

SPECIFICATIONS

GENERAL

- Frequency coverage
 - Receive : 0.1000~30.0000MHz
 - Transmit : 160m band 1.8000~ 2.0000MHz
 - 80m band 3.4000~ 4.1000MHz
 - 40m band 6.9000~ 7.5000MHz
 - 30m band 9.9000~10.5000MHz
 - 20m band 13.9000~14.5000MHz
 - 17m band 17.9000~18.5000MHz
 - 15m band 20.9000~21.5000MHz
 - 12m band 24.4000~25.1000MHz
 - 10m band 27.9000~30.0000MHz
- Modes : A3J(SSB), A1(CW), F3(FM), F1(RTTY), A3(AM)
- Frequency step : 10Hz (With [TS] OFF)
1kHz (With [TS] ON)
- Antenna impedance : 50Ω unbalanced
- Power supply requirement : 100~120V AC (U.S.A. version)
220~240V AC (Australia, Europe, France versions)
- Power consumption
 - Receiving max. audio : 150VA
 - standby : 140VA
 - Transmitting max. : 760VA
 - min. : 325VA
- Usable temperature range : -10°C~+60°C
- Frequency stability : ±15Hz (-10°C~+60°C)
- Dimensions : 425mm(W)×149mm(H)×411mm(D)
(Projections not included)

TRANSMITTER

- Max. output power
 - SSB : 150W PEP
 - CW, RTTY, FM : 150W
 - AM : 75W
- Modulation
 - SSB : Balanced modulation
 - FM, RTTY : Reactance modulation
 - AM : Low level modulation
- Max. frequency deviation : ±5kHz
- RTTY shift width : 170Hz, 425Hz, 850Hz selectable
- Spurious emissions : Less than -60dB
- Carrier suppression : Less than -40dB
- Unwanted sideband : Less than -55dB (with 1kHz modulation)
- Microphone impedance : 600Ω

RECEIVER

- Receiving system
 - SSB, CW, RTTY, AM : Quadruple-conversion superheterodyne
 - FM : Triple-conversion superheterodyne

Intermediate frequencies

	SSB	CW, RTTY	AM	FM
1st	46.5115	46.5106	46.5100	46.5100
2nd	9.0115	9.0106	9.0100	9.0100
3rd	0.4550	0.4550	0.4550	0.4550
4th	10.6950	10.6950	10.6950	—

Unit: MHz

- Sensitivity ([PREAMP] ON)
 - SSB, CW, RTTY (for 10dB S/N)
 - 0.1~0.5MHz : Less than 0.5μV
 - 0.5~1.8MHz : Less than 1.0μV
 - 1.8~30MHz : Less than 0.16μV
 - AM (for 10dB S/N)
 - 0.1~0.5MHz : Less than 3.2μV
 - 0.5~1.8MHz : Less than 6.3μV
 - 1.8~30MHz : Less than 1.0μV
 - FM (for 12dB SINAD)
 - 28~30MHz : Less than 0.23μV
- Selectivity
 - SSB, CW-W, RTTY-W, AM-N : More than 2.4kHz/-6dB
 - Less than 3.8kHz/-60dB
 - CW-N, RTTY-N : More than 500Hz/-6dB
 - (With [CM250Hz] OFF) : Less than 1.0kHz/-dB
 - CW-N, RTTY-N : More than 250Hz/-6dB
 - (With [CW250Hz] ON) : Less than 800Hz/-60dB
 - AM-W : More than 6.0kHz/-6dB
 - Less than 15.0kHz/-60dB
 - FM : More than 15.0kHz/-6dB
 - Less than 30.0kHz/-50dB
- Spurious and image rejection ratio
 - Image : Less than -80dB
 - IF : Less than -70dB
- Audio output : More than 2.6W at 10% distortion with an 8Ω load
- Notch filter attenuation : More than 45dB
- RIT variable range : ±9.99kHz

