

KENWOOD

TS-480HX/TS-480SAT

HF/50MHz All-Mode Transceiver

KENWOOD
NETWORK COMMAND SYSTEM
with Voice over Internet Protocol capability



DX Distinction

— Creative Concept, Elegant Engineering

■ **200W output (50MHz: 100W) DC 13.8V operation:**

The TS-480HX is a highly portable rig offering 200W output (50MHz: 100W) — making it ideal for both base station and DX'ing applications.

■ **100W model:**

The 100W TS-480SAT is additionally equipped with a built-in automatic antenna tuner.

■ **TX/RX AF DSP:**

16-bit AF digital signal processing offers such powerful features as noise reduction, TX/RX equalizer, and AF filters.

■ **Compact construction:**

As well as being designed for compactness, both models are supplied with a convenient carrying bracket that's perfect for any DX'pedition.

■ **Separate LCD control panel with speaker:**

Sporting a large amber LCD with backlit keys, the standalone control panel can be positioned anywhere up to 4 metres from the main unit.

■ **Continuous RX: 500kHz (VFO: 30kHz) to 60MHz**

■ **TX covers all Amateur bands 1.8MHz to 50MHz**

■ **Other features**

include a quad-mixer that provides RX dynamic range in the TS-950 class, PSK31 compatibility, packet cluster tune (with TM-D700E and TM-D710E), PC-based control, and optional IF filters.



Power and performance on the move – Kenwood's compact TS-480HX/SAT is the perfect travel companion.



Tailor-made for DX'ing, the new TS-480HX HF transceiver raises the bar on portable performance. Despite its compact dimensions, it delivers an astonishing punch: 200W with a DC 13.8V supply. Yet its separate control panel is perfect for base station use.

Sharing virtually all the same powerful features is the 100W TS-480SAT, except that it boasts a built-in antenna tuner. Whichever model you choose, you can be sure of enjoying the best of both worlds — first-rate communications at home and on the trail.



HF/50MHz All-Mode Transceiver

TS-480HX

200W Model

TS-480SAT

100W Model

with Built-in Automatic Antenna Tuner

One Rig to Rule Them All

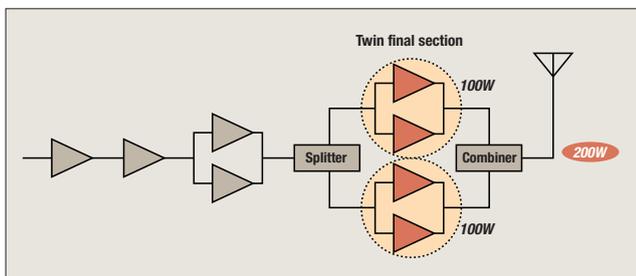
— Kenwood Engineering at Its Finest

As a go-anywhere HF/50MHz all-mode transceiver, Kenwood's new TS-480HX/SAT is well ahead of the pack when it comes to advanced electronic engineering, convenient features and ease of operation.

EXCELLENT POWER AND PERFORMANCE

High RF power output

Equipped with a twin final section featuring splitter and combiner circuitry, the TS-480HX can provide up to 200 watts RF output (50MHz: 100W) with a DC 13.8V power supply. The TS-480SAT delivers up to 100 watts.



Separate Power Sources

The 200W TS-480HX features two power terminals (DC1, DC2) for separate supply to each half of the twin final section; voltage balance is optimized to ensure stable output. This arrangement allows for use of two power supplies or a single 41A power source.

Twin cooling fans

When used for extended periods, the heat build-up inside a compact transceiver can be a serious concern, reducing its working life. But the components in the heavy-duty TS-480HX/SAT are designed to withstand heat. What is more, it is equipped with a die-cast aluminium chassis and twin fans for enhanced cooling

efficiency. And since the control panel is separate from the main unit, the fans are able to generate a powerful airflow from front to back. As a result, you can rely on this transceiver to transmit continuously for 30 minutes* without having to power down.



*This figure is supplied for reference purposes only and depends on there being an ambient temperature of 25°C, antenna SWR of 1.2 or less, and nothing to obstruct the air flow generated by the cooling fans.

