

# KENWOOD

# TS-430S

## HF TRANSCEIVER



**The TS-430S combines the ultimate in compact styling with its counterparts in advanced circuit design and performance. An all solid-state SSB, CW, and AM transceiver, with FM optional, covering the 160-10 meter Amateur bands including the new WARC bands, this remarkable radio also incorporates a 150kHz-30MHz general coverage receiver having a superior dynamic range. Key features include dual digital VFO's, eight memory channels, memory scan, programmable band scan, IF shift, notch filter, fluorescent tube digital display, built-in speech processor, all-mode squelch circuit, and a host of other features designed to enhance its versatility and flexibility of use in Amateur operations.**

#### **160-10 METER OPERATION, WITH GENERAL COVERAGE RECEIVER.**

- In addition to 160-10 meter Amateur band coverage, including the new WARC 30, 17, and 12 meter bands, the TS-430S features a 150kHz-30MHz general coverage receiver having a superior dynamic range.
- Front panel UP/DOWN band switches allow easy selection of the desired Amateur band. A 1MHz step switch provides 1MHz band steps across the entire 150kHz-30MHz coverage. Each of the two digital VFO's is continuously tuneable from band to band across the full coverage of the transceiver.
- The TS-430S uses a new, innovative, up-conversion digital PLL circuit, providing superior frequency stability and accuracy, since only the fundamental crystal oscillator determines these parameters.

#### **USB, LSB, CW, AM, WITH OPTIONAL FM, ALL MODE.**

The TS-430S modes of operation include USB, LSB, CW, and AM, in both transmit and receive, with FM available through the addition of the optional FM-430 frequency modulation unit. The FM-430 is easily installed inside the transceiver. Mode selection is quickly accomplished through the use of front panel mode keys with adjacent LED indicators. AGC time constant automatically selected with mode selection.

#### **COMPACT, LIGHTWEIGHT DESIGN.**

With every conceivable feature built-in, the TS-430S measures only 270

(10-5/8)W x 96(3-3/4)H x 275(10-7/8)D, mm (inches), and weighs only 6.5kg(14.3lbs.), allowing expanded operation as a mobile or base, at the shack, in the field, or on DX-peditions.

#### **SUPERIOR RECEIVER DYNAMIC RANGE.**

To meet today's demanding requirements for every type of operation, the receiver front end has been carefully designed to provide superior dynamic range, through use of 2SK125 junction-type FET's in the new Dyna-Mix high sensitivity direct balanced mixer circuit.

#### **10-Hz STEP DUAL DIGITAL VFO'S.**

- Built-in 10Hz step dual digital VFO's operate independently of each other, and include band and mode information, allowing for ease of split frequency or cross-band operation in different modes without the need for a separate VFO.
- The tuning control torque is adjustable through an access hole in the case bottom.
- A STEP switch is provided to permit tuning in 10Hz (10kHz/revolution of the tuning knob), or 100Hz (100kHz/revolution) steps, an extra convenience in tuning the selected mode.
- An A=B switch on the front panel permits quick shifting of the "B" VFO to the same frequency and mode as the "A" VFO, or vice-versa, depending on the setting of the function control, an advantageous feature when preparing for split frequency operation.
- A LOCK switch protects against accidental frequency shift that might occur if the tuning knob were ac-

cidental bumped.

- An RIT control is provided for shifting the receive frequency only, and is effective on either VFO or memory operations.
- UP/DOWN manual scan is possible using optional MC-42S or MC-60A microphone.

#### **EIGHT MEMORIES STORE FREQUENCY, MODE, AND BAND DATA.**

- Each memory stores frequency, mode, and band information, for increased convenience and simplicity of operation.
- The eighth memory stores receive and transmit frequencies independently for convenience in split-frequency memory operations.
- A front panel "M. CH" switch is provided to allow the operator to operate each of the eight memories as an independent VFO, or as a fixed frequency. When the "M. CH" switch is in OFF position, the frequency stored in the memory will be transferred to the VFO. Tuning of that frequency, using the main tuning knob, will then be possible. The original memory frequency can be recalled at will. When the "M. CH" switch is in ON position, the frequency stored in the memory will be recalled as a fixed frequency.

#### **LITHIUM BATTERY MEMORY BACK-UP.**

Memory and VFO information is backed-up by an internal lithium battery (estimated 5 year life), an important convenience when moving the transceiver from one location to another.

