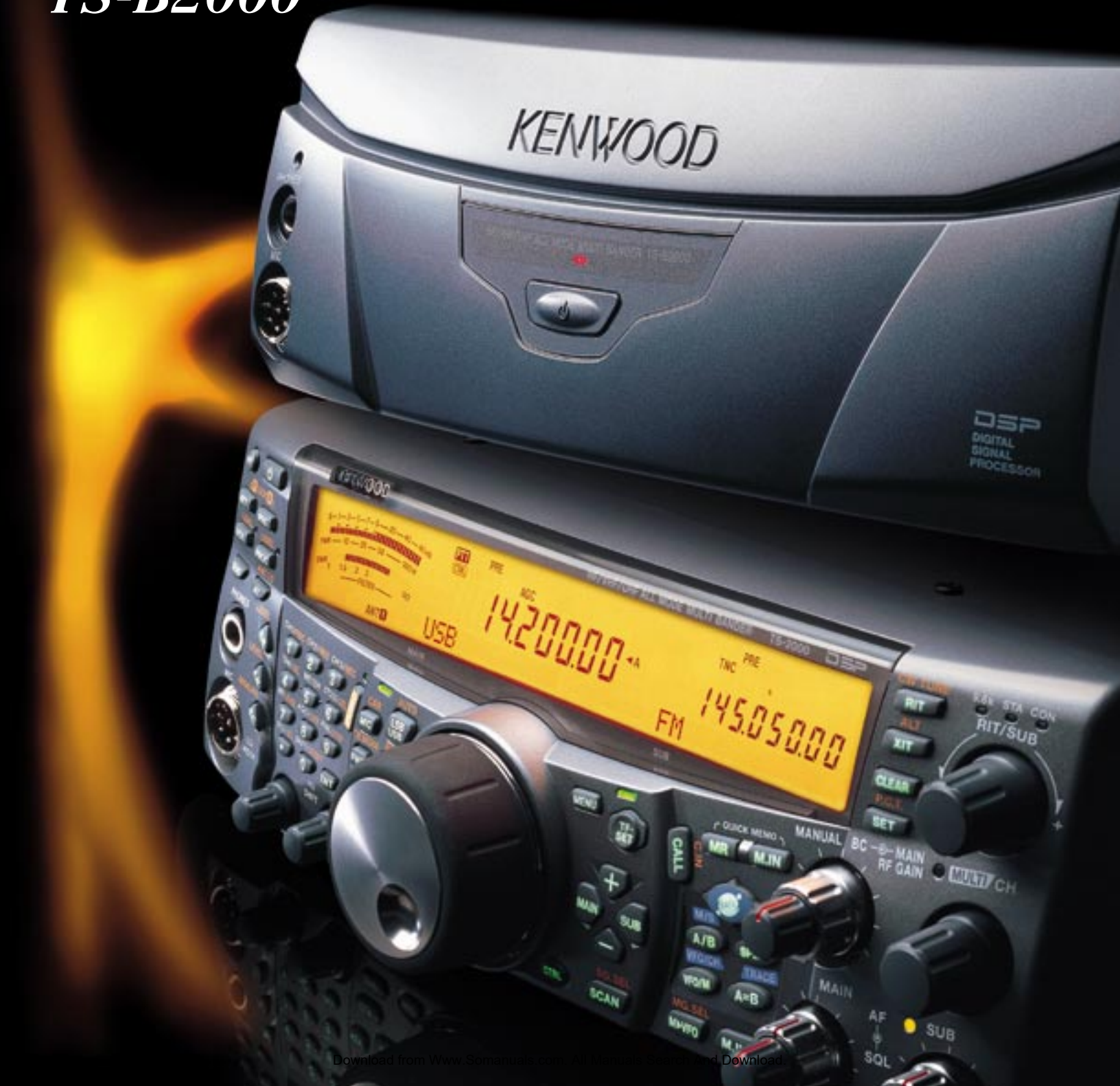
KENWOOD

TS-2000/2000X

All-Mode Multibander

TS-B2000



Distinctive by Design, Packed for Performance

All-mode multibander: HF/50/144/440/1200MHz* in one compact rig offering wide-band receive (500kHz to 1300MHz, non-contiguous) and 100W output (HF/50/144MHz) — ideal for both base station use and mobile operation.
*TS-2000 & TS-B2000 require optional UT-20 1200MHz all-mode unit. The UT-20 can only be installed by a qualified technician; do not attempt to install it yourself.

Black box version: The TS-B2000 can be used exclusively for computer control or in a vehicle with a remote head*.
*Optional RC-2000 mobile controller

Dual-channel receive: Featuring an all-mode multiband transceiver (with satellite mode) plus a sub 144/440MHz FM/AM receiver, so two frequencies (HF/50/144/440/1200*: ALL MODE + 144/440MHz: FM/AM) can be received simultaneously, even on the same band (144/440MHz).
* With optional UT-20 1200MHz all-mode unit

Digital signal processing: IF-DSP (main band) combines with AF-DSP (sub band) to provide precision filtering and interference reduction.