RX dynamic range

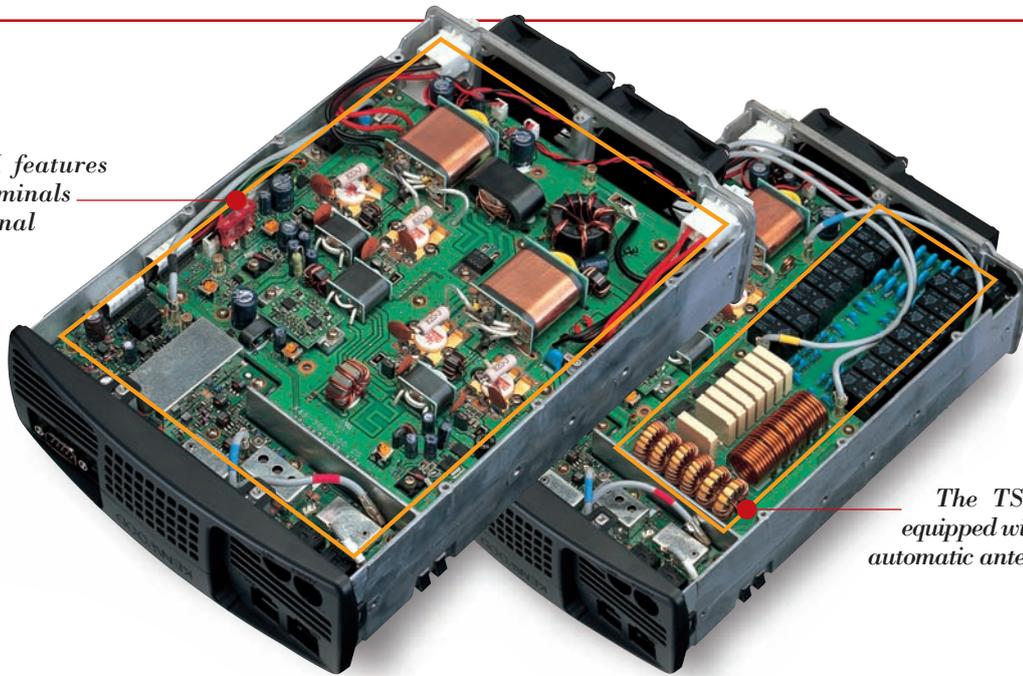
A quad-mixer provides RX dynamic range equivalent to that of the TS-950 class (at 50 kHz separation).

CW support

There is a full range of CW features, including auto tune. When in SSB mode, a simple key-press will switch automatically to CW — very handy for 50MHz operations, especially if combined with slow scan. Another convenient feature is the ability to record three different messages for quick transmission during contests. You can choose between full and semi-break-in; for the former the delay time between key release and active receive mode can be set for between 50ms and 1000ms in 50ms steps. Other CW features include pitch control (400-1000Hz), side tone monitor with 10-step volume setting, an electronic keyer, microphone paddle mode and CW reverse mode.



The TS-480HX features two power terminals for the twin final section.



The TS-480SAT is equipped with a built-in automatic antenna tuner.

IF filters (option)

Optionally available for more intense operations are 500Hz and 270Hz band CW narrow IF filters (YF-107C, YF-107CN), as well as a 1.8kHz band SSB narrow IF filter (YF-107SN). Any two of these IF filters can be installed inside the transceiver.



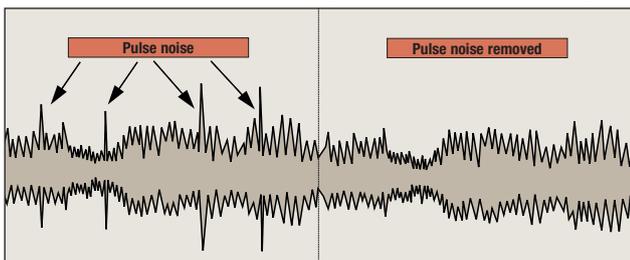
AF DIGITAL SIGNAL PROCESSING (TX/RX)

Thanks to a 16-bit digital signal processor offering double-precision arithmetic operations (equivalent to 32-bit processing), a 100MHz clock and 16-bit A/D & D/A converters, the TS-480HX/SAT offers many powerful features.