ANTENNA TUNER

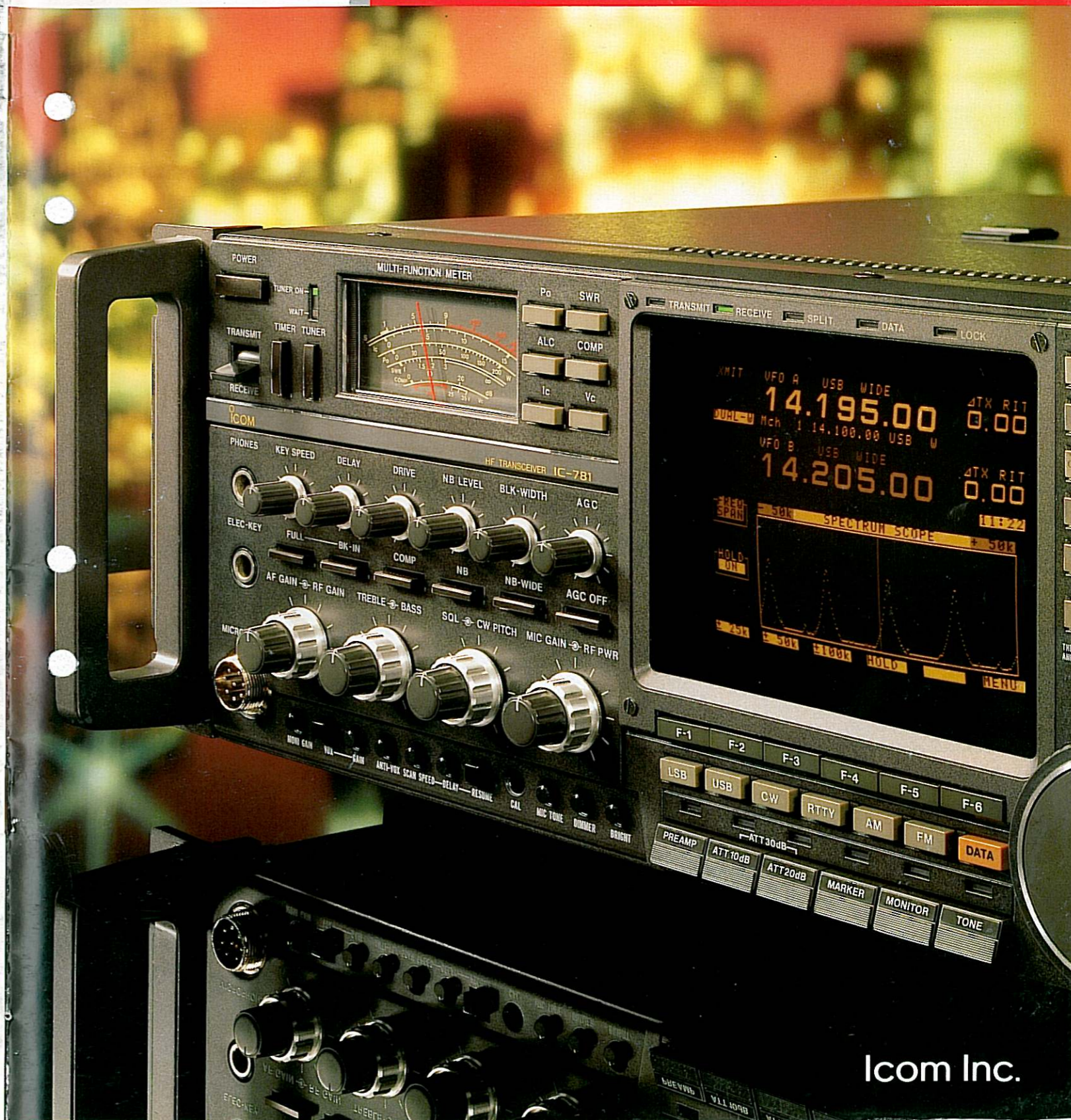
- Output matching range : 16.7~150Ω unbalanced.
- Minimum input power : 15W
- Auto tuning accuracy : VSWR less than 1.2:1
- Insertion loss : Less than 0.5dB (after tuning)

CRT DISPLAY

- Output level
 - Composite video signal : 1Vp-p
 - Video components : 0.7Vp-p positive
 - Synchronous components : 0.3Vp-p negative
- Output impedance : 75Ω
- Horizontal frequency : 15.75kHz
- Vertical frequency : 60Hz

