



HF/50MHz ALL MODE TRANSCEIVER

# IC-756PROII

## Experience the Most Advanced DSP Ever Created for Amateur Radio

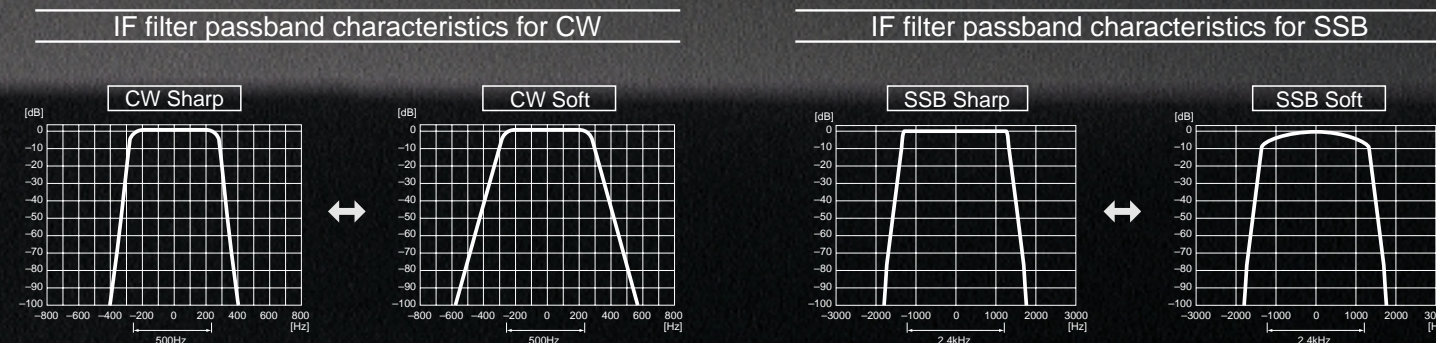


Icom Inc.

# Experience the Most Advanced DSP Ever Created for Amateur Radio

ICOM'S IC-756 AND IC-756PRO ROCKED THE AMATEUR RADIO WORLD WITH THE MOST ADVANCED TECHNOLOGY, INNOVATIVE FEATURES, AND EASE OF USE AVAILABLE IN AMATEUR RADIO! NOW ICOM RAISES THE BAR OF EXCELLENCE WITH THE WORLD'S MOST POWERFUL DSP TECHNOLOGY IN AMATEUR RADIO HISTORY. FROM THE BOX TO HEAVY CONTEST ACTION, IN A MATTER OF SECONDS, THE IC-756PROII OFFERS OVER ONE HUNDRED BUILT-IN IF FILTERS, ALL EASILY SELECTED FROM THE FRONT PANEL. IMAGINE THE FUN AND EXCITEMENT OF CREATING YOUR OWN FILTER WIDTH AND SHAPE WHILE ON THE AIR RAGCHEWING, OR IN THE MIDDLE OF A PILE-UP!

Sharp and Soft filter shape are selectable for SSB and CW mode



Select your favorite filter shape depending on your listening preference and band conditions: SSB and CW filters are independent.

**DSP**  
32-bit Floating Point DSP  
Digital Signal Processor  
24-bit AD/DA Converter

HF/50MHz ALL MODE TRANSCEIVER

# IC-756PROII



# The Features You Wanted Most

The engineering team at ICOM listened to you to create the most powerful DSP rig available.

## RECEIVER

### High Performance Receiver

A measurable improvement in the newly designed 4-element system for the IC-756PROII, delivers a well respected 3rd order intercept point. By refining the receiver front-end mixer circuits, ICOM engineers made improvements in the input filter, buffer amplifier, and other electronic components from the RF stage to the mixer stage. The result is less distortion from strong signals.

### Receiver Basics

A perfect balance of analog and digital brings one of the most exciting receivers to life. Whether in the ham bands or just listening for rare shortwave, the general coverage receiver (30kHz to 60MHz\*) will give you endless hours of enjoyment. With controls over the sensitivity of the receiver from the 2-level pre-amplifier and 3-level attenuator, virtually any signal can be added to your log.