Satellite communications: Main-band circuits are used for satellite mode, which thus benefits from IF-DSP.

Striking design: With its large amber LCD and backlit keys, the distinctive front panel of the TS-2000/2000X improves operating ease.

Kenwood Skycommand System II Plus: Built-in Transporter function means the TS-2000/2000X/B2000 can be operated remotely with one handheld transceiver.

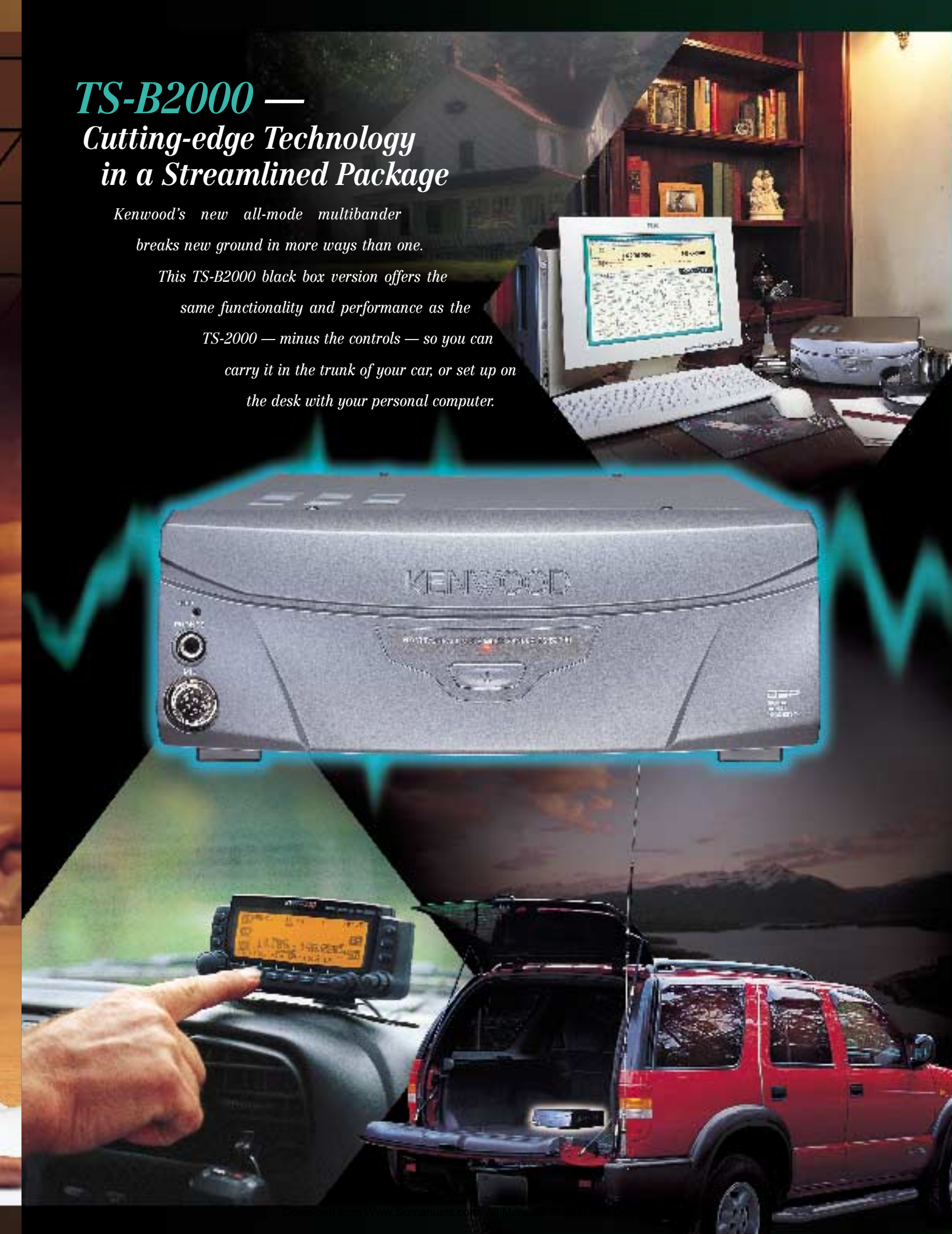
High-speed processing: Superior performance is assured with two 16-bit DSP chips, double-precision computing and a 100MHz speed CPU, plus 24-bit A/D and D/A converters.

High frequency stability: Built-in TCXO offers professional performance — ±0.5ppm* (-10~+50°C).
*Main-band SSB, CW, FSK, AM modes only.

Other features include a mobile controller and radio control software (both options), built-in auto antenna tuner, DX cluster tune, and an antenna terminal dedicated to HF low-band reception.