OPTIONS

- **IC-2KL** 500W LINEAR AMPLIFIER
- **IC-AT500** 500W AUTOMATIC ANTENNA TUNER
- **SP-20** EXTERNAL SPEAKER WITH AUDIO FILTERS
- **SM-10** COMPRESSOR/GRAPHIC EQUALIZER DESK TOP MICROPHONE
- **SM-8** DESK MICROPHONE
- **HP-2** COMMUNICATION HEADPHONES
- **UT-36** VOICE SYNTHESIZER UNIT
- **CT-16** SATELLITE INTERFACE UNIT
- **CT-17** CL-V LEVEL CONVERTER
- **HM-36** HAND MICROPHONE (Up/down switches included)
- **SM-6** ELECTRET CONDENSER-TYPE DESK MICROPHONE
- **WR-200** SWR & POWER METER (1.8~150MHz, max. 200W)
- **WR-2000** SWR & POWER METER (1.8~54MHz, max. 2000W)



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**THIS IS YOUR DREAM RIG.
THE SKY'S THE LIMIT.**

IC-781 is the world's most advanced HF transceiver — the first with a built-in CRT (cathode ray tube) DISPLAY. IC-781 works all bands on all modes. It's an amateur's dream rig — the top of the line.

The SPECTRUM SCOPE, TWIN PASSBAND TUNING, and DDS (Direct Digital Synthesizer) are unique to the market. You can work the world with its 105dB DYNAMIC RANGE and 150W OUTPUT POWER.

We are grateful to many amateurs throughout the years for their suggestions. ICOM's successful DXpeditions have also contributed to the development of IC-781. IC-781 is the choice of amateurs the world over.

HF ALL BAND TRANSCEIVER <SSB-CW-RTTY-AM-FM>

IC-781



WHAT A BREAKTHROUGH:

CENTRAL MONITORING WITH A CRT DISPLAY!

MULTI-FUNCTIONAL CRT DISPLAY

The multi-functional 5-inch CRT displays the frequencies of VFO A and VFO B, the contents of the MEMORY, 2 MENU SCREENS, 15 OPERATIONAL SCREENS, and packet and AMTOR data.

The CRT also displays the contents of 99 memory channels, 2 programmed scan edge frequencies, and a note of up to 10 characters per channel.

The soft orange display and fine resolution of 94 letters, numbers, punctuation marks, and symbols makes reading easy.

DUAL WATCH

What is so special about the IC-781 Dual Watch system? Dual Watch simultaneously monitors 2 frequencies — using 2 PLL circuits. Because each frequency is separately derived, you are assured that each frequency is precisely accurate! Ideal for contests, traffic handling, DX chasing and net control work.

SEPARATE CONTROL FOR "A" SECTION AND "B" SECTION RIT/ΔTX

RIT (receiver incremental tuning) and ΔTX (transmitter incremental tuning) for each frequency display section can be separately controlled. Especially useful when operating duplex and dual watch.

SPECTRUM SCOPE

The CRT's advanced SPECTRUM SCOPE displays the relative strengths of signals around a center frequency. The span can be set to 50kHz, 100kHz and 200kHz. Ideal for monitoring band conditions in an instant.

The SPECTRUM SCOPE's specifications are superb. Its dynamic range is 60dB, and its sensitivity is -10dBm. A logarithm amplifier is built-in.

BAND STACKING REGISTER

Enables you to store an amateur frequency, switch bands, and return to the stored frequency. Especially convenient when switching bands during contests, and for quick monitoring of propagation conditions on other bands.

99 MEMORY CHANNELS

Each of the 99 memory channels stores an operating frequency, IF filter and DATA switch settings, a Selected Memory Scan number and a note of up to 10 characters. Roll the Memory List screen to view the channels. 2 additional memory channels are provided for storing PROGRAMMED SCAN frequencies.

10Hz STEP TUNING

IC-781 derives frequencies digitally. Each frequency step is 10Hz, making tuning as smooth as if using an analog VFO. Push the [TS] switch on the front panel to change to a frequency step of 1kHz. RIT and ΔTX are adjustable in 10Hz steps.

SCANNING FUNCTIONS

IC-781 has many scanning functions: Programmed Scan, Fine Programmed Scan, ΔF Scan, Fine ΔF Scan, Memory Scan, and a Selected Memory Channel Scan. A Fine Scan slowly tunes through a signal, and tunes rapidly through frequencies without signals. A great convenience for hands-free operation.