\* Some frequency bands are not guaranteed, depending on version.

### Level Adjustable Noise Blanker

Reduce annoying QRN, engine ignitions, sparks or other pulse type QRM with the fully adjustable (101 steps) noise blanker.

### Dual Watch

The dual watch function allows you to receive 2 signals on the same band simultaneously. So listen to your favorite net while keeping an eye or ear on the DX window.

### CW Carrier Point Selectable

Until now the carrier point of the CW mode was LSB only. Now, the carrier point of the normal (default) CW mode is selectable from USB and LSB.

## SSB/CW Synchronous Tuning

You no longer have to worry about losing a CW signal while tuning through the bands. With the SSB/CW Synchronous Tuning, the frequency automatically shifts when you change modes.

Example of SSB/CW Synchronous Tuning



Receiving a CW signal in USB mode

Change to CW mode with the function ON

Change to CW mode with the function OFF



The receiving freq. shifts to the width of CW pitch.



The receiving frequency does not shift.

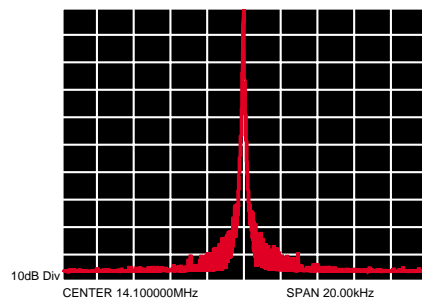
## TRANSMITTER

### Highly Stable Transmitter

For the Big Clear signal, the IC-756PROII utilizes two 2SC5125 transistors in the PA Unit. Along with superior IMD characteristics, these transistors have plenty of power to allow for 100W full duty cycle operation. Great for those long contest hours, or the demand of the data modes.

For those in search of "the Perfect Audio", the Digital Phase Shift Network (DPSN) is used in the SSB modulator, providing clear and high quality transmit audio for voice and data mode operations.

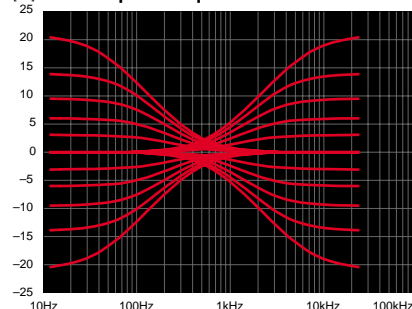
Transmit C/N characteristics



### Microphone Equalizer

Tweak your transmit audio with the separate bass and treble adjustment for the perfect audio. This built-in audio equalizer has a total of 121 combinations, so you can get the warm, full audio you want.

Microphone equalizer characteristics

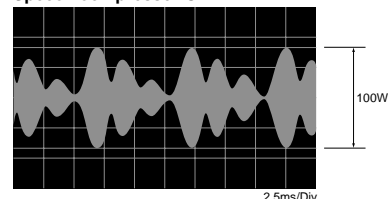


In addition, the transmit bandwidth is selectable from 2.2, 2.4, and 2.8 kHz to suit operating band conditions. Go from ragchew to DX audio in a matter of seconds with a push of a button.

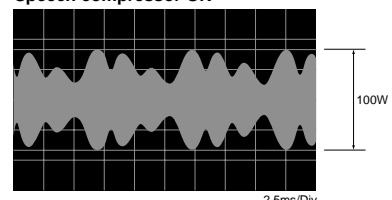
### Digital RF Speech Compressor

The IC-756PROII utilizes the 32-bit DSP for the RF speech compressor providing the maximum punch without the fuzzy sound. Great for breaking through the noise and hash to complete the QSO.

Speech compressor OFF



Speech compressor ON



### High Stability Crystal Unit

The IC-756PROII incorporates a POC type crystal oscillator, providing  $\pm 0.5$ ppm ( $-10^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ ). A must for digital or MARS (Military Affiliate Radio System) operation.



