



HF TRANSCEIVER

Model TS-830S



INSTRUCTION MANUAL

AFTER UNPACKING

It is advisable to save all original packing cartons (inner and outer) to protect your valuable transceiver from damage should you wish to transport it for remote operation or ship it for after-sales service.

The following explicit definitions apply in this manual. Be sure to read these definitions:

NOTE: If disregarded, inconvenience only — no damage or personal injury.

CAUTION: Equipment damage may occur, but not personal injury.

WARNING: Personal injury may occur — do not disregard.

CAUTION: _____
Read Operating Manual Section 4. before placing transmitter in service.

WARNING: _____
HIGH VOLTAGES PRESENT.

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TS-830S SPECIFICATIONS

[GENERAL]

Frequency Range	160 m Band 1.8 ~ 2.0 MHz 80 m Band 3.5 ~ 4.0 MHz 40 m Band 7.0 ~ 7.3 MHz 30 m Band 10.1 ~ 10.15 MHz (10.0 MHz WWV) 20 m Band 14.0 ~ 14.35 MHz * 17 m Band 18.068 ~ 18.168 MHz 15 m Band 21.0 ~ 21.45 MHz * 12 m Band 24.89 ~ 24.99 MHz 10 m Band 28.0 ~ 29.7 MHz
Modes	SSB/CW
Frequency Stability	Within 1 kHz during the first hour after 1 minute of warmup. Within 100 Hz during any 30 minute period after warmup.
Power Requirement	120V AC (220V, 240V modifiable), 50/60 Hz
Power Consumption	Transmit: 295 watts Receive: 32 watts (with heaters off)
Dimensions	333 (13.3) × 133 (5.3) × 333 (13.3) mm (inch)
Weight	13.5 kg (29.8 lbs)

[TRANSMITTER]

*Final Power Input	220W PEP for SSB operation 180W DC for CW operation
Audio Input Impedance	500Ω ~ 50 kΩ
RF Output Impedance	50Ω ~ 75Ω
Carrier Suppression	Better than 40 dB
Sideband Suppression	Better than 60 dB
Spurious Radiation	Better than 60 dB
Harmonic Radiation	Better than 40 dB
Audio Freq. Response	400 to 2,600 Hz, within -6 dB
3rd Order Intermodulation Distortion	Better than -36 dB
ALC Input	-10V DC MAX
Linear Amp Relay Contact Rating	100V DC 1A

[RECEIVER]

Receiver Sensitivity	0.25 μV at 10 dB S + N/N
Image Ratio	Better than 60 dB
IF Rejection	Better than 80 dB
Receiver Selectivity	
SSB/CW WIDE	2.4 kHz (-6 dB), 3.6 kHz (-60 dB)
CW NARROW	With YK-88C (option) 500 Hz (-6 dB), 1.5 kHz (-60 dB) With YK-88CN (option) 270 Hz (-6 dB), 1.1 kHz (-60 dB) With YG-455C (option) 500 Hz (-6 dB), 820 Hz (-60 dB) With YG-455CN (option) 250 Hz (-6 dB), 500 Hz (-60 dB)
Variable Bandwidth	
SSB with 2.4 kHz filter	500 Hz ~ 2.4 kHz (-6 dB) continuously variable
CW with 500 Hz filter	500 Hz ~ 150 Hz (-6 dB) continuously variable With optional filter YK-88C and YG-455C added.
Notch-filter Attenuation	Better than 40 dB
Audio Output Impedance	8 ~ 16Ω
Audio Output	1.5W (8Ω)

*Will transmit on the 17, and 12 meter bands. Diodes installed for preventing accidental transmission before government amateur authorization.

NOTE: The circuit and ratings may change without notice due to developments in technology.

SECTION 1. INTRODUCTION AND FEATURES

1.1 KENWOOD TS-830S

The TS-830S is a highly sophisticated solid state Amateur band transceiver employing only three vacuum tubes. Operating on all Amateur bands between 1.8 and 29.7 MHz, this unit is constructed modularly. The TS-830S includes many built-in features usually found as extras on other transceivers. Included are VOX, 25 kHz calibrator, RIT, RF attenuator, and an effective noise blanker. The TS-830S also includes automatic gain control (AGC), automatic level control (ALC), semi-break-in CW with sidetone, a speech processor, speaker and built-in AC power supply. Designed for operation on SSB or CW, the TS-830S delivers more than 220 watts PEP input. Any complicated electronic device will be damaged if operated incorrectly, and this transceiver is no exception. Please read all of the operating instructions before putting your TS-830S on the air.

1.2 FEATURES

1. Interference-free DX operation

* Variable bandwidth IF filter circuit (VBT)

The built-in VBT (Variable Bandwidth Tuning) circuit allows IF filter pass-bandwidth to be varied as you wish to eliminate unpleasant interference. It is adjustable independent of the IF shift.

* IF shift circuit

The IF SHIFT (also called pass-band tuning) is a circuit to shift IF pass-bandwidth without changing receive frequency. It eliminates interference or adjusts receive frequency characteristic as desired.

* High reliability 455 kHz notch circuit

Interference is also eliminated by the built-in notch circuit. The TS-830S uses 455 kHz notch-frequency. The notch circuit shifts the BFO frequency and the local mixer frequency at the same time, thereby equivalently changing the notch frequency. Thus, accurate notch characteristic is realized even when the notch point is changed, completely eliminating nearby interference signals.

* NARROW/WIDE BANDWIDTH selection and optional filters for enhanced CW operation:

NARROW or WIDE CW operation can be selected when using the following optional filters:

YK-88C (500 Hz), YK-88CN (270 Hz),

YG-455C (500 Hz), YG-455CN (250 Hz)

* Variable tone control circuit.