GENERAL COVERAGE RECEIVER

IC-781's receiver section covers 0.100.00 to 29.999.99MHz on all modes. Great for listening to shortwave broadcasts, marine and coastal stations, etc.

HIGH PERFORMANCE FILTERS

The high shape factor of the 9 filters provides excellent selectivity characteristics. The 455kHz and 9MHz filters can be used separately or in tandem. Filters can be conveniently preset for each operating mode on the CRT DISPLAY IF FILTER PRESET screen.

MENU 1



Calls up the Scan Operation screen, the Memory List screen, the Spectrum Scope and the Clock and Timer screen.

MENU 2



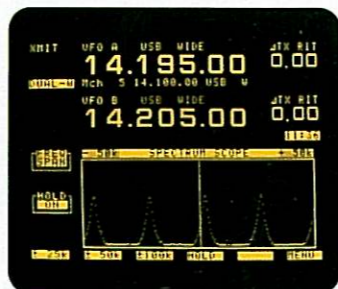
Calls up the Terminal Monitor screen, the Data Format screen, the CI-V Condition screen, the Filter Selection screen and the Band Key Preset screen.

Dual Watch screen



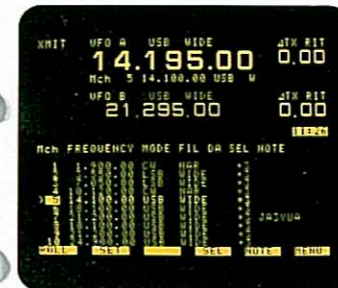
Displays VFO A and VFO B frequencies used during Dual Watch. Shown here with the Spectrum Scope in operation.

Spectrum Scope screen



Displays the relative strength of signals ±25kHz, ±50kHz or ±100kHz around a center frequency.

Memory List screen



Displays 99 memory channels and 2 scan edge channels. Rotate the main dial while pushing F1 to roll the screen; or while pushing F2 to select a channel.

Scan Operation screen in VFO mode



Operates the programmed scan, the line programmed scan, the ΔF scan and the line ΔF scan.

Scan Operation screen in memory mode



Operates the memory scan, the selected memory scan, the ΔF scan and the line ΔF scan.

Filter Selection Screen



Presets filter selection for each operating mode.

BUILT-IN CLOCKS

IC-781 is equipped with 2 clocks — one for local time, and the other for UTC or any other time. The Sub Clock stores a note of up to 6 characters.

Filter combinations

Mode	Filter switch	9MHz IF filter	455kHz IF filter	Standard bandwidth (-6dB)
SSB	WIDE	FL-80 ----- FL-103*	FL-96	2.4kHz ----- 2.8kHz*
	NARROW	FL-80	FL-96	2.4kHz
FM	—	THROUGH	CFW-455E	15kHz
AM	WIDE	FL-102	CFW-455IT	6kHz
	NARROW	FL-102	FL-96	2.4kHz

* Optional

SLEEP AND DAILY TIMERS

IC-781 is equipped with selectable Sleep Timers and 5 Daily Timers which turn the transceiver ON and OFF. Using the Timers and the RECORDER REMOTE JACK, you can record

CW and RTTY filter combinations

Filter switch	250Hz switch (CW)		9MHz IF filter	455kHz IF filter	Standard bandwidth (-6dB)
	9MHz	455kHz			
WIDE	—	—	FL-80	FL-96	2.4kHz
	OFF	OFF	FL-100	FL-52A	500Hz
NARROW	ON	OFF	FL-101	FL-52A	250Hz
	OFF	OFF	FL-100	FL-53A	250Hz
ON	ON	FL-101	FL-53A	250Hz	

a signal at any time. Especially useful for recording your favorite shortwave program when asleep or at work.

TERMINAL MONITOR

ASCII (RS-232C level) code data is displayed on the CRT DISPLAY through the [DATA IN] jack. Using an external terminal unit, the screen displays RTTY, packet, AMTOR, etc.

