



HF/50/144MHz ALL MODE TRANSCEIVER

IC-746PRO

Digital
Signal
Processor



Icom Inc.

HF + 50MHz + 144MHz All Band Coverage

The IC-746PRO covers all amateur HF (1.8MHz to 28MHz) bands as well as 50MHz and 144MHz. Also the general coverage receiving is from 30kHz to 60MHz and 108MHz to 174MHz*. * Specifications guaranteed 0.5–29.99, 50–54 and 144–148MHz only.

All mode digital modulation and demodulation

The DSP unit offers full all mode digital modulation and demodulation. For SSB mode, the digital PSN (Phase Shift Network) modulation produces clear and high quality transmit audio. This improves the Intermodulation distortion.

RTTY demodulator and decoder

The built-in RTTY demodulator and decoder reads baudot RTTY signals on the screen without turning on your PC or other gear. The RTTY tuning indicator helps critical tuning. Twin Peak filter removes interfering QRM giving you a more accurate decoded message.



Powerful 100W output for all bands

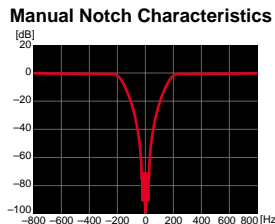
The final power amplifier generates a stable 100 W in SSB, CW, RTTY and FM modes (40W in AM). A large cooling fan and heat sink provide 100% duty cycle.

Digital twin PBT capability

The low and high IF passband edges move independently by turning the digital twin PBT. It actually shifts and narrows the passband to eliminate interfering signals. Very useful during crowded band conditions such as pileups or contests.

Manual and auto notch filter

There are 2-types of notch filters. The manual notch filter eliminates interfering beats. It's sharp cutting characteristic achieves more than 70dB of attenuation without losing AGC gain. The auto notch function locks on to 2 or more near-by signals ensuring clear reception.



Digital noise reduction

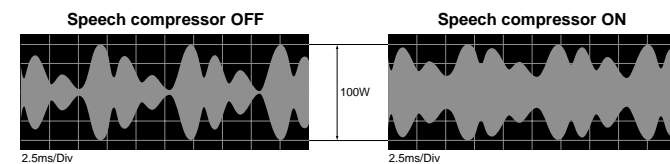
The DSP digitally reduces various types of noise and enhances receive signal components. Outstanding signal-to-noise ratio is achieved providing clean, clear audio in SSB.

Comparison of receive signal speaker output



Digital RF speech compressor

The digital RF speech compressor provides the maximum punch without fuzzy sound. Great for breaking through the noise and hash to complete the QSO.



The 32-bit DSP Technology Takes You Even Higher – To 144MHz!

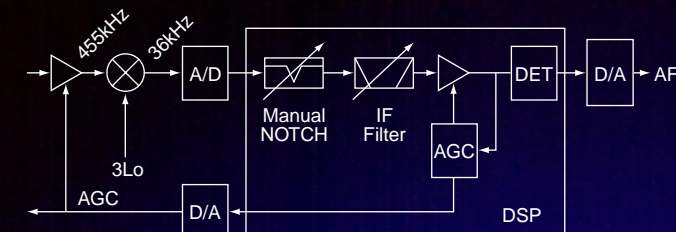
The 32-bit floating point DSP and 24-bit AD/DA converter derived from the 756PROII represents incredible progress in IC-746PRO. Experience the exciting digital functions and superior wide band technology the IC-746PRO offers from HF bands to 144MHz band.



32-bit floating point DSP and 24-bit AD/DA converter
32-bit floating point DSP & 24-bit AD/DA converter are applied to the IC-746PRO. This combination dramatically improves receiver performance providing ultra wide dynamic range and good 3rd order intercept point. Adds many digital features never seen in its class.

AGC loop management

The DSP unit controls the AGC loop including digital IF filter and manual notch. This AGC system rejects unwanted sideband out of the filter pass band. Of course, the AGC time constants are flexibly adjustable for each operating mode. (0.1–6.0 or 8.0 sec.)

