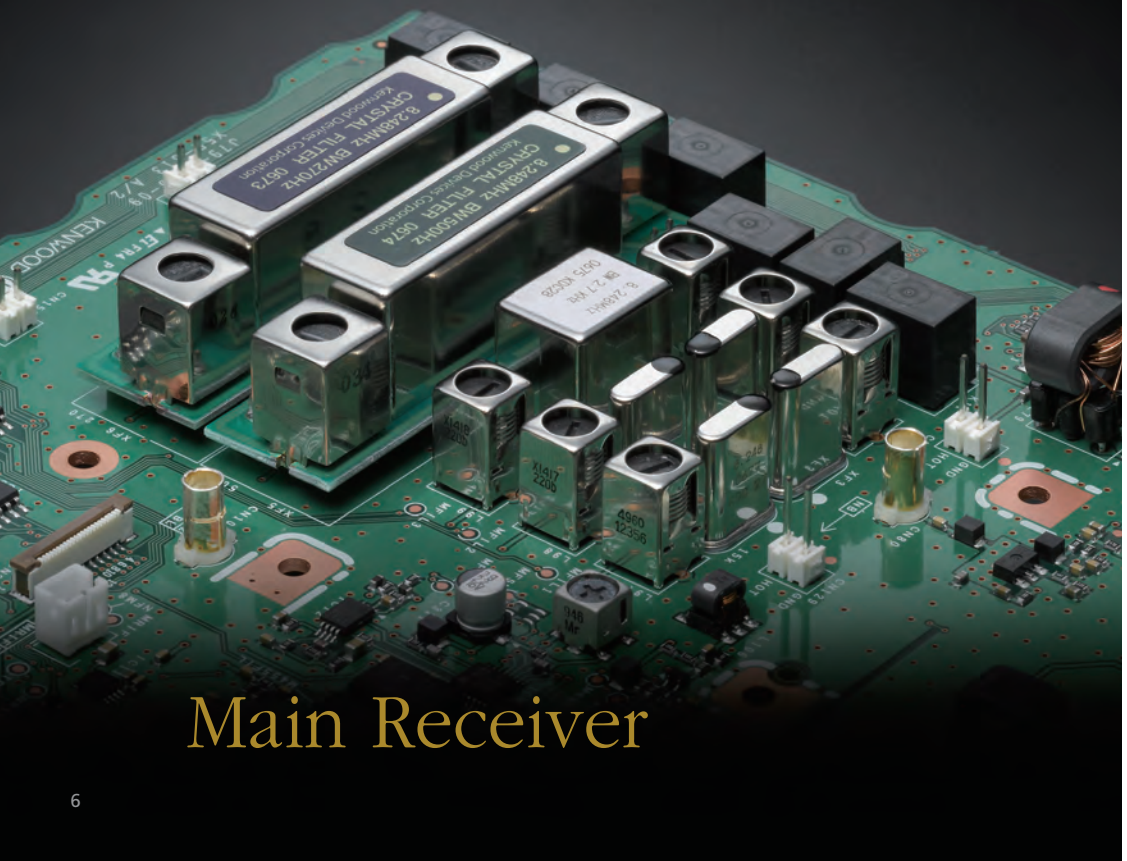
# The TS-990S has the overwhelmingly highest quality receiver among the TS series.

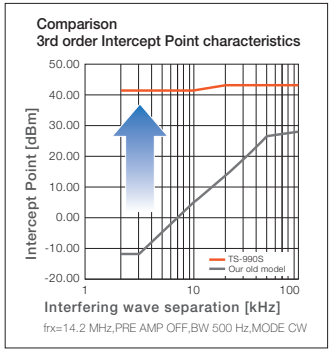
The dual receivers facilitate reception on different bands.
The main receiver is the highest quality receiver among the TS-900 series, thanks to its down-conversion configuration, newly adopted mixer, and five types of roofing filters. The highest quality transceiver shows its true metal in contests, fierce pile-ups and high-intensity signals.
The TS-990S will surely satisfy any real DX'er.