TS-B2000 —
Cutting-edge Technology in a Streamlined Package

Kenwood's new all-mode multibander breaks new ground in more ways than one. This TS-B2000 black box version offers the same functionality and performance as the TS-2000 — minus the controls — so you can carry it in the trunk of your car, or set up on the desk with your personal computer.



- **Sleek front panel with power switch and mic/headphone terminals**

- **Optional RC-2000 mobile controller available for mobile use**

Easy Mode

- **ARCP-2000 radio control software supplied for PC use**

TS-B2000

HF/50/144/440/1200*MHz

All-mode Multibander

* With optional UT-20 1200MHz all-mode unit

A marvel of electronic engineering: Kenwood's stylish new all-mode multibander is packed with top-end features yet compact enough to use at home, in your car, or on a DX'pedition. With its 3D front panel, featuring backlit keys and large amber display, its appearance is as distinctive as its performance.

TS-2000
HF/50/144/440/1200*MHz

TS-2000X
HF/50/144/440/1200MHz

All-mode Multibander

* With optional UT-20 1200MHz all-mode unit

All-Mode, Multiband, Engineered for Excellence

Kenwood's new TS-2000/2000X/B2000 all-mode multibander may be compact, but it's equipped with all the features you would expect to find in a top-of-the-line rig.

IF Digital Signal Processing

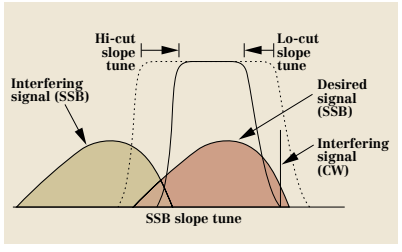
The TS-2000/2000X/B2000 is serious about digital signal processing. Kenwood's advanced digital technology converts analog waveforms into digital data in real-time, enabling such digital processing as IF filtering, slope tune, auto notch and AGC. IF-stage DSP on main-band transmit and receive — including V/UHF bands — allows the greatest range of control and unprecedented performance.

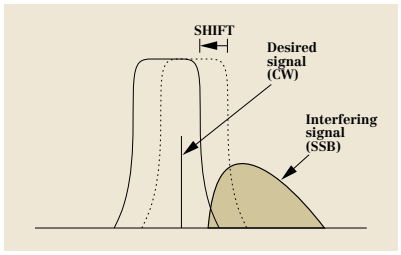
DSP Detection

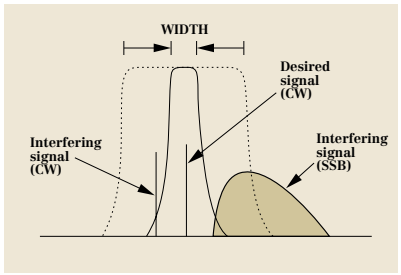
IF-stage DSP means that the TS-2000/2000X/B2000 offers significantly lower distortion and higher quality detection in all modes. (FM: digital AF filter)

Digital Filtering

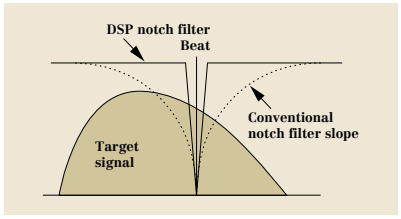
There is absolutely no need to purchase optional filters: digital IF filters are available for each mode (FM: digital AF filter), offering performance superior to anything possible with analog circuitry. When operating in SSB/FM/AM modes, this digital filtering enables both high- and low-cut frequency variance. Employing slope tune, you can thus cut out noise with minimal effect on sound quality. In AM mode, the high-cut frequency can reduce interference by controlling the IF pass bandwidth — useful for receiving shortwave broadcasts. In CW mode, the WIDTH function is supplemented by center frequency shift, allowing adjacent signal interference to be tuned out. The WIDTH function also provides noise reduction capabilities in FSK with 4 steps available: 250, 500, 1000 and 1500Hz. And thanks to AF-stage DSP, independent control of high-cut and low-cut frequencies (12 steps each) provides slope tune capability in FM as well.







IF Auto Notch



Since it is working with a digital signal, IF Auto Notch (main band, SSB mode) can provide extremely sharp filtering of carrier frequencies from broadcast and continuous beat sources. The interfering beat is removed far more accurately than in conventional analog systems, and Auto Notch will even track changes in the beat signal (tracking speed can be varied in 5 steps).

IF AGC

The digital AGC circuit (main band only) delivers very fast release characteristics, surpassing even the best analog designs. You can select a custom release time (20 steps) for each mode, except FM.

HF Band

50MHz Band

440MHz Band

144MHz Band

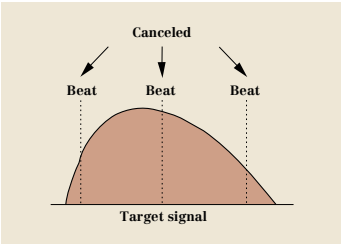
1200MHz Band

AF Digital Signal Processing

DSP is also executed at the AF stage, offering Beat Cancel and CW Auto Tune functions. It also enables you to achieve remarkable noise reduction and apply custom enhancements to your transmitted voice.