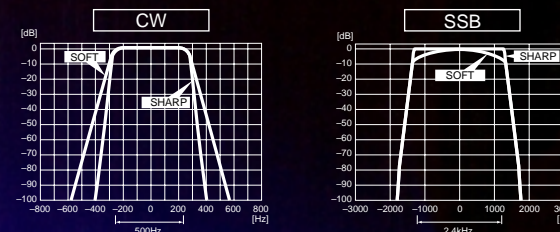


IF filter width and shape variable

No more expensive optional filters are required for the IC-746PRO operation. The digital IF filter allows you to select a filter width and shape. Soft and sharp filter shapes can be selected in both SSB and CW modes independently. You can also change the settings on the fly and compare the difference.

Microphone/Speaker audio equalizer

Microphone/speaker audio equalizer controls bass and treble sound in 11 levels with AM, FM and SSB mode. You can also select the transmit filter width from 2.8/2.4/2.2kHz in SSB mode.



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IC-746PRO

Mode	Passband width range	
		50–500Hz
SSB	10 types; 50Hz step	31 types; 100Hz step
CW	10 types; 50Hz step	



Large, multi-function LCD

The large multi-function LCD displays frequency, 9-character channel name, channel number, multi functional meter (includes S-meter, RF output, SWR and ALC level) and other operating status. The dot-matrix portion of the LCD shows the following items.



- Channel name
- Function key assignment
- Band Scope
- RTTY decoder screen
- Memory keyer contents
- Graphical SWR scale

Ample CW functions

Multi function electronic keyer, variable dot/dash ratio (2.8:1 to 4.5:1) and key speed (6-60 WPM), paddle polarity, bug key etc. CW pitch is adjustable (300 to 900Hz). Full break-in capability. Double key jacks – one each for front and rear panel.

Memory Keyer

4 channel memory keyer stores up to 50 characters with serial contest number auto-counter, morse cut number and auto repeat function. In addition, an user external keypad* controls the memory keyer at your finger tips.



* Please prepare for yourself.

Built-in antenna tuner

The internal antenna tuner matches the HF and 50MHz band automatically. After operating on a band for the first time, the tuner memorises the selected antenna and preset point providing for very high speed tuning. 2 antenna connectors for HF and 50MHz bands and 1 for 144MHz band is equipped for the IC-746PRO.

SSB/CW Synchronous Tuning

You no longer have to worry about losing a CW signal while tuning with SSB mode. With the SSB/CW synchronous tuning, the frequency automatically shifts when you change modes.

Voice Squelch Control (VSC) function

The Voice Squelch Control function opens the squelch only when received a modulated signal containing a voice during scanning.

Other outstanding features

- Triple band stacking register
- 2 types of preamplifier (Regular and Hi-gain) for HF and 50MHz bands, 1 for 144MHz band
- 20dB RF attenuator
- Level adjustable noise blanker (101 steps)
- BPF function in SSB mode
- 1/4 speed dial tuning function for SSB-data, CW and RTTY modes
- 108 selectable DTCS and 50 selectable CTCSS with encoder/decoder
- Optional high stability crystal unit, CR-338
- Up to 10 memo-pad temporarily store frequencies and modes
- Quick split function with split lock function
- ± 9.99kHz RIT and ΔTX
- Band edge beep
- CI-V capability for PC control
- VOX
- Program, memory, select memory and ΔF scans
- IF transmit audio monitor (SSB mode only; AF transmit audio monitor for the other modes)
- 102 memory channels
- 9600bps data terminal
- AH-4 control circuits
- Auto TS function
- Optional voice synthesizer unit, UT-102 announces the operating frequency, mode and S-meter level
- 1Hz tuning and indica-



SPECIFICATIONS

GENERAL

- Frequency coverage (unit: MHz) :