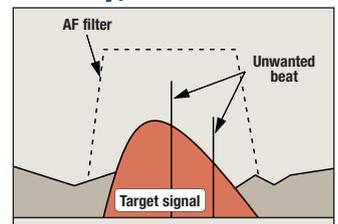
Digital noise limiter (DNL)

With three level settings, the DNL is highly effective in removing even the pulse noise that cannot be eliminated with conventional analogue circuitry and noise blankers. For extra clarity, however, it can be used in conjunction with a noise blanker, which removes pulse noise at the IF stage.



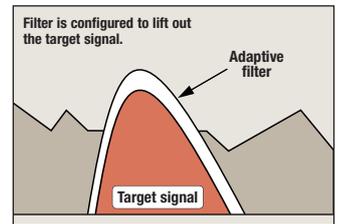
Beat cancel (SSB/AM only)

DSP will also cancel out multiple beats falling within the AF filter range. Choose BC1 to remove weak and/or continuous beat interference, or BC2 to handle intermittent beat, like that of a CW signal.

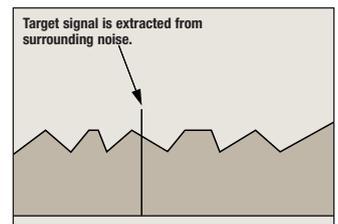


Noise reduction

NR1 is a line enhanced filter with 10 level settings (including auto) – great for extracting a target signal. A good choice for CW operations is NR2 (SPAC), adjustable in 2ms increments (2~20ms); it can suppress noise at the same frequency as the target signal, allowing it to pull a weak target signal out from the surrounding noise.



NR1



NR2

TX/RX equalizer

The equalizer offers flat (default), high boost (2 types), Formant pass, bass boost (2 types), conventional and user* settings, separately for transmit and receive.

**Configurable using the ARCP-480 radio control program.*

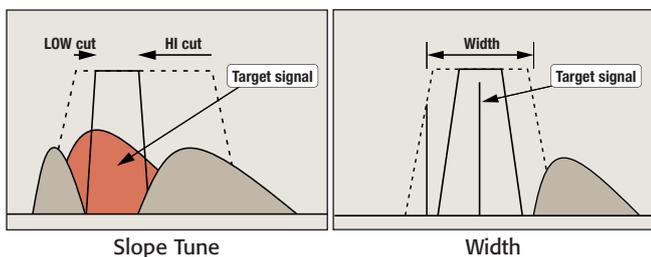




ENHANCED OPERATING EASE

AF filters

Slope tune can be used to move the target signal away from noise using hi-cut and low-cut filters (SSB, FM and AM), while Width allows adjustment of the pass-band to avoid adjacent noise (CW/FSK).



TX filter

Audio quality during transmit can be adjusted to suit by switching between two passband settings (500-2500Hz and the default 300-2700Hz).

Speech processor

Available for SSB, FM and AM transmission, the speech processor enhances the clarity of messages for the receiving station. Input/output levels can be finely adjusted (0~100).

CW auto tune

This feature uses DSP to automatically zero in on a target frequency during CW operations. It is also RIT compatible.

Built-in automatic antenna tuner (TS-480SAT)

The automatic antenna tuner inside the TS-480SAT – with presets for quick band changes – covers all amateur bands 1.8MHz to 54MHz.



Emphasis on portability

Outdoor use is facilitated by DC 13.8V operation and compact dimensions: the 3.2kg main unit measures 179mm (W) x 61mm (H) x 258mm (D)*, while the 0.5kg control panel is 180mm (W) x 75mm (H) x 37mm (D)*.