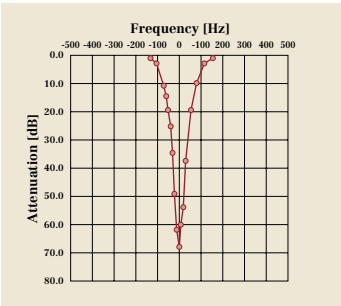
Beat Cancel

Automatic Beat Cancel, available for the main band (SSB and AM modes), immediately eliminates multiple beats interfering with a desired signal. It works well in combination with IF Auto-Notch (SSB).



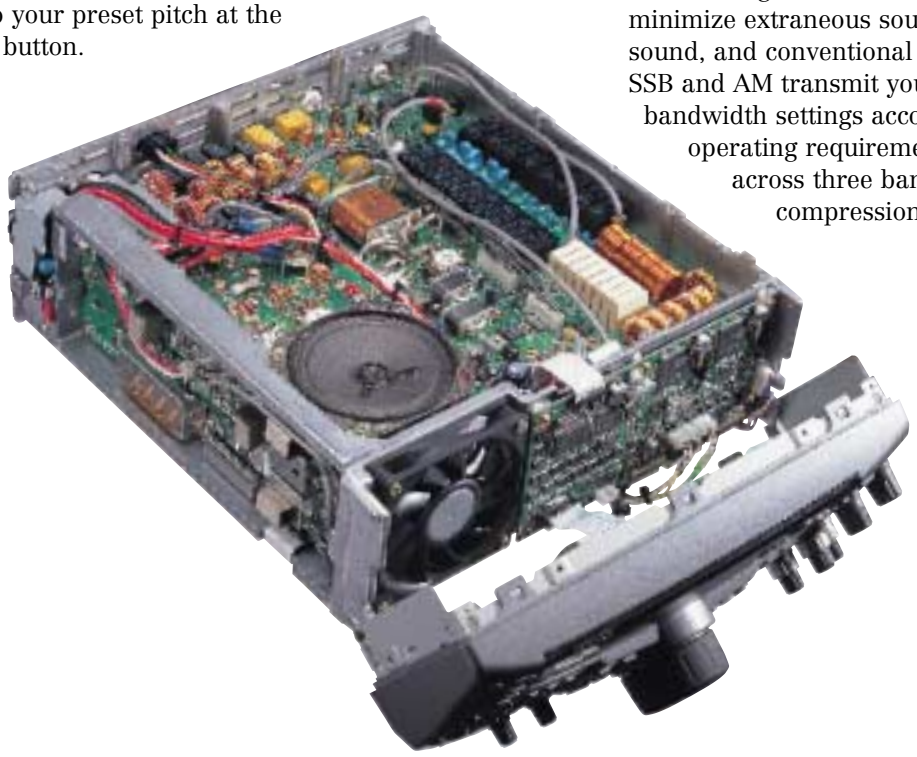
Manual Beat Cancel

A new Manual Beat Cancel function, which operates as a manual AF notch, can be used in all modes — though it is particularly effective in CW.



CW Auto Tune

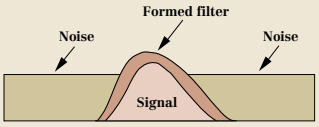
You no longer have to adjust the VFO while operating on CW — CW Auto Tune does it for you automatically by adjusting the VFO to your preset pitch at the touch of a button.



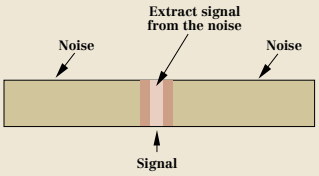
Noise Reduction

There are 2 types of noise reduction: LEM (NR1) and SPAC (NR2). LEM (Line Enhancer Method) — available for all modes on the main band and FM/AM on the sub band — automatically forms a filter shape around the target signal for a custom, dynamic noise reduction capability. The degree of enhancement can also be set manually for main-band use. The SPAC (Speech Processing/Auto Correlation) function utilizes a special statistical/correlation algorithm to pull out weak signals that are buried deep in noise. Although available for all modes on the main band, it's especially useful for tough CW conditions. The correlation time setting can be adjusted in 10 steps between 2ms and 20ms.

Line Enhancer Method



SPAC Method



TX Audio Shaping

You have 3 ways to tailor audio quality with DSP: the TX/RX equalizer (SSB/FM/AM), TX filter bandwidth (SSB/AM), and speech processor (SSB/FM/AM). The TX/RX equalizer offers 4 frequency response settings on SSB, FM and AM: high boost for improved clarity, formant pass to minimize extraneous sounds, bass boost for stronger sound, and conventional mode for an 'analog' sound. On SSB and AM transmit you can choose between 6 TX filter bandwidth settings according to your microphone and operating requirements. The speech processor works across three bands (SSB, FM and AM) for high compression and minimal distortion.