CI-V INTERFACE

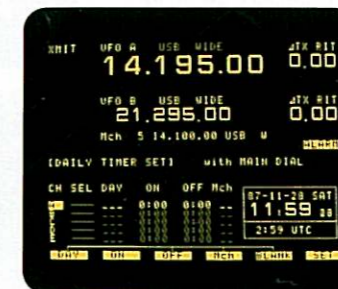
With the built-in interface, you can control IC-781 with a personal computer. Add CT-17 (optional) and control the frequency, mode, VFO A/B selection, memory channels, etc., of several rigs with a personal computer.

Clock and Timer screen



Displays the year, month, day and date as well as two times. Sleep and Daily Timer screens as well as the Clock Adjustment screen are called up from this screen.

Daily Time Set screen



Selects and activates the ON/OFF time, the day and the memory channel.

Data Format screen



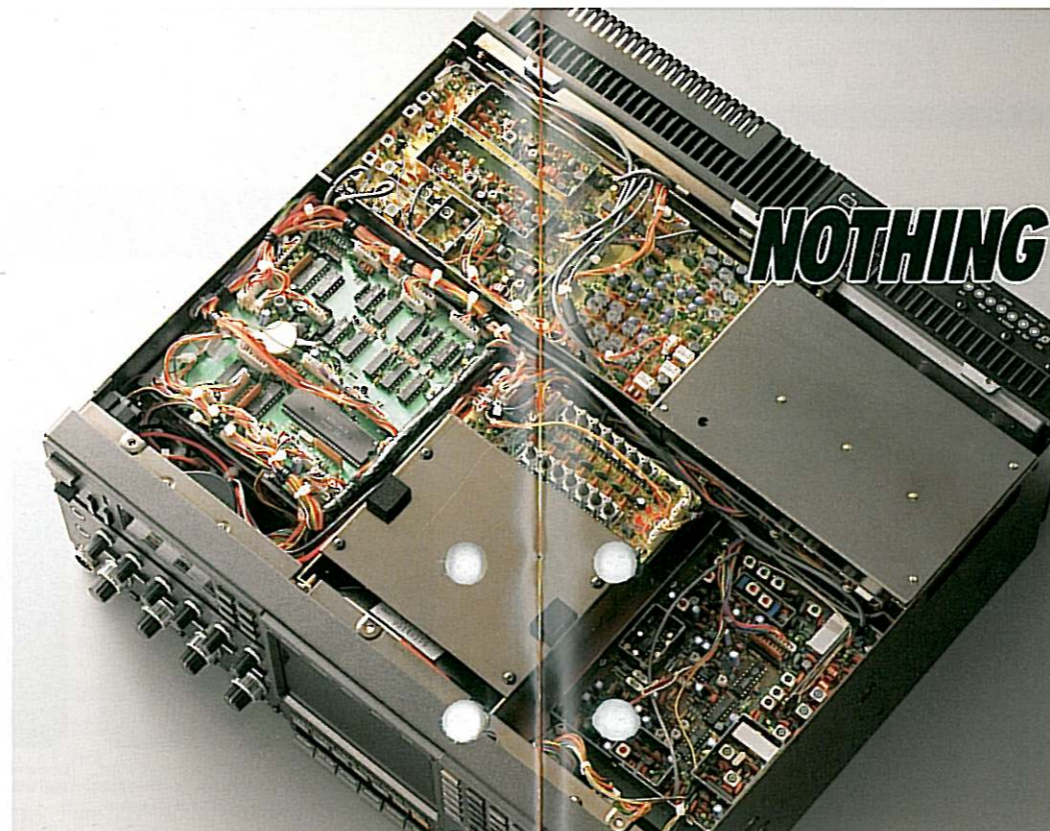
Sets the data length, baud rate and line feed command. An RS-232C level formatted ASCII code input socket is provided on the rear panel.

CI-V Condition screen



Sets the CI-V remote control condition.

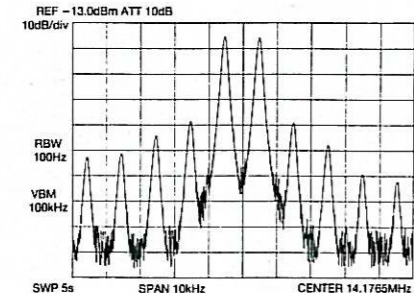
SUPERIOR SPECIFICATIONS, SUPERIOR PERFORMANCE.