**Projections not included.*

Separate LCD control panel with speaker

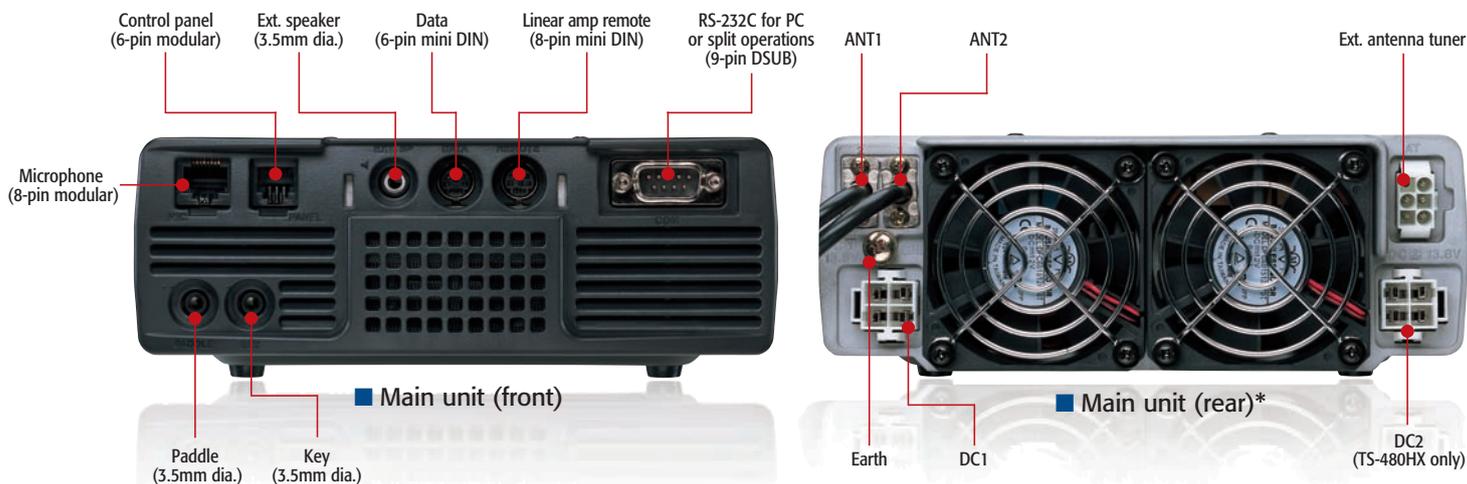
The large, standalone LCD control panel – featuring its own 6.6cm speaker (2W max. output) – can be freely positioned up to 4 metres from the main unit. The supplied tabletop panel bracket is convenient when using the transceiver at home on a desk, while the mobile panel bracket is ideal for mounting in a car. The panel can be snapped into place or removed from a bracket instantly. It also features 34 keys, each with backlighting to enhance operating ease.



Memory Name function

Clear identification is possible for the 100 memory channels with up to 8 alphanumeric characters each.

External terminals



**The TS-480SAT is equipped with a single fan.*



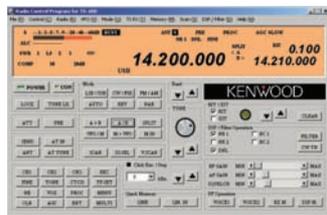
Attractive backlighting of the LCD and keys facilitates operation at night.

■ Multiple scan functions

Included among the many scan functions are program scan, memory scan, group scan, slow scan, subtone scan and CTCSS scan.

■ PC-based control

The ARCP-480 radio control program (freely downloadable from the Kenwood web site)* enables PC-based control of all transceiver functions, as well as the customizing of TX/RX equalizer curves.



*www.kenwood.com/j/products/info/amateur.html

■ PSK31 compatible (SSB/FM)

The TS-480HX/SAT can be connected directly to a computer for the increasingly popular PSK31 mode. It also offers the following convenient features:

- Separate adjustment of AF input/output levels (10 steps)
- Choice of centre frequency (1000Hz or 1500Hz)
- Adjustable AF DSP filter bandwidth (7 steps)
- Selectable CW narrow IF filters (if installed)
- TX with VOX function (no need for a PTT control line)
- Microphone muting during PTT operation via the data terminal

■ Voice guide & storage unit (option)

The VGS-1 voice guide and storage unit can serve two important roles: vocal confirmation of frequency, key operation, etc., and recording/playback of messages received by the transceiver. A total of 90 seconds (3 x 30 seconds) can be recorded and stored in Flash ROM for playback and transmission. Additionally, a convenient constant record function means you can always play back the last 30 seconds of reception for confirmation.