### Related features:

- Hear your Tx audio with the Tx monitor function, great for headphone operation
- 50 frequency tone encoder for 10m and 6m repeater operation with Tone Scan
- Hands free operation with the VOX function
- Complete control of output RF power with the variable RF control
- Quick split function with split lock capability

# Build Your Own Filter

The PROII takes the 756PRO's built-in IF filters to the next level. Now, you can adjust the shape of the filter to best suit your operating style or band conditions.

### 32-Bit Floating Point DSP Unit & 24-Bit AD/DA Converter

The IC-756PROII continues the phenomenal performance of the 32-bit floating point DSP from the IC-756PRO. The 24-bit AD/DA converter makes it possible to provide ultra-wide dynamic range of signal management. The receiver delivers clear signals without distortion in any signal conditions, from a very weak signal to an extremely strong signal. This powerful combination supports many DSP features exclusive to the IC-756PROII.



### Sharp and Soft Filter Shapes are Selectable Each for SSB and CW Mode

Select an appropriate filter shape, depending on your operating style or band conditions. Independent SSB and CW Filters give you the flexibility you want while listening to the signal.

### SSB Sharp Filter – Both for Sharp Selectivity and Signal Fidelity

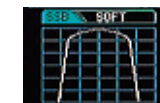
The perfect filter shape factor when signal fidelity or pinpoint accuracy is needed! A sharp slope from the filter edges gives FULL audio response while eliminating any adjacent interference.



### SSB Soft Filter – Providing Good Readability

The perfect filter shape factor when trying to pick out a weak signal! The rounded filter shape resembles a traditional analog filter, by rolling off the high and low ends

of the band pass. Although maintaining the steep filter skirt characteristics of a digital filter, the soft filter increases the signal to noise ratio of the intended signal.



### CW Sharp Filter – Ultimate Sharpness

The too good to be true CW filter! Mechanical or Crystal filters cannot give you the weak signal edge of the Sharp CW filter in the IC-756PROII. The steep filter form, only 200Hz from  $-6/-60$ dB, will allow you to pick out a weak signal that is buried by a stronger signal. DX hunters will have to try this one to really see the magic of the Sharp CW filter.



### CW Soft Filter – Digital Filter, Analog Operation

Running a pile-up has become easier with the soft CW filter. By broadening the filter skirt, the characteristics of the soft filter performs much like a mechanical filter without the ringing.



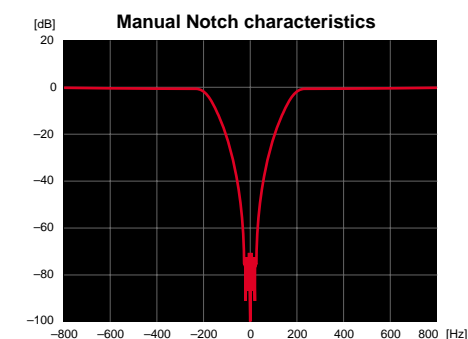
### Digital TWIN PBT

By moving the IF pass band, the digital twin Pass Band Tuning (PBT), allows the flexibility of both IF shift and narrowing of the IF passband. With the digital IF filters, the PBT performance allows you to cut away all the interference and noise to hear the actual signal.

In addition to the filter display, the LCD indicates the twin PBT conditions across the top of the screen, so you can still use the lower portion of the TFT display for other radio operations.

### Manual Notch Function

An incredible 70dB of attenuation is at your command with the manual notch. Eliminate strong adjacent signals or beat tone noise, without reducing the performance of the AGC gain.



### Automatic Notch Function

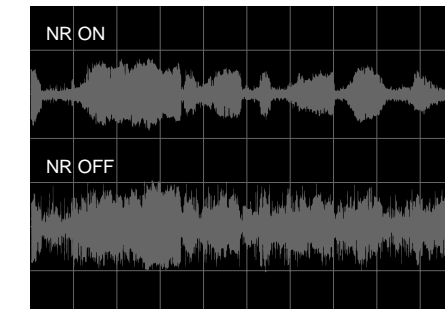
Eliminate those annoying AM carriers, amplifier or radio tune up interference with a push of a button. The automatic notch locks will eliminate 2 or more interfering signals simultaneously without signal loss or distortion. Very helpful on 80 and 160 meters.