Expanded Power and Performance

DX Cluster (Packet Cluster) Tune

DX cluster information received on the sub band is not just displayed on the LCD: it can also be used for instantly setting up the main band frequency to cluster information. Up to 10 items can be stored in memory.

Built-in 1200/9600bps TNC

The simple 2-chip TNC is compliant with the AX.25 protocol for Sky Command and DX cluster tune.

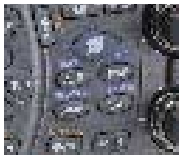
Dual-Channel Watch

Provision of main and sub bands enables dual-channel watch. This all-mode multibander can simultaneously receive two frequencies, even on the same band, allowing such combinations as HF+V/UHF, VHF+VHF, UHF+UHF and VHF+UHF (the sub band is used exclusively for 144/440MHz reception on FM/AM). This means, for instance, that you can pick up local information on V/UHF while operating HF on the main band.

Satellite Communications

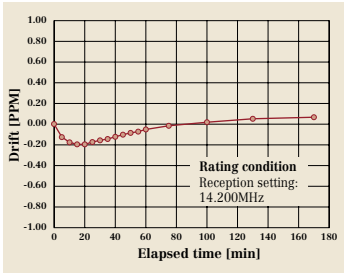
Satellite operations are enhanced with the IF-DSP, 10 dedicated memory channels, Doppler effect frequency adjustment (manual) and the ability to choose either normal or reverse shift for the trace.

		Down link			
	All-mode	HF/50MHz	144MHz	440MHz	1200MHz
Up link	HF/50MHz	—	●	●	●
	144MHz	●	—	●	●
	440MHz	●	●	—	●
	1200MHz	●	●	●	—



High-duty Transmitter Section

This transceiver is the perfect choice for contesting, mobiling and FSK applications, delivering up to 100 (AM: 25) watts on HF/50/144MHz bands. Output is 50 (AM: 12.5) watts on the 440MHz band, and 10 (AM: 2.5) watts on 1200MHz*. But there's more than just power: the built-in TCXO ensures excellent frequency stability — ±0.5ppm (except in FM mode).



*Minimum output is 5 watts for HF/50/144/440MHz bands, 1 watt for 1200MHz.

CW Features

In addition to the new Auto Tune function, there is a full range of CW features. The full/semi break-in switching and delay time settings are fully adjustable. In semi break-in the delay time between key release and active receive mode can be set for between 50ms and 1000ms. When using VOX operation the delay time can be set for between 150ms and 3000ms. Other CW features include pitch control (400-1000Hz), side tone monitor with 10-step volume setting, DSP-based rise time adjustment, and CW reverse mode.

FSK Features

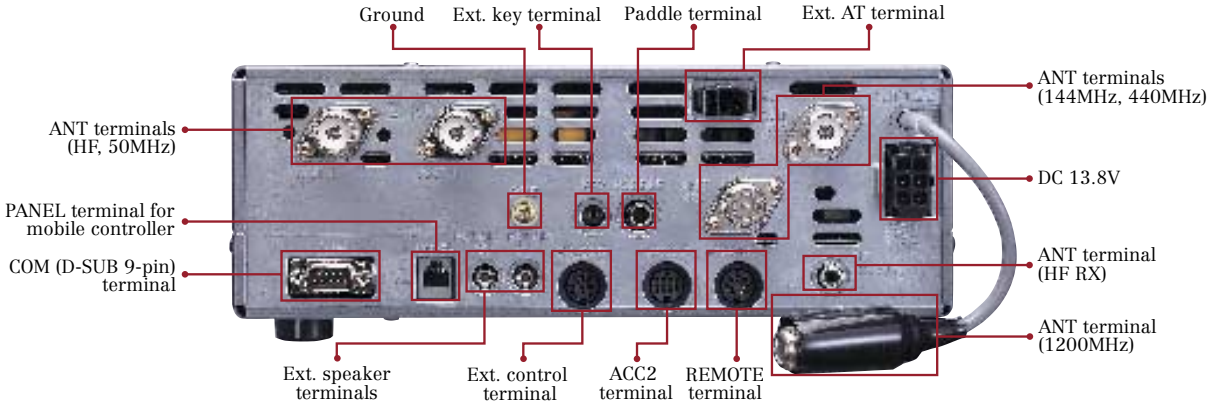
When operating in FSK mode, you can select shift frequencies (170, 200, 425 and 850Hz) and switch both KEY polarity and Hi/Low tones to suit your RTTY device. Additionally, the FSK reverse function lets you match transmission methods to the other party if necessary, for example changing the BFO frequency from LSB (normal) to USB (reverse).