## OPTIONAL ACCESSORIES

### FM-430

FM Unit



(Easily installed inside of the TS-430S. No adjustment required.)

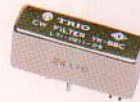
### MB-430

Mobile Mount



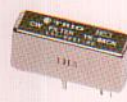
### YK-88C

500 Hz CW filter



### YK-88CN

270 Hz CW narrow filter



### YK-88SN

1.8 kHz SSB narrow filter



### YK-88A

6 kHz AM filter



### PC-1A

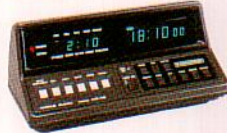
Phone Patch  
(FCC Part 68 registered)



(Available only where phone patch operation is legal.)

### HC-10

Digital World Clock

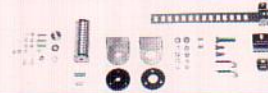


### MA-5

5 Band Helical Type HF Mobile Antenna



### VP-1



The model MA-5, VP-1 are not available in U.S.A.

### MC-42S (500Ω)

UP/DOWN Microphone  
(8 pin plug)



### MC-60A (50 kΩ/500 Ω)

Deluxe Desk Top Microphone with UP/DOWN Switch  
(Built-in preamplifier, 8 pin plug)



### HS-4 (8 Ω)

Headphones



### HS-5 (8 Ω)

Deluxe Headphones



### HS-6 (12.5 Ω)

Light-weight Headphones



### SP-40

Mobile Speaker



## TS-430S SPECIFICATIONS

### (GENERAL)

Transmitter Frequency Range: 160, 80, 40, 30\*, 20, 17\*, 15, 12\*, 10 meter Amateur bands

Receiver Frequency Range: 150 kHz to 30 MHz

Mode: A3J (LSB, USB), A1 (CW), A3 (AM), F3 (FM) (optional accessory)

Antenna Impedance: 50 Ω

Power Requirement: 12.0 to 16.0 V DC (13.8 V nominal)

Power Consumption: 20 A approx. in transmit mode  
1.2 A approx. in receive mode

Dimensions: 270 (10.6)W × 96 (3.8)H × 275 (10.8)D mm (inch)

Weight: 6.5 kg (14.3 lbs.)

### (TRANSMITTER)

Final Power Input:

Band	Mode			
	SSB	CW	FM	AM
160 m-15 m band 10 m band	250WPEP 250WPEP	200WDC 200WDC	— 120 W	60 W 60 W

Modulation: SSB = Balanced Modulation  
FM = Variable Reactance Direct Shift (with FM-430 optional accessory)  
AM = Low Level Modulation (IF stage)

Carrier Suppression: Better than 40 dB

Unwanted Sideband Suppression: Better than 50 dB

Harmonic Content: Less than -40 dB

Maximum Frequency Deviation (FM): ±5 kHz (with FM-430 optional accessory)

Microphone Impedance: 500 Ω to 50 kΩ

### (RECEIVER)

Circuitry: SSB, CW, AM = Double Conversion Superheterodyne  
FM = Triple Conversion Superheterodyne

Intermediate Frequency: 1st IF = 48.055 MHz  
2nd IF = 8.83 MHz  
3rd IF = 455 kHz (only FM)

Sensitivity: (at 10 dB S/N, 0 dB  $\mu$  = 1  $\mu$ V)

Frequency Mode	150kHz-500kHz	500kHz-1.8MHz	1.8MHz-30MHz
SSB/CW	Less than 1 $\mu$ V	Less than 4 $\mu$ V	Less than 0.25 $\mu$ V
AM	Less than 13 $\mu$ V	Less than 40 $\mu$ V	Less than 2.5 $\mu$ V
FM (S/N = 26dB)	—	—	* Less than 1 $\mu$ V
FM (SINAD 12dB)	—	—	* Less than 0.4 $\mu$ V

\* with FM-430 optional accessory

Image Ratio: More than 70 dB (1.8 to 30 MHz)  
More than 50 dB (FM = 3rd image ratio)

IF Rejection: More than 70 dB (1.8 to 30 MHz)

Selectivity:

Mode	Selectivity	-6dB	-60dB
SSB/CW		2.4kHz	Less than 4.4kHz
AM *1		6kHz	Less than 12 kHz
FM *2		15kHz	Less than 32kHz

\*1 with YK-88A optional filter

\*2 with FM-430 optional accessory

Frequency Stability: Better than  $\pm 30 \times 10^{-6}$  (0°C to +50°C),  
Within  $\pm 200$  Hz from 1 to 60 minutes after turn-on; within  $\pm 30$  Hz any 30 minutes period thereafter

Frequency Accuracy: Better than  $\pm 10 \times 10^{-6}$

RIT Variable Range: More than  $\pm 1$  kHz

Audio Output Impedance: 4 Ω to 16 Ω

Audio Output Power: More than 1.5 W across 8 Ω (at 10% distortion)

\*Will transmit on the new 30, 17 and 12 meter bands. Diodes have been installed to prevent accidental transmission. They may be removed easily when government authorization has been granted for Amateur operation.

Note: Circuit and ratings subject to change without notice due to developments in technology.

blanker minimizes the effects of adjacent-channel signals on the operation of the blanker. The noise-blanker eliminates pulse-type interference such as ignition noise, which can be a problem, particularly on the higher HF bands.

### RF ATTENUATOR.

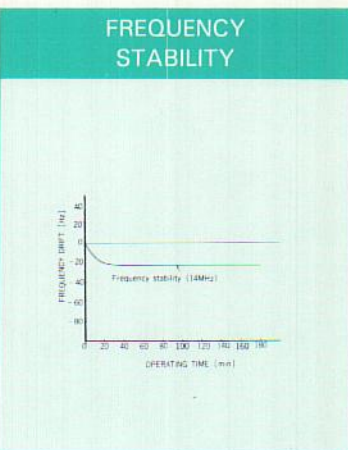
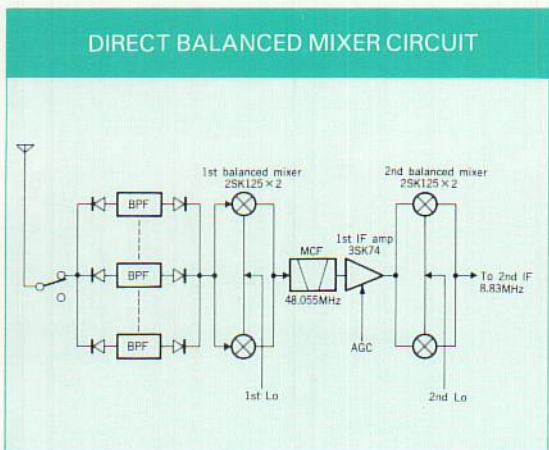
The carefully designed TS-430S receiver front-end includes a 20dB RF attenuator which may be switched in to provide optimum rejection of inter-modulation distortion.

### VOX CIRCUIT.

The compact TS-430S features VOX as well as push-to-talk operation. VOX gain, VOX delay, and anti-VOX controls are located on top of the cabinet, for easy adjustment. The system also features semi-break-in operation on CW, and includes a sidetone oscillator circuit.

### RUGGED CONSTRUCTION AND STYLING.

The TS-430S is styled to enhance the appearance of any fixed or mobile station, while providing maximum ease of operation through a functional layout of the controls. The transceiver with advanced mechanical engineering through-