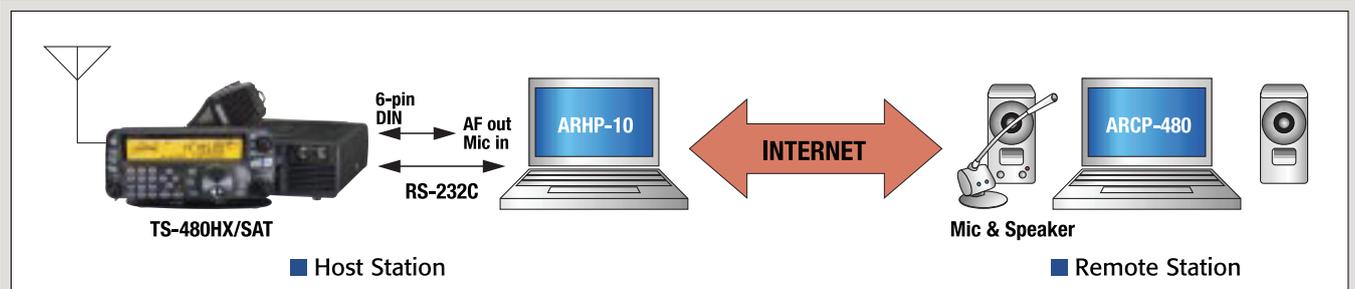


■ Other Features

- Transverter display function (up to 999.9999 MHz)
- Wide/Narrow deviation selection (FM TX)
- Direct Frequency Entry
- CTCSS (42 subtone frequencies)
- 1750Hz Tone
- TX Monitor
- 5W Minimum RF Output for QRP Operating
- FSK Reverse
- Noise Blanker
- Packet Cluster Tune with TM-D700E* and TM-D710E*
- Auto Power Off
- Time-out Timer

*Frequency data received by the TM-D700E and TM-710E (version G2.0 and later) can be transferred to the TS-480 via RS-232C cable (not supplied).

Kenwood Network Command System



Using the ARHP-10 radio host program*, you can even control the transceiver remotely over a LAN or via the Internet. The Kenwood Network Command System further enables VoIP (Voice over Internet Protocol) applications.

*Internet-linked operation and/or remote control of Amateur Radio products is subject to local licensing and legislation in the country of use. Ensure that you operate within the terms of your licence at all times. To use ARHP-10 requires global IP; any questions regarding IP addresses should be directed to your provider. A computer running Windows® 2000/XP and equipped with a microphone and speakers (or headphones) is required for VoIP.

Options

<p>SO-3 TCXO</p> 	<p>PG-4Z Panel Extension Cable Kit (4 metres)</p> 	<p>MC-43S Hand Microphone (requires MJ-88)</p> 	<p>SP-23 External Speaker</p> 	<p>ARCP-480 Radio Control Program (available free for downloading from the Kenwood website: www.kenwood.com/v/products/info/amateur.html)</p> 
<p>YF-107C 500Hz CW Filter</p> 	<p>PG-20 DC Cable (7 metres)</p> 	<p>MC-47 Hand Microphone (requires MJ-88)</p> 	<p>SP-50B Mobile Speaker</p> 	<p>ARHP-10 Radio Host Program (available free for downloading from the Kenwood website: www.kenwood.com/v/products/info/amateur.html)</p> 
<p>YF-107CN 270Hz CW Narrow Filter</p> 	<p>HS-6 Headphones</p> 	<p>MC-60A Deluxe Desktop Microphone (requires MJ-88)</p> 	<p>VGS-1 Voice Guide & Storage Unit</p> 	
<p>YF-107SN 1.8KHz SSB Narrow Filter</p> 	<p>LF-30A Low-pass Filter (for TS-480SAT)</p> 	<p>MJ-88 Microphone Connection Cord</p> 		

Not all accessories may be available. Please contact dealers for details.