FM Features

As well as switchable Narrow/Wide deviation modes, the TS-2000/2000X/B2000 has built-in CTCSS functionality with 38 EIA-standard sub-tones settings plus 1750Hz tone burst. Other features include DCS (104 codes), both cross-band and fixed-band repeater operation, and 1200MHz ALT.

Data Communication Features

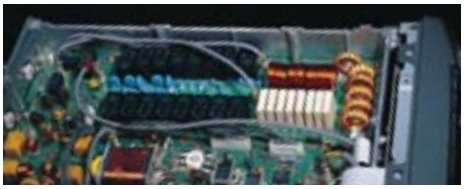
Packet filter bandwidth is fully selectable to match packet speed, and you can also switch ACC2 (PKD) input/output levels. For PSK31 mode, the menu offers a 100Hz bandwidth IF-DSP filter.



Enhanced Operating Ease

Automatic Antenna Tuner

The built-in antenna tuner — which also operates when the radio is in receive mode — covers amateur bands from 1.9 to 50MHz, with rapid tuning lock when using presets.



300 Memory Channels

This transceiver provides a bank of 300 memories (plus 1 call channel for each band), with 290 assignable by name and 10 available for programmable scan. The scroll function lets you browse memory contents, memory channel copy sends the contents of one channel to another, lock-out memory changes the scan map to exclude certain channels, and memory shift alters the frequency stored in a channel. In addition, there are 10 'quick' memories to capture a current operation on-the-fly — ideal for contest operation.

Multiple Scan Functions

A full range of scan functions is provided, including MHz scan, memory scan, and call scan. Group scan mode covers all 300 memory channels in groups of 10, and programmable band scan will search a frequency spread between two VFO settings (the scan-hold function stops the scanning for 5 seconds). A new feature is programmable slow scan, which will automatically slow down to check a frequency range you're interested in. As well as varying scan speed, you can choose either time-operated (TO) or carrier-operated (CO) busy-stop-resume.

Menu System

All of the power and functions of the TS-2000/2000X/B2000 can be accessed through the menu-driven display interface on the front panel. You may also activate the Quick Menu feature to access only your most commonly-used functions.

Other Features

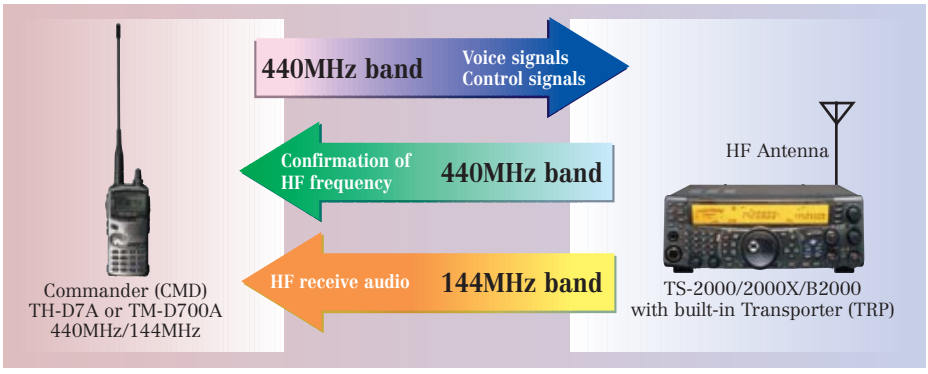
- **Large, amber-colored backlit LCD**
- **Backlit front keys**
- **Compatible with optional DRU-3A digital recording unit**
- **Key operation announcement with optional VS-3 voice synthesizer (option)**
- **Programmable function keys**
- **Transverter (displays up to 19.99999GHz)**
- **RF gain control**
- **All-mode squelch**
- **Simple visual scan**
- **Auto simplex checker**
- **Auto repeater offset (144/1200MHz)**
- **DTMF remote control**
- **Built-in keyer**
- **Noise blanker**
- **Auto power-off**

Kenwood Skycommand System II Plus

The TS-2000/2000X/B2000 is fully equipped for Kenwood's Skycommand System II Plus. With just a handheld transceiver you can relax in your garden while DX'ing from your shack. Alternatively, you could enjoy HF access via the multibander in your parked car while taking in a baseball game.

Conventionally two extra transceivers are required for KSS operation — a Commander and a Transporter — but the TS-2000/2000X/B2000 has Transporter functions built in. This means you can operate it remotely with a single mobile or handheld unit, such as the TH-D7A or TM-D700A, transmitting control signals to the Transporter, which also relays your voice to the HF radio. In return, HF signals are transmitted back to the Commander. This system allows you to transmit and receive HF signals, set frequencies (with LCD confirmation), switch memory channels, and much more — all remotely.

Kenwood Skycommand System II Plus is the most sophisticated version yet developed, enabling full-duplex operation with access to such HF functions as RIT/XIT, mode switching (USB, FM, etc.), split-frequency operations on/off, and memory shift. Control is effected via simple TNC, compatible with the AX.25 protocol. In addition, if a second TS-2000/2000X/B2000 unit is used as the Commander, you have control over noise reduction, noise blanker on/off and antenna switching among other functions.