### Noise Reduction

The 32-bit DSP processing power of the IC-756PROII produces real results by separating a signal component from the noise with the variable Noise Reduction. By suppressing the noise components, an outstanding signal-to-noise ratio is achieved, providing clean, clear audio in all modes without distortion of the target signal.



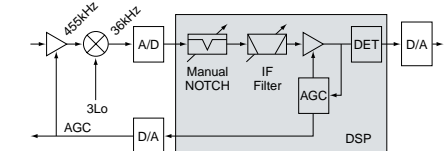
### Audio output comparison



### AGC Loop Management

All would be lost if not for the power of the multiple AGC loops. This AGC system is incredibly impressive with the rejection of unwanted signals or noise. Unlike rigs with a single AGC circuit, the AGC in the IC-756PROII will be able to copy weak signals without the pumping of the AGC from stronger adjacent signals.

In addition, the AGC time constants (slow, medium, and fast presets are user selectable) give flexibility and speed needed for working the pile-ups.



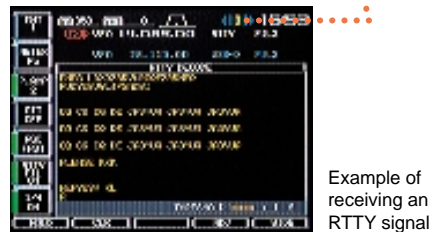
Example for setting the time constant for SSB-Mid, 2.0 seconds.

# Visualize Your Possibilities

More than just a pretty face, the multifunction display allows you to see signals, settings and many other operating functions at a glance.

## RTTY Demodulator and Decoder

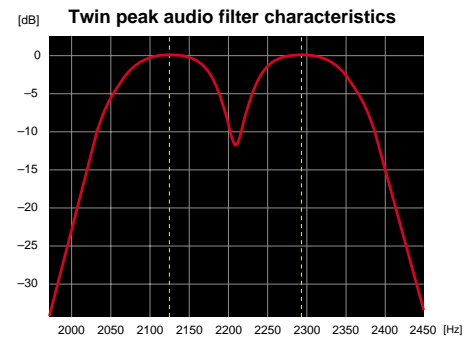
The IC-756PROII has a built-in RTTY demodulator and decoder that reads baudot RTTY signals on the screen. Copy the mail without turning on your PC or other gear, and the RTTY tuning indicator shows you when you are tuned perfectly.



Example of receiving an RTTY signal

## Twin Peak Audio Filter

The 32-bit DSP improves RTTY reception with the Twin Peak audio filter by automatically peaking the areas of the mark and space frequencies. This function removes interfering QRM giving you a more error free decoded message.



## 50Hz passband width for PSK31 mode

The PSK31 uses only 31Hz of passband width. The IC-756PROII makes it possible to narrow a passband to 50Hz in SSB mode, so that only intended signals can be heard clearly. In addition, a POC type crystal unit delivers superior frequency stability, with 1Hz step tuning, that is ideal for delicate digital mode operation.

## Data Communication

Perfect for the serious Data operator, the IC-756PROII offers Data operation on SSB, AM and FM modes. Special filters, Band Pass Filters (BPF), are automatically selected when the IF filter passband is reduced to 500Hz or less in SSB mode. The BPF automatically sharpens for better rejection of interfering signals. Perfect for PSK31, SSTV or other AFSK modes.

Along with the BPF, the IC-756PROII automatically turns off the Compression and enables the 1/4-tuning step for easier operation and more accurate tuning.

## Real Time Spectrum Scope

Thanks to the 5-inch TFT color display, the real time spectrum scope with an adjustable sweep frequency range from  $\pm 12.5\text{kHz}$ ,  $\pm 25\text{kHz}$ ,  $\pm 50\text{kHz}$  and  $\pm 100\text{kHz}$ , clearly shows band activity with relative strengths of the signals around a center frequency. The peak hold feature gives a snapshot of band activity while using the dual watch and sub-band marker to search the band for finding new stations, or an open frequency in a crowded band.