NOTHING ELSE COMES CLOSE.

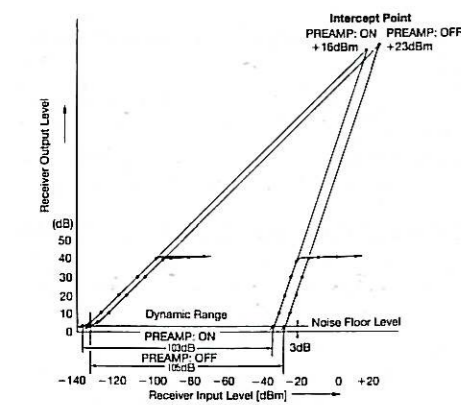
QUADRUPLE CONVERSION RECEIVER WITH GREAT SPECIFICATIONS

IC-781's quadruple conversion receiver uses a 1st IF of 46.5115MHz; a 2nd IF of 9.0115MHz (SSB); a 3rd IF of 455kHz; and a 4th IF of 10.695MHz. This up-conversion system ensures superior image rejection and spurious response characteristics.



105dB DYNAMIC RANGE

The 105dB dynamic range with a +23dBm intercept point provides excellent sound reproduction of faint and strong signals on all bands without distortion.



CONTINUOUS INTERNAL TEMPERATURE CONTROL

IC-781's extra-large heatsink and superior cooling system maintains internal temperature within a safe range. When the built-in heat sensor detects high temperatures in the PA circuit, the CPU automatically increases fan rotation speed four times. Because the PA section and the bandpass filter are kept cool, continuous operation on CW and RTTY does not affect frequency stability.

ACCURATE SWR METER: NO ADJUSTMENT REQUIRED

The built-in SWR meter does not require calibration. SWR is accurately displayed even during SSB operation. Excess current due to changes in the SWR are detected automatically to protect the PA circuit.

TRANSMITTED SIGNAL MONITOR (All modes)

You can monitor the 9MHz IF of your signal at the touch of a button. Especially useful for determining modulation quality when using the speech compressor, the tone control, etc.

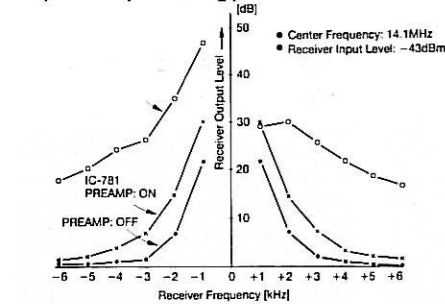
VARIABLE OUTPUT POWER

Using the built-in power controller, you can adjust output power. (SSB: 15~150W PEP, CW, RTTY, FM: 15~150W, AM: 8~75W).

AUTOMATIC ANTENNA TUNER

Built-in pre-set/auto-tuning antenna tuner matches IC-781 to the antenna when the SWR is less than 3:1. Maximizes radiated output power.

PHASE NOISE BLOCKING CHARACTERISTIC (Our Competitor's rig.)

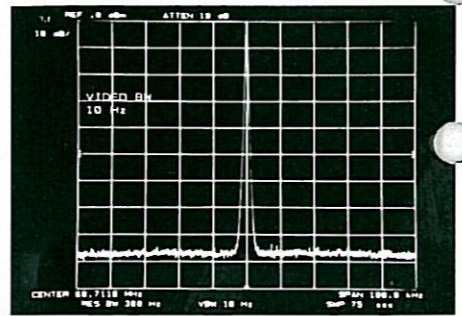


150W OUTPUT POWER

30V DC applied to the final transistors provide 150W output power and low IMD (Intermodulation Distortion). The inner-type line flow fan ensures stable internal temperature during full-power operation.

COMMERCIAL QUALITY FREQUENCY STABILITY

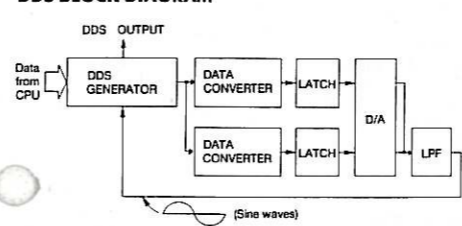
All frequencies are derived from a reference crystal oscillator. IC-781 uses a constant temperature oven crystal which is stable to within 15Hz at -10°C~+60°C.