- You control the TS-2000/2000X/B2000 from the portable Commander (CMD).
- Voice is transmitted from the CMD unit on the 440MHz band.
- Control signals are also sent from the CMD unit on the 440MHz band.
- The HF signal received by the TS-2000/2000X/B2000 is relayed to the CMD unit on the 144MHz band.
- You can confirm the HF frequency on the LCD of the CMD.

Options

RC-2000
Mobile Controller

ARCP-2000
Radio Control Program (Supplied with TS-B2000)

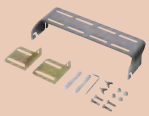
UT-20*
1200MHz All-Mode Unit

DRU-3A
Digital Recording Unit

VS-3
Voice Synthesizer Unit

HS-5
Deluxe Headphones (8Ω)

HS-6
Small Headphones (12.5Ω)



MB-430**
Mobile Bracket

MC-43S
Hand Microphone

MC-47
Hand Microphone

MC-52DM
Hand Microphone with DTMF

MC-60A
Deluxe Desktop Microphone

MC-80
Desktop Microphone

MC-90
DSP-compatible Desktop Microphone

PG-2Z
DC Power Cable

PS-53
Heavy-duty Power Supply

SP-23
External Speaker

SP-50B
Mobile Speaker

**The UT-20 can only be installed by a qualified technician; do not attempt to install it yourself.*
***Do not install the MB-430 Mobile Bracket vertically as this would adversely affect transceiver operation and safety.*

Not all accessories may be available, please contact dealers for details.

Specifications

	TS-2000/TS-2000X/TS-B2000
GENERAL	
Transmitter Frequency Range	Main: 160, 80, 40, 30, 20, 17, 15, 12, 10, 6, 2 meter bands, 70, 23 (TS-2000X only) cm bands Sub: 2 meter band, 70cm band
Receiver Frequency Range	Main: (0.03) 0.5 ~ 30 MHz, (30) 50 ~ 54 (60) MHz, (142) 144 ~ 148 (152) , (420) 430 ~ 450 MHz, 1240 ~ 1300 MHz (TS-2000X only), Sub: (118) 144 ~ 148(174) MHz, (220) 438 ~ 450 (512) MHz ** Figures in parenthesis ( ) indicate VFO coverage range*
Mode	A1A (CW), J3E (SSB), A3E (AM), F3E (FM), F1D (FSK), F2D
Power Requirement	13.8 V DC ±15%
Current Drain (Less than)	Transmit: 20.5 A (HF, 6m, 2m), 18 A (70cm), 9 A (23cm) Standby: 2.6 A
Operating Temperature	14° F ~ +122° F (-10° C ~ +50° C)
Frequency Stability	Main: Other mode within ±0.5 x 10^{-6} (±0.5 ppm) FM TX mode within ±0.5 x 10^{-6} ± 2 kHz Sub: Within ±0.5 x 10^{-6} ± 600 Hz
Antenna Impedance	50Ω
Microphone Impedance	600Ω
Dimensions, projections not included (W x H x D)	TS-2000/X: 10-5/8 x 3-3/4 x 12-1/2 inch (270 x 96 x 317 mm) TS-B2000: 10-5/8 x 3-3/4 x 12-1/2 inch (270 x 96 x 317 mm)
Weight (approx.)	TS-2000: 17.19 lbs. (7.8 kg) TS-2000X: 18.07 lbs. (8.2 kg) TS-B2000: 16.53 lbs. (7.5 kg)
TRANSMITTER	
RF Output Power	SSB/CW/FM/FSK=100W, AM=25W (HF, 6m, 2m), SSB/CW/FM/FSK=50W, AM=12.5W (70cm) SSB/CW/FM/FSK=10W, AM=2.5W (23cm)
Modulation SSB FM AM	 Balanced modulation Reactance modulation Low-level modulation
Maximum Frequency Deviation (FM)	Less than ±5 kHz (wide) Less than ±2.5 kHz (narrow)
Spurious Radiation	1.8 ~ 28MHz: Less than –50dB 50 ~ 430MHz: Less than –60dB 1200MHz: Less than –50dB
Carrier Suppression	More than 50 dB
Unwanted Sideband Suppression	More than 50 dB
Transmit Frequency Response (SSB)	400 ~ 2600 Hz (within -6 dB)
XIT Variable Range	±20.00 kHz
Antenna Tunable Range	16.7Ω ~ 150Ω (160 ~ 6m Band)
RECEIVER	
Circuitry Main: SSB/CW/AM/FSK FM Sub: AM/FM	 Quadruple superheterodyne Triple conversion superheterodyne Double conversion superheterodyne
Intermediate Frequency Main: 1st IF 2nd IF 3rd IF 4th IF Sub: 1st IF 2nd IF	 69.085 MHz or 75.925 MHz (HF ~ 50 MHz) 41.895 MHz (144/440MHz), 135.495 MHz (1200MHz) 10.695 MHz 455 kHz 12.0 kHz 58.525 MHz 455 kHz