Strong signals are not a problem with three levels of attenuation (10, 20 or 30 dB) exclusive for the real time spectrum scope.



Spectrum scope screen (peak-hold function ON)

## 5-inch TFT color LCD

Enjoy the full 5-inch TFT color display. The IC-756PROII extends its functionality with more display adjustments, color types, and improved contrast. In fact, 8 colors of display settings and 7 types of font settings are available. Various information is indicated on the color LCD, separated into an upper and lower screen. The lower screen can spread vertically to increase the information viewing area.



Memory list screen

## FONT TYPE



7 segment

POP



Basic 1

Italic 1



Basic 2

Italic 2



Classic

## DISPLAY TYPE



DISPLAY A



DISPLAY B



DISPLAY C



DISPLAY D



DISPLAY E



DISPLAY F



DISPLAY G



DISPLAY H

# Make More Contesting Points

Contesters told us how to improve the 756PRO, so you can rack-up points (and awards) even faster.

## OPERATION

### Digital Voice Recorder

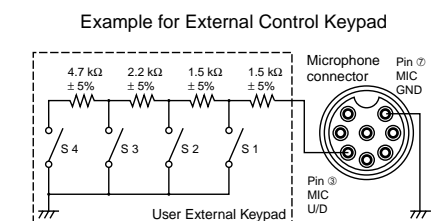
The Digital Voice Recorder (DVR) in the IC-756PROII is a very convenient function for contests, DX' peditions, field day and even normal operation. Record your call-sign, CQ, or other station information into four memory locations. A total of 90 seconds is available for the four memories, with each memory channel being soft partitioned to allow custom recording sizes.

The front panel control of the DVR allows you to record in-coming signals to the R4 memory with a quick push of the button continuously for up to 30 minutes. The playback automatically mutes the receiver for clear playback of the previous 15 seconds of recorded audio. The perfect feature for those contest operators wanting to improve their UBN.



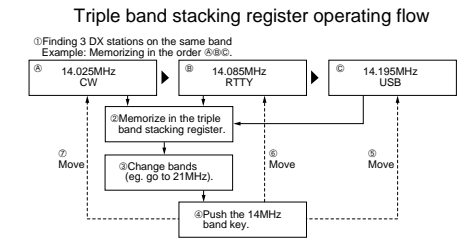
### External Control Capability for Voice Memory and Memory Keyer

For more convenient control of the DVR and CW memory keyer, the IC-756PROII allows external control via the Microphone connector. Create your own controls on your favorite key, microphone or keyboard for quick access.



## Triple Band Stacking Register

Hop around the band with ICOM's exclusive triple-band stacking registers. Each band remembers the last 3 frequencies, mode and other settings used.



## KEYING

### Memory Keyer

A must have feature for the CW operator, the internal memory keyer provides 4 memories for programming station information, calling CQ and callsign. Each memory has a capacity of 55 characters, as well as other time saving functions such as automatic repeat, serial contest number auto-counter, and morse cut number functions.

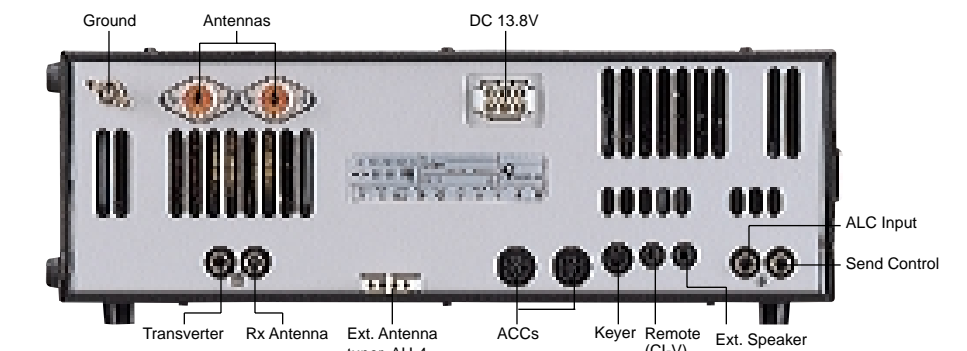
When connected to your external control pad, transmission is at your finger tips. This allows the memory keyer to be used while watching the band with the spectrum scope. Perfect tool for increasing your Q count in a contest.