DIRECT DIGITAL SYNTHESIZER (DDS)

The ICOM DDS unit, a newly developed frequency synthesizer system, provides rapid lock-up time — increasing scanning speed as well as improving the C/N ratio. Providing one of the fastest transmit/receive switching times on the market, DDS makes IC-781 ideal for packet and AMTOR communications.

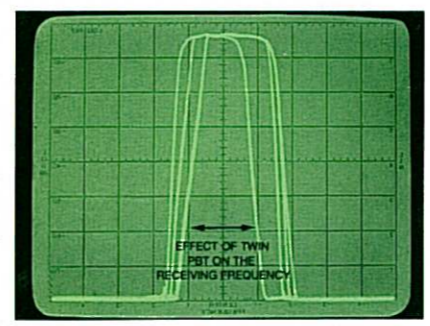
DDS BLOCK DIAGRAM



TWIN PASSBAND TUNING

Selects sections of the 455kHz and 9MHz IF filters separately or in tandem for clear reception of a signal in heavy interference. Use both filters to shift the IF. Useful for DX pileups, contests, nets, and other crowded band conditions.

TWIN PBT CHARACTERISTICS



NOISE BLANKER

Built-in noise-trigger noise blanker attenuates pulse-type noise caused by engine ignition sparks, etc. Ideal for city operation.

Maximum 15msec. blank-width attenuates long pulse width noise such as the "woodpecker" and the key clicks of strong CW signals.

BUILT-IN PREAMPLIFIER AND ATTENUATORS

Turn on the receiver preamplifier to boost a signal by 10dB. Especially useful during poor band conditions. If your antenna provides insufficient gain, you need this preamplifier! Use the 10, 20, and 30dB attenuators to reduce QRN and other noise.

CW PITCH CONTROL

Adjust the audio pitch of any CW signal without changing the operating frequency.

MULTI-FUNCTION KEYBOARD FOR YOUR CONVENIENCE

The keyboard on the front panel makes it easy to change the operating frequency, to switch bands, and to call up memory channels. You can get to any frequency fast! Very handy when working a contest and handling traffic.

TRANSMIT FREQUENCY CHECK SWITCH [XFC]

When operating duplex, push [XFC] on the front panel to monitor the transmit frequency. Ideal for crossband contacts.

NO FUSS PACKET AND AMTOR OPERATION

Packet and AMTOR are the newest modes in amateur radio; IC-781 has a built-in DATA switch that automatically inhibits the microphone input line.

BUILT-IN TONE ENCODER FOR 10 METER REPEATERS

You will have no problem accessing a 10 meter repeater with IC-781 — a programmable tone encoder with 38 tone frequencies is built-in.

CUSTOM-DESIGNED POWER SUPPLY FOR STABLE OPERATION

IC-781's switching regulator power supply is lightweight and compact. You are assured of stable power when operating continuously for a long time — even on RTTY and SSTV!

ALL MODE TRANSMITTER

IC-781 transmits all modes: AM, CW, RTTY and SSB (USB/LSB). The built-in tone encoder makes 28MHz FM repeater access easy.

CONVENIENT PANEL LAYOUT FOR EASY OPERATION

Measuring 425mm(W) × 149mm(H) × 411mm(D), IC-781 is not much larger than any high-quality rig on the market. Centered on the 5 inch CRT display, the front panel is laid out for convenient operating. Letters and numbers are printed large for easy reading. Easy access to all switches and controls. Easy viewing of all LEDs.

RF SPEECH COMPRESSOR

The built-in RF speech compressor boosts the relative output power of your SSB signal. Compressor adjustment is conveniently located on the front panel. Ideal for pileups, contests, etc.

ALL STANDARD FUNCTIONS ARE BUILT-IN

- Automatic Gain Control (AGC) circuit.
- S-meter squelch indicator (all modes).
- FM noise squelch.
- Variable tone control for transmitting and receiving.
- CRT display intensity control.
- Connectors on the rear panel for external data communications equipment.
- Calibration markers every 25kHz.
- Vox control (Gain/Anti-vox/Delay).