	TS-2000/TS-2000X/TS-B2000
RECEIVER (Continued)	
Sensitivity Main: SSB/CW/FSK (S/N 10 dB)	 Less than 4 µV (500 kHz ~ 1.705 MHz), Less than 0.2 µV (1.705 ~ 24.5 MHz), Less than 0.13 µV (24.5 ~ 30 MHz), Less than 0.13 µV (50 ~ 54 MHz), Less than 0.16 µV (144 ~ 148 MHz), Less than 0.11 µV (430 ~ 450 MHz), Less than 0.11 µV (1240 ~ 1300MHz),
AM (S/N 10 dB)	Less than 31.6 µV (500 kHz ~ 1.705 MHz), Less than 2 µV (1.705 ~ 24.5 MHz), Less than 1.3 µV (24.5 ~ 30 MHz), Less than 1.3 µV (50 ~ 54 MHz), Less than 1.4 µV (144 ~ 148 MHz), Less than 1.0 µV (430 ~ 450 MHz), Less than 1.0 µV (1240 ~ 1300MHz)
FM (12 dB SINAD)	Less than 0.22 µV (28 ~ 30 MHz), Less than 0.22 µV (50 ~ 54 MHz), Less than 0.25 µV (144 ~ 148 MHz), Less than 0.18 µV (430 ~ 450 MHz), Less than 0.18 µV (1240 ~ 1300MHz)
Sub: AM (S/N 10 dB)	Less than 2.25 µV (144 ~ 148 MHz), Less than 1.55 µV (438 ~ 450 MHz)
FM (12 dB SINAD)	Less than 0.40 µV (144 ~ 148 MHz), Less than 0.28 µV (438 ~ 450 MHz)
Squelch Sensitivity Main: SSB/CW/AM/FSK	 Less than 18 µV (500 kHz ~ 1.705 MHz), Less than 1.8 µV (1.8 ~ 28.7 MHz), Less than 1.1 µV (50 ~ 54 MHz), Less than 1.1 µV (144 ~ 148 MHz), Less than 1.1 µV (440 ~ 450 MHz), Less than 1.1 µV (1240 ~ 1300MHz)
FM	Less than 0.2 µV (28 ~ 30 MHz), Less than 0.2 µV (50 ~ 54 MHz), Less than 0.16 µV (144 ~ 148 MHz), Less than 0.1 µV (430 ~ 450 MHz), Less than 0.1 µV (1240 ~ 1300MHz)
Sub: AM	Less than 1.1 µV (144 ~ 148 MHz), Less than 1.1 µV (438 ~ 450 MHz)
FM	Less than 0.23 µV (144 ~ 148 MHz), Less than 0.18 µV (438 ~ 450 MHz)
Image Rejection Ratio Main / Sub	 More than 70 dB / More than 60 dB
IF Rejection Ratio Main / Sub	 More than 70 dB / More than 60 dB
Selectivity Main: SSB (Low: 300MHz, Hi: 2600MHz)	 More than 2.2 kHz (-6 dB), Less than 4.4 kHz (-60 dB)
AM (Low:100MHz, Hi:3000MHz)	More than 6.0 kHz (-6 dB), Less than 12.0 kHz (-50 dB)
FM	More than 12.0 kHz (-6 dB), Less than 25.0 kHz (-50 dB)
FM (Narrow)	More than 8.0 kHz (-6 dB), Less than 20.0 kHz (-50 dB)
Sub: AM	More than 12.0 kHz (-6 dB), Less than 25.0 kHz (-50 dB)
FM	More than 12.0 kHz (-6 dB), Less than 25.0 kHz (-50 dB)
RIT Variable Range	±20.00 kHz
Notch Filter Reduction	More than 30 dB (1 kHz)
Beat Elimination	More than 40 dB (1 kHz)
Low Frequency Output	More than 1.5 W 8 Ω at 10% distortion

Kenwood follows a policy of continuous advancement in development.
For this reason specifications may be changed without notice.

These specifications are guaranteed for Amateur Bands only.

JQA-1205 ISO 9001
Communications Equipment Division
Kenwood Corporation
ISO9001 certification

KENWOOD CORPORATION
14-6, 1-chome, Dogenzaka, Shibuya-ku, Tokyo 150-8501, Japan

KENWOOD COMMUNICATIONS CORPORATION
Headquarters
3975 Johns Creek Court, Suwanee, GA 30024-1265

Order Administration/Customer Support/Distribution
P.O. BOX 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745

KENWOOD ELECTRONICS CANADA INC.
6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8

CA222KP-E-10(00) 001108.3B Printed in Japan