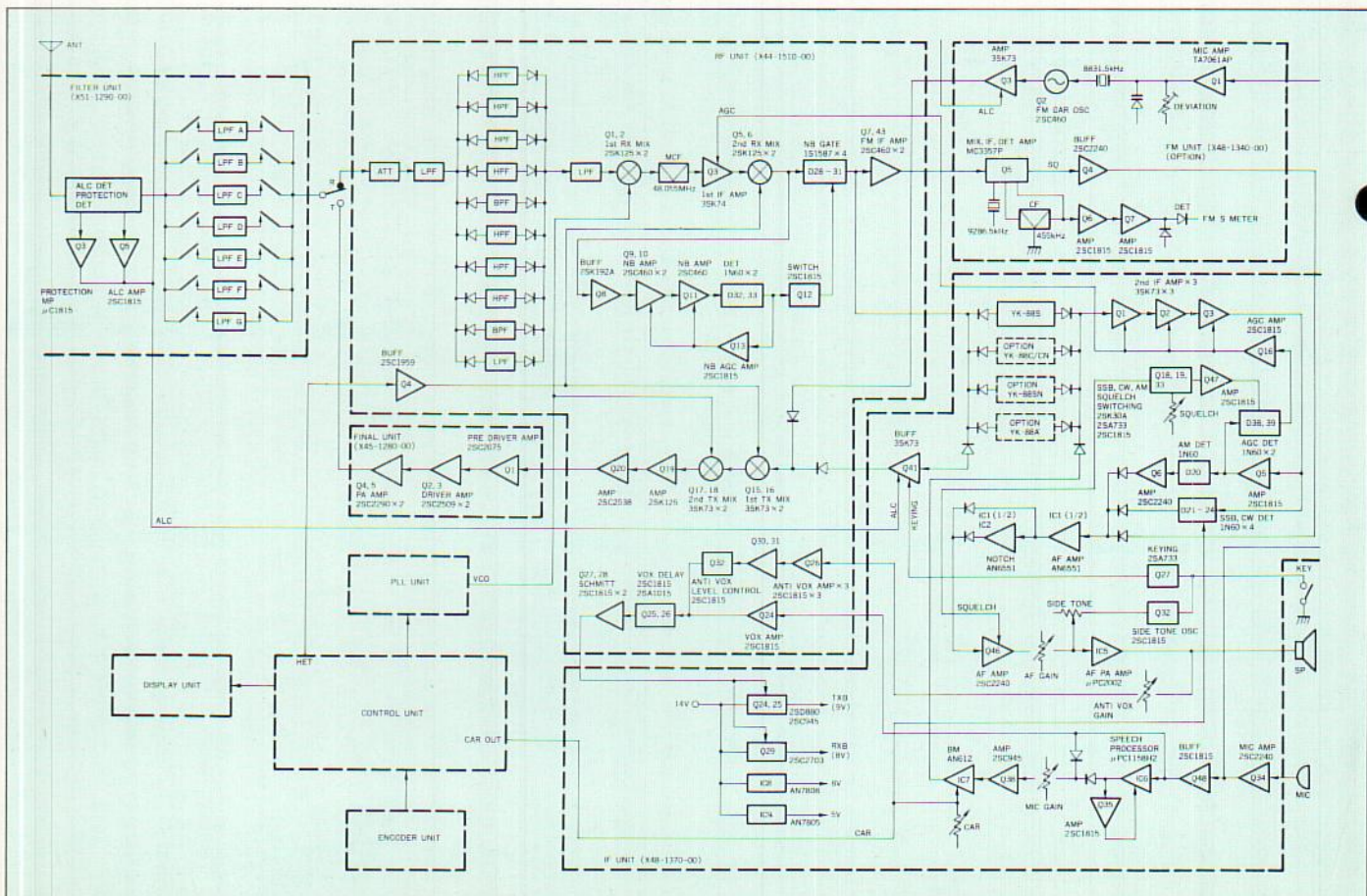
out, will take virtually any rough treatment typically encountered in mobile or fixed operations.

### OTHER PROVISIONS FOR EASE OF OPERATION AND ADDED VERSATILITY.

- The front panel meter functions as an S meter on receive, and as an IC or ALC meter on transmit.
- A 1 MHz marker circuit with switch (inside cabinet) is provided for use in calibrating the fundamental oscillator with received standard signals such as WWV. (Also requires use of supplied jumper wire.)

- An audible "beep" from the speaker confirms operations such as key entry, and UP/DOWN band selection.
- Indicators are provided for VFO A/B, ON AIR, F. LOCK, F. STEP, RIT, NOTCH, M. CH, and MODE.
- MIC and CAR level controls are located on the front panel.
- Microphone impedances of 500Ω to 50kΩ may be used.
- A remote terminal is provided for use with linear amplifiers, or other equipment. An accessory terminal with band information is also provided. For future expansion of the system, a transverter terminal is located on the rear panel.

## TS-430S BLOCK DIAGRAM





MC-60A

PS-430

TS-430S

SP-430

### MEMORY SCAN.

Scans only those memory channels in which data is stored. Allows the operator to guard the stored frequencies without the need for changing the band or mode switches. The scanning time is approximately 2 seconds for each channel, with a HOLD switch provided to interrupt the scanning process.

### PROGRAMMABLE