Example of stand-by screen for memory keyer transmission.

### Related features

- Full break-in (QSK) function
- CW pitch control from 300 to 900Hz
- Multi-functional electronic keyer with adjustable keying speed and dot/dash ratio, paddle polarity
- Double key jack system for lambic, straight, bug or external keyer operation
- CW Reverse



## ANTENNAS

### Multiple Antennas

Operate like the big guns with the fully automatic antenna system. From automatic antenna selection to the high-speed auto-antenna tuner, changing bands and antennas is as simple as pushing one button. The ATU remembers the last tuning combination used in the selected band, allowing quick band hopping from 160-6 meters. Also, the PRO II has an antenna switch for up to 3 RX and 2 TX antennas. This antenna management systems included a separate RX antenna connector for receive only antennas like your favorite wire or beverage antenna.

## AND MORE

### Other Outstanding Features

- Analog and digital meter indicates RF power, SWR, ALC, and speech compression level
- Memory pad stores up to 5 or 10 operating frequencies and modes
- Independent RIT and ΔTX control for main and sub bands
- Clock and Timer
- 101 Alphanumeric memory channels (including 2 scan edges)
- Auto TS function
- Dial lock
- Band edge beep
- AH-4 control circuit
- Optional voice synthesizer announces operating frequency, mode, and receiving signal strength
- Computer control with CI-V interface capability with the optional CT-17
- Programmed memory, select memory and ΔF scans



Digital meter screen

## SPECIFICATIONS

GENERAL	
• Frequency coverage	: Rx 0.030–60.000MHz*1, *2 Tx 1.800– 1.999MHz*2 3.500– 3.999MHz*2 7.000– 7.300MHz*2 10.100– 10.150MHz*2 14.000– 14.350MHz*2 18.068– 18.168MHz*2 21.000– 21.450MHz*2 24.890– 24.990MHz*2 28.000– 29.700MHz*2 50.000– 54.000MHz*2
*1: Some freq. bands are not guaranteed. *2: Depending on version	
• Mode	: USB, LSB, CW, RTTY, AM, FM
• Number of memory Ch.	: 101 (99 regular, 2 scan edges)
• Antenna connector	: SO-239x2 and phono [RCA; (50Ω)]
• Temperature range	: -10°C to +50°C; +14°F to +122°F
• Frequency stability	: Less than ±0.5ppm (1 min. after powered ON/0 to 50°C; +32 to +122°F)
• Frequency resolution	: 1Hz
• Power supply requirement	: 13.8V DC ±15% (negative ground)
• Power consumption	: Tx Max. power 23A Rx Standby 3.0A (typ.) Max. audio 3.5A (typ.)
• Dimensions	: 340(W)×111(H)×285(D) mm; (projections not included) 13½(W)×4¾(H)×11½(D) in
• Weight (approx.)	: 9.6kg; 21lb 1oz
• ACC 1 connector	: 8-pin DIN connector
• ACC 2 connector	: 7-pin DIN connector
• CI-V connector	: 2-conductor 3.5 (d) mm (1/8")
• Display	: 5-inch (diagonal) TFT color LCD

TRANSCIEVER	
• Output power	: SSB, CW, RTTY, FM 5–100W (continuously adjustable) AM 5–40W
• Modulation system	: SSB DPSN modulation AM Digital low power modulation FM Digital phase modulation
• Spurious emission	: 50dB (HF bands) 60dB (50MHz band)
• Carrier suppression	: More than 40dB
• Unwanted sideband suppression:	More than 55dB
• ΔTX variable range	: ±9.999kHz
• Microphone connector	: 8-pin connector (600Ω)
• ELE-KEY connector	: 3-conductor 6.35 (d) mm (1/4")
• KEY connector	: 3-conductor 6.35 (d) mm (1/4")
• SEND connector	: Phono (RCA)
• ALC connector	: Phono (RCA)