2. WARC bands

The TS-830S fully covers 160-10 m Amateur bands, including the new WARC bands of 10, 18 and 24.5 MHz.

The TS-830S VFO covers more than 50 kHz above and below each 500 kHz band. The optional VFO-230 external digital VFO covers about 100 kHz above and below each band, for MARS and other applications.

3. Self-contained, compact AC Power supply.

4. Advanced circuit design for improved two-signal characteristics. Cleverly designed front-end circuit components and receive circuit system assure excellent two-signal characteristics. Cross-modulation and blocking are reduced.

5. TX final unit uses 6146B's

The finals are a pair of 6146B transmitting tubes. RF negative feed back and amplified ALC provide clear, strong signals with reduced cross modulation.

6. Variable level noise blanker

Conventional fixed level noise blankers are sometimes less than effective in removing pulsating noise over weak signals or rejecting strong interference signals. This variable level noise blanker is equipped to control the optimum threshold level of the gate pulse amplifier.

7. RF speech processor to increase average power during SSB operation

This is an RF clipper speech processor, using both the 455 kHz and 8.83 MHz IF's. Unwanted frequency components are removed by the 8.83 MHz crystal filter, providing a compression ratio of approximately 20 dB.

8. Transmit monitor circuit

The built-in monitor circuit permits easy adjustment of the RF processor and mic gain.

9. XIT (Transmit Incremental Tuning) for fine adjustment of transmit frequency independent of receive frequency.

10. A combination of precise, easy-to-read digital frequency indicator and an analog dial.

The digital indicator has a Digital Hold memory function.

11. The controls are arranged on the die-cast front panel for easy operation.

12. A full variety of accessory circuits are provided:

The TS-830S includes:

VOX circuit (available for Semi-Break-in), Market circuit, side-tone oscillator, selectable AGC (OFF, FAST, SLOW), RF ATTENUATOR, Fixed crystal oscillator circuit, Audio frequency characteristics selector circuit for each mode, CW zero-beat circuit, IF OUT-1 (for BS-8 Pan Display) and OUT-2 (for RX Display) for SM-220 Station Monitor, HEATER switch, Screen Grid switch, and a built-in speaker.

SECTION 2. INSTALLATION

2.1 UNPACKING

Remove the TS-830S from its shipping container and packing material and examine it for visible damage. If the equipment has been damaged in shipment, notify the transportation company immediately. Save the boxes and packing material for future shipping or moving.

The following accessories should be included with the transceiver.

1. Instruction Manual (B50-2738-00) 1
2. Plastic Extension Feet with Screws (J02-0049-14) 2
3. Speaker Plug 1/8" (E12-0001-05)..... 1
4. 7P DIN Plug (E07-0751-05) 1
5. Fuse (6A) (F05-6021-05) 1

2.2 OPERATING LOCATION

As with any solid state electronic equipment, the TS-830S should be kept from extremes of heat and humidity. Choose an operating location that is dry and cool, and avoid operating the transceiver in direct sunlight. Also, allow at least 3 inches clearance between the back of the equipment to any object. This space allows an adequate air flow from the ventilating fan to keep the transceiver cool.

CAUTION:

Do not operate the radio in an RF Field greater than 6V RF. Receiver damage may occur.

2.3 CABLING (See Figure 2-1.)

■ GROUND

To prevent electric shock, and reduce the possibility of TVI and BCI, connect the transceiver to a good earth ground, through as short and heavy a lead as possible. Use ground rods or metal cold water feedline.

NOTE:

A ground connection greater than $1/4 \lambda$ away from the transceiver may be a good DC ground, but NOT an RF Ground.

■ ANTENNA

Connect through a 50 ohm antenna feedline to the coaxial connector on the rear panel.

■ KEY

If CW operation is desired, connect a key to the KEY jack. Use shielded line or coaxial cable.

■ POWER CONNECTIONS

Make sure the POWER switch on the front panel is turned off, the stand-by switch is in the REC position, and the line voltage is correct. Then connect the power cord to the line source.

■ AC POWER

For fixed station operation, the TS-830S is supplied to operate from a 120V AC, 50/60 Hz power source capable of supplying 280 watts or more.

2.4 MICROPHONE

Attach the microphone connector to a suitable microphone, as shown in Figure 2-1. Be sure the microphone PTT switch is separate from the microphone circuit, as shown in Figure 2-1A.

It should be noted that a microphone with a 3P plug using a common ground terminal should not be used.

The microphone input is designed for 500~50 k Ω microphones. The choice of microphone is important for good speech quality, and should be given serious consideration. The crystal lattice filter in the transceiver provides all the restriction necessary on audio response, and further restriction in the microphone is not required. It is more important to have a microphone with a smooth, flat response throughout the speech range.

Follow the microphone manufacturer's instructions for connecting the microphone cable to the plug. With many microphones, the push-to-talk button must be pressed to make microphone audio available. For VOX operation, this unwanted feature may be eliminated, if desired, by opening the microphone case and permanently connecting the contacts which control the microphone audio.

Standard microphone sensitivity is within the range of -50 dB to -60 dB. If a microphone having a higher sensitivity is used, the ALC and compressor circuits will not function properly. In this case, insert in the mike line an attenuator as shown in Fig. 2-1C. A typical MIC gain control setting is 12 o'clock. If you must run this control at 9 o'clock or less, use an attenuator.

2.5 KEY

If CW operation is desired, connect a key to the KEY jack. Use shielded cable, and a standard (mono or 2P) phone plug.