System provides out-of-band protection. Variable capacitors and dial gear are not utilized and therefore provide problem-free use. The IC-271H provides FM, USB, LSB, CW coverage in the 144 ~ 148MHz (European version: 144.0 ~ 146.0MHz) frequency range with 100 watts output power. Thus the IC-271H can be used for mobile, DX, local calls, and satellite work.

MULTI-PURPOSE SCANNING

Memory Scan allows you to monitor all different memory channels or only those stored with a particular mode. Program Scan provides scanning between two programmed frequencies. Auto-stop scanning when a signal is received, in any mode.

DUAL VFO'S AND 32 MEMORY CHANNELS

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

The IC-271H has 32 memory channels and each channel stores the operating frequency as well as the mode, duplex/simplex and subaudible tone frequency (U.S.A. version only).

CONTINUOUS TUNING SYSTEM

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

Automatic recycling restarts tuning at the top of the band, i.e., 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 10Hz steps in the SSB and CW modes, and 5KHz steps and 1KHz steps in the FM mode, is provided for trouble-free QSO.

EASY-TO-READ DISPLAY

The IC-271H employs an easy-to-read large luminescent display. This displays the operating frequency as well as the VFO in use, operating mode, RIT shift frequency, duplex mode, scan mode, etc.

EASIER OPERATION, LIGHTER WEIGHT AND HIGHER POWER

The IC-271H is the most compact 100 watt, lightest weight all-mode 144MHz transceiver. It is the first to use a pulse power supply (option) in communication equipment, for light weight. A 50mm-diameter large tuning control knob is provided for smooth and easy tuning. Easy to use control knobs are provided for both receiving and transmitting. An LED indicates the transmit or receive mode.

MOST SUITABLE FOR BOTH FIXED AND PORTABLE STATIONS

The transceiver can be operated with a self-contained 117/240V AC (option) or 12V DC power supplies. A convenient Dial Lock switch is included for mobile operation as well as an easy-carry handle. An effective Noise Blanker reduces pulse noise. The IC-SM6, high quality stand microphone (option), is suitable for fixed station operation. A powerful audio output, 2.0 watts at 8 ohm, provides easy listening even in noisy surroundings.

OUTSTANDING PERFORMANCE

The RF amplifier and the first mixer circuit incorporate FET's, and other circuits provide excellent Cross Modulation and Two-Signal Selectivity characteristics. The IC-271H has excellent sensitivity demanded especially for mobile operation, high stability, and utilize Crystal Filters having high shape factors and 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 3 INSTALLATION

BE SURE TO READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE OPERATION

3 - 1 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 to keep the shipping cartons. In the event storage, moving, or reshipment becomes necessary they will be handy. Accessory cables, plugs, etc., are packed with the transceiver. Make sure you have not overlooked anything.

1. Microphone (IC-HM12) 1
2. DC Power Cord 1
3. External Speaker Plug 1
4. Key Plug 1
5. Spare Fuses (20 Amp) 2
6. Wiring Fastener 3

3 - 2 RECOMMENDATIONS FOR INSTALLATION

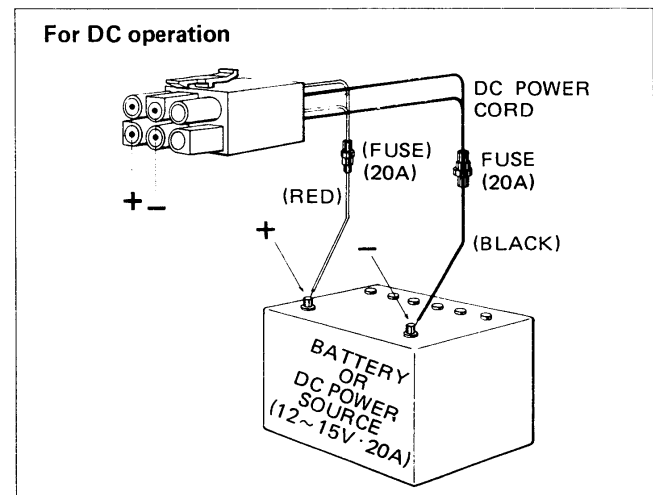
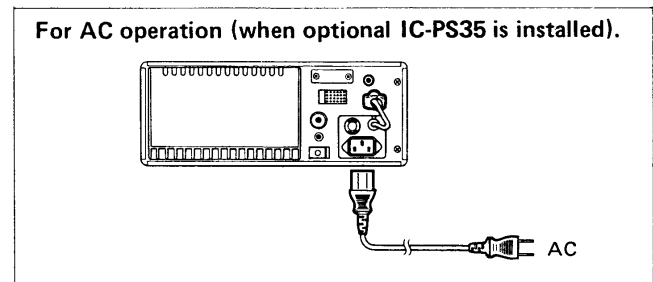
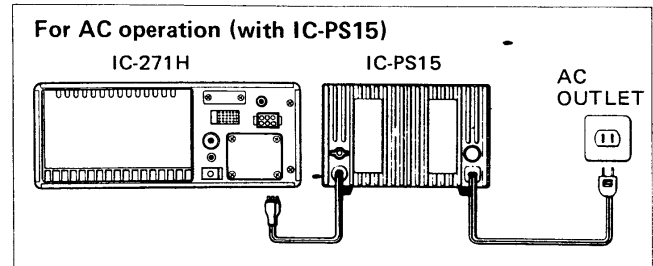
1. Avoid placing the IC-271H in direct sunlight, high temperature, dusty or humid places.
2. The temperature of the set will usually become relatively warm during transmission. Any equipment should be at least 1 inch (3cm) away from the unit so as to provide good ventilation. Be sure that nothing is on and just behind the rear PA heatsink to ensure 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.
4. 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!

3 - 3 POWER SUPPLY

For AC operation, use the special power supply IC-PS15, IC-PS30, or optional built-in power supply IC-PS35. If you would like to use your car battery or any other DC power supply, be sure that its output voltage is 12-15 Volts and the current capacity is at least 20 Amps. The maximum power consumption of the set during transmission runs about 20 Amps, so keep that in mind if the unit is installed in your automobile, and turn it on after you have started the engine. Attention should also be paid to the condition of the battery and electrical system.

The connection of the DC power cord supplied with the IC-271H is done in the following way: First make sure that the power switch of the unit is in the OFF position and the T/R switch is in the receive position. Connect the cord to a DC power supply with the RED lead to the positive terminal and the BLACK lead to the negative

terminal. (Reverse connection will cause the protection circuit to operate and blow the fuse.) Connect the DC plug to the socket on the rear panel of the IC-271H. Refer to the drawing below.



3 - 4 ANTENNA

The single most important 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. In VHF as well as the low bands, every watt of ERP makes some difference. Therefore, 100 watts average output plus 3dB of gain antenna equals 200 watts ERP, presuming low VSWR of course. The few extra dollars invested in a gain types antenna is well worth it. When adjusting your antenna, whether mobile or fixed, by all means follow the manufacturer's instructions.

There are however 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 an error of 40% or more. Instead, use an in-line watt meter similar to the Bird model 43 or Sierra model 164B with



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A-0561A
Printed in Japan