RECEIVER	
• Receive system	: Triple conversion superheterodyne system
• Intermediate frequencies:	1st 64.455MHz (for all modes) 2nd 455kHz (for all modes) 3rd 36kHz (for all modes)
• Sensitivity (typical)	:

Frequency Range (MHz)	SSB, CW, RTTY (at 2.4kHz BW)	AM (at 6kHz BW)	FM (at 15kHz BW)
0.50–1.799	—	13μV	—
1.80–27.99	0.16μV*1	2μV*1	—
28.0–29.99	0.16μV*1	2μV*1	0.5μV*1
50.0–54.0	0.13μV*2	1μV	0.32μV*2

10dB S/N for SSB, CW, RTTY and AM, 12dB SINAD for FM  
\*1-Pre-amp 1 is ON, \*2-Pre-amp 2 is ON

- Squelch sensitivity (Pre-amp: OFF):  
SSB, CW, RTTY Less than 5.6μV  
FM Less than 1μV
- Selectivity (representative value):  
SSB, RTTY More than 2.4kHz/–6dB  
Less than 3.2kHz/–40dB  
Less than 3.6kHz/–60dB  
Less than 4.3kHz/–80dB  
CW (BW: 500Hz) More than 500Hz/–6dB  
Less than 700Hz/–60dB  
AM (BW: 6kHz) More than 6.0kHz/–6dB  
Less than 15.0kHz/–60dB  
FM (BW: 15kHz) More than 12.0kHz/–6dB  
Less than 20.0kHz/–60dB
- Spurious and image rejection ratio : More than 70dB (except IF through on 50MHz band)
- AF output power (at 13.8V DC) : More than 2.0W at 10% distortion with an 8Ω load
- RIT variable range : ±9.999kHz
- PHONES connector : 2-pin connector 6.35 (d) mm (1/4")
- EXT SP connector : 2-pin connector 3.5 (d) mm (1/4")/8Ω

ANTENNA TUNER	
• Matching impedance range:	16.7–150Ω unbalanced*1 (HF bands) 20–125Ω unbalanced*2 (50MHz band)

- \*1 Less than VSWR 3:1; \*2 Less than VSWR 2.5:1
- Min. operating input power: 8 W
- Tuning accuracy : VSWR 1.5:1 or less
- Insertion loss : Less than 1.0dB (after tuning)

### Supplied accessories:

- Hand microphone
- DC power cable
- Spare fuses
- CW key plug

All stated specifications are subject to change without notice or obligation.

## OPTIONS



**IC-PW1 HF+50MHz 1kW LINEAR AMPLIFIER**  
Covers all HF and 50MHz bands, provides clean, stable 1kW output. Automatic antenna tuner and compact detachable controller are standard. 2 exciter inputs are available. (Not available for EU countries.)



**AH-4 HF+50MHz AUTOMATIC ANTENNA TUNER**  
Covers 3.5–54MHz with a 7m (23 ft) or longer wire antenna.



**AH-2b ANTENNA ELEMENT**  
A 2.5m long antenna element for mobile operation with the AH-4. All amateur bands between 7–54 MHz can be matched.



**SP-20 EXTERNAL SPEAKER**  
4 audio filters; headphone jack; can connect to 2 transceivers. Input impedance: 8Ω  
Max. input power: 5W



**SP-21 EXTERNAL SPEAKER**  
Style and size are matched to the IC-756PROII. Input impedance: 8Ω  
Max. input power: 5W



**PS-125 DC POWER SUPPLY**  
Style and size are matched to the IC-756PROII.  
13.8V DC, 25A max.



**SM-20 DESKTOP MICROPHONE**  
Unidirectional, electret microphone for base station operation. [UP/DOWN] switches and a low cut function are available.



**CT-17 CI-V LEVEL CONVERTER**  
For remote transceiver control using a personal computer equipped with an RS-232C port. You can change frequencies, operating mode, etc.



**UT-102 VOICE SYNTHESIZER UNIT**  
Announces operating frequency and mode.



**HM-36 HAND MICROPHONE**  
Same as that supplied.

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