Specifications

	TS-480HX	TS-480SAT
GENERAL		
Transmitter Frequency Range	1.81 – 2.0MHz, 3.5 – 3.8MHz, 7.0 – 7.1MHz, 10.1 – 10.15MHz, 14.0 – 14.35MHz, 18.068 – 18.168MHz, 21.0 – 21.45MHz, 24.89 – 24.99MHz, 28.0 – 29.7MHz, 50 – 52MHz	
Receiver Frequency Range	0.5 – 30MHz, 50 – 54MHz (VFO: Continuous 30kHz – 60MHz)	
Mode	SSB (J3E), CW (A1A), FSK (F1B), FM (F3E), AM (A3E)	
Power Requirements	DC1: 13.8V±15% DC2: 13.8V±15% ¹⁾	DC13.8V±15%
Current Drain		
Transmit	DC1: Less than 20.5A; DC2: Less than 20.5A ²⁾	Less than 20.5A
Standby	Less than 1.5A	Less than 1.5A
Operating Temperature	-20°C – +60°C	
Frequency Stability		
Main unit	Within ±5ppm (-20°C – +60°C) Within ±10ppm (-10°C – +50°C)	
With optional SO-3 attached	Within ±0.5ppm (-20°C – +60°C) Within ±1.0ppm (-10°C – +50°C)	
Antenna Impedance	50 Ω	
Microphone Impedance	600 Ω	
Grounding Method	Negative ground	
Dimensions (W x H x D)		
Main unit: without / with projections	179 x 61 x 258mm / 179 x 69.5 x 278mm	
Panel: without / with projections	180 x 75 x 37mm / 183 x 78 x 68mm	
Weight (approx.)	3.7kg (Main unit 3.2kg / Panel 0.5kg)	

¹⁾ Voltage differential between DC1 and DC2 is within 1V.

²⁾ Two power sources each of more than 20.5A or a single 41A source (20.5 + 20.5A) required.

These specifications are guaranteed for Amateur Bands only.

Kenwood follows a policy of continuous advancement in development.

For this reason, specifications may be changed without notice.



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	TS-480HX	TS-480SAT
TRANSMITTER		
RF Output Power		
HF (AM)	200W (50W)	100W (25W)
50MHz (AM)	100W (25W)	100W (25W)
Modulation: SSB / FM / AM	Balanced / Phase / Low Power	
Maximum Frequency Deviation: Wide / Narrow	Less than ±5kHz / Less than ±2.5kHz	
Spurious Radiation: HF / 50MHz	Less than -50dB / Less than -60dB	
Carrier Suppression	More than 40dB (SSB)	
Unwanted Sideband Suppression	More than 40dB (SSB)	
Transmit Frequency Response	400 – 2600Hz (within -6dB)	
XIT Variable Range	±9.99kHz	
Antenna Tuner Matching Range (1.9MHz – 50MHz)	–	16.7 – 150Ω
RECEIVER		
Circuitry	Double superheterodyne	
SSB, CW, AM, FSK	Triple superheterodyne	
FM	Triple superheterodyne	
Intermediate Frequency: 1st IF / 2nd IF / 3rd IF	73.095MHz / 10.695MHz / 455kHz (FM only)	
Sensitivity		
SSB / CW / FSK (S/N 10dB)	Less than 4µV (0.5 – 1.705MHz) Less than 0.2µV (1.705 – 24.5MHz) Less than 0.13µV (24.5 – 30MHz) Less than 0.13µV (50 – 54MHz)	
AM (S/N 10dB)	Less than 31.6µV (0.5 – 1.705MHz) Less than 2µV (1.705 – 24.5MHz) Less than 1.3µV (24.5 – 30MHz) Less than 1.3µV (50 – 54MHz)	
FM 12dB SINAD	Less than 0.22µV (28 – 30MHz) Less than 0.22µV (50 – 54MHz)	
Squelch Sensitivity		
SSB / CW / FSK / AM	Less than 18µV (0.5 – 1.705MHz) Less than 1.8µV (1.8 – 30MHz) Less than 1.1µV (50 – 54MHz)	
FM	Less than 0.2µV (28 – 30MHz) Less than 0.2µV (50 – 54MHz)	
Image Rejection Ratio	More than 70dB	
IF Rejection Ratio	More than 70dB	
Selectivity		
SSB / CW / FSK	More than 2.4kHz (-6dB), Less than 4.4kHz (-60dB)	
AM	More than 5.0kHz (-6dB), Less than 40kHz (-60dB)	
FM	More than 12.0kHz (-6dB), Less than 25.0kHz (-50dB)	
RIT Variable Range	±9.99kHz	
Beat Elimination	More than 40dB (1kHz)	
Audio Output Power	More than 2.0W (8 Ω, 10% distortion)	