Receive	0.030– 60.000*	108.000–174.000*
Transmit	1.800– 2.000	3.500– 3.999
	7.000– 7.300	10.100– 10.150
	14.000– 14.350	18.068– 18.168
	21.000– 21.450	24.890– 24.990
	28.000– 29.700	50.000– 54.000
	144.000–148.000	

* Some frequency ranges are not guaranteed.
- Type of emission : 2K40J3E (SSB), 100HA1A (CW), ?100HF1B (RTTY), 16K0F3E (FM), 6K00A3E (AM)
- Number of memory Ch. : 102 (99 regular, 2 scan edges and 1 call)
- Antenna connector : SO-239×3 (2 for HF/50MHz and 1 for 144MHz bands; 50Ω)
- Temperature range : -10°C to +60°C; +14°F to +140°F
- Frequency stability :
 - Less than ±7ppm from 1 min. to 60 min. after power ON.
 - After that, rate of stability change is less than ±1ppm at 25°C (+77°F). Temperature fluctuations (0°C to +50°C; +32°F to +122°F) less than ±5ppm.
- Frequency resolution : 1Hz
- Power supply requirement : 13.8V DC ±15%
- Power consumption :

Tx	Max. power	23A
Rx	Standby	2.2A
	Max. audio	3.0A
- Dimensions : 287(W)×120(H)×316.5(D) mm; (projections not included) 11⁵/₁₆(W)×4²³/₃₂(H)×12¹⁵/₃₂(D) in
- Weight (approx.) : 9.0kg; 19lb 13oz
- 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")
- DATA connector : Mini DIN 6-pin

TRANSMITTER

- Output power : SSB, CW, RTTY, FM 5–100W (continuously adjustable) AM 5–40W
- Modulation system : SSB PSN modulation AM Low power modulation FM Phase modulation
- Spurious emission : Less than -50dB (HF bands) Less than -60dB (50/144MHz band)
- Carrier suppression : More than 40dB
- Unwanted sideband suppression : More than 55dB
- ΔTX variable range : ±9.99kHz
- 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 2nd 455kHz 3rd 36kHz
- 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*2	0.25μV*2
144.0–148.0	0.11μV*3	1μV*3	0.18μV*3

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, *3-Pre-amp is ON

- Squelch sensitivity (Pre-amp: OFF):

SSB, CW, RTTY	Less than 5.6μV
FM	Less than 1μV
- Selectivity (representative value):

SSB (BW: 2.4kHz)	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 More than 360Hz/–6dB Less than 650Hz/–60dB
RTTY (BW: 350Hz)	More than 350Hz/–6dB Less than 6.0kHz/–6dB
AM (BW: 6kHz)	More than 15.0kHz/–6dB More than 12.0kHz/–6dB Less than 20.0kHz/–60dB
FM (BW: 15kHz)	Less than 20.0kHz/–60dB
- Spurious and image rejection ratio : More than 70dB (HF, 50MHz) More than 60dB (144MHz) (except IF through on 50MHz)
- AF output power (at 13.8V DC) : More than 2.0W at 10% distortion with an 8Ω load
- RIT variable range : ±9.99kHz
- PHONES connector : 3-pin connector 6.35 (d) mm (1/4")
- EXT SP connector : 2-pin connector 3.5 (d) mm (1/8")/8Ω

ANTENNA TUNER

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

*1Less than VSWR 3:1; *2Less than VSWR 2.5:1
- Min. operating input power: 8W (HF bands) 15W (50MHz band)
- 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.



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-746PRO. Input impedance: 8Ω Max. input power: 5W



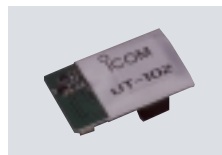
PS-125 DC POWER SUPPLY
 Style and size are matched to the IC-746PRO. 13.8V DC, 25A max.



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.



CR-338 HIGH STABILITY CRYSTAL UNIT
 POC type crystal for improved frequency stability. Frequency stability: ±0.5 ppm

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