# Main Receiver

## We have achieved a down-conversion format for all amateur bands

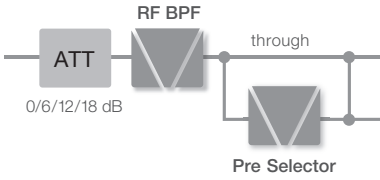
A key point in tapping maximum performance from the 1st mixer in actual operation (say, CW operation) is to prevent the outflow of unnecessary signals, other than the target signal, from the mixer to the subsequent stage. This is because it can tap the maximum performance of the digital IF filter using the DSP in the final IF stage. The TS-990S main receiver employs a 1st IF frequency 8.248 MHz down-conversion format. It achieves superior close-in dynamic range unattainable through conventional up-conversion formats. Even if the interference is a close-in frequency, the receiver maintains a relatively flat dynamic range, which you can tune without losing your target signal.



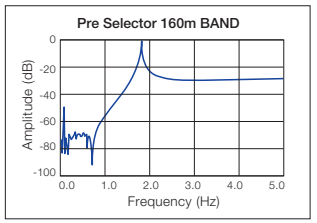

The horizontal axis shows separation of the target signal by interfering signal frequencies (two waves). At a frequency of 10 kHz, interference 1 refers to reception frequency + 10 kHz, and interference 2 refers to reception frequency + 20 kHz.

## The newly adopted mixer contributes to achieving +40 dBm IP3

In place of the Double Balanced Mixer, which uses the J-FET, we have installed the newly adopted Double Balanced Grounded Switch Type (H-mode mixer) in the 1st mixer circuit, which is the heart of the main receiver. The transceiver is also equipped with a pre selector function (works on HF amateur band) that varies its tuning frequency in tandem with the receiver frequency. It effectively dampens interference from strong signals that cannot be minimized through bandpass filters on dedicated amateur bands. Furthermore, we have achieved a +40 dBm class of third-order intercept point for the signal path of the 1st mixer, based on select circuits and components, employing large core toroidal coils for protecting against distortion from large input signals, as well as using relays for the signal switching.




Amateur band RF BPF




Pre Selector feature

Transformer feedback RF Amp

## ■Main Options

**MC-90**
Deluxe Desktop Microphone

**MC-60A**
Desktop Microphone

**MC-43S**
Hand Microphone

**HS-5**[*1]
Open-Air Deluxe Headphones

**HS-6**[*1]
Light Weight Headphones

**SP-990**
External Speaker
NEW

**ARCP-990**
Radio Control Program
NEW

*Download the free software from the Kenwood website.

**ARHP-990**
Radio Host Program
NEW

*Download the free software from the Kenwood website.

*1:HS-5 and HS-6 are monaural. We recommend using stereo headphones to fully utilize simultaneous dual reception function of the main unit.

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## ■TS-990S Specifications

| General | | |
|---|---|---|
| Frequency range (Transmitter) | 160m band | 1.81 ~ 2.0 MHz |
| | 80m band | 3.5 ~ 3.8 MHz |
| | 60m band *1 | 5.25 ~ 5.45 MHz |
| | 40m band | 7.0 ~ 7.2 MHz |
| | 30m band | 10.1 ~ 10.15 MHz |
| | 20m band | 14.0 ~ 14.35 MHz |
| | 17m band | 18.068 ~ 18.168 MHz |
| | 15m band | 21.0 ~ 21.45 MHz |
| | 12m band | 24.89 ~ 24.99 MHz |
| | 10m band | 28.0 ~ 29.7 MHz |
| | 6m band | 50.0 ~ 52.0 MHz |
| Frequency range (Receiver)*2 | | 0.13 ~ 30 MHz, 50 ~ 54 MHz<br>VFO: Continuous 30 kHz ~ 60 MHz |
| Mode | | A1A(CW), A3E(AM), J3E(SSB), F3E(FM), F1B(FSK), G1B(PSK) |
| Frequency stability | | Within ±0.1 ppm(0 °C ~ +50 °C) |
| Antenna impedance | | 50 Ω |
| Antenna tuner load range | | 16.7 Ω ~ 150 Ω |
| Supply voltage | | AC 220 - 240 V ±10 % (50 / 60 Hz) |
| Power consumption | At transmit (maximum) | 840 VA or less |
| | At receive (no signal) | 200 VA or less |
| Usable temperature range | | 0 °C ~ +50 °C |
| Dimensions | Without projection | W460 x H165 x D400 mm |
| | Include projection | W460 x H182 x D449 mm |
| | At front leg up position | H201 mm (front panel), H173 mm (rear panel) |
| Weight | | Approx. 24.5 kg |

| Transmitter | | |
|---|---|---|
| Output power | CW/SSB/FSK/PSK/FM (AM) | 200 W (50 W) |
| Modulation | | SSB:Balanced, AM:Low Power, FM:Reactance |
| Maximum frequency deviation (FM) | | wide: ±5 kHz or less, narrow: ±2.5 kHz or less |
| Spurious emissions | | HF (Harmonics) : -60 dB or less |
| | | HF (others) : -50 dB or less |
| | | 50 MHz: -66 dB or less |
| Carrier suppression | | -60 dB or less |
| Unwanted sideband suppression | | -60 dB or less |
| Transmit frequency response | | Within -6 dB (300 ~ 2700 Hz) |
| Microphone impedance | | 600 Ω |
| XIT variable range | | ±9.999 kHz |

| Receiver | | | | |
|---|---|---|---|---|
| Circuit type | | Main | Sub1*3 | Sub2*4 |
| | | Double superheterodyne | Double superheterodyne | Triple superheterodyne |
| Intermediate frequency | 1st IF | 8.248 MHz | 11.374 MHz | 73.095 MHz |
| | 2nd IF (FM) | 24 kHz/ (455 kHz) | 24 kHz | 10.695 MHz |
| | 3rd IF (FM) | - | - | 24 kHz / (455 kHz) |
| Sensitivity (TYP) | SSB, CW, FSK, PSK (S/N 10 dB) | 0.5 µV (0.13 ~ 0.522 MHz) | | |
| | | 4 µV (0.522 ~ 1.705 MHz) | | |
| | | 0.2 µV (1.705 ~ 24.5 MHz) | | |
| | | 0.13 µV (24.5 ~ 30 MHz) | | |
| | | 0.13 µV (50 ~ 54 MHz) | | |
| | AM (S/N 10 dB) | 6.3 µV (0.13 ~ 0.522 MHz) | | |
| | | 32 µV (0.522 ~ 1.705 MHz) | | |
| | | 2 µV (1.705 ~ 24.5 MHz) | | |
| | | 1.3 µV (24.5 ~ 30 MHz) | | |
| | | 1.3 µV (50 ~ 54 MHz) | | |
| | FM (12 dB SINAD) | 0.22 µV (28 ~ 30 MHz) | | |
| | | 0.22 µV (50 ~ 54 MHz) | | |
| Image Rejection Ratio (50 MHz) | | 70 dB (60 dB) or more | | |
| IF Rejection Ratio | | 70 dB or more | | |
| Selectivity | SSB (LO:200 / HI:2800 Hz) | 2.4 kHz or more (-6 dB) | | |
| | | 4.4 kHz or less (-60 dB) | | |
| | CW, FSK, PSK (WIDTH:500 Hz) | 500 Hz or more (-6 dB) | | |
| | | 1.2 kHz or less (-60 dB) | | |
| | AM (LO:100 / HI:3000 Hz) | 6.0 kHz or more (-6 dB) | | |
| | | 12 kHz or less (-50 dB) | | |
| | FM | 12 kHz or more (-6 dB) | | |
| | | 25 kHz or less (-50 dB) | | |
| XIT variable range | | ±9.999 kHz | | |
| Notch filter attenuation | | 60 dB or more (Auto), 70 dB or more (Manual) | | |
| Beat cancel attenuation | | 40 dB or more | | |
| Audio output | | 1.5 W or more (8 Ω) | | |
| Audio output impedance | | 8 Ω | | |

*1 60m band: Refer to applicable Amateur Radio regulations to your country.
*2 MAIN BAND: Spec. guaranteed in amateur band 160m through 6m
*3 In 160m/80m/40m/20m/15m Amateur bands, IF band width 2.7 kHz or less (SSB, CW, FSK, PSK)
*4 Except in above *3

Internal beat may occur during amateur radio band reception depending on combination of main band and sub-band frequencies of a main unit.
Spurious signal other than reception signal may appear on band scope (waterfall view) too.

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*Alterations may be made without notice to improve the ratings or the design of the transceiver.
*The photographic and printing processes may cause the coloration of the transceiver to appear different from that of the actual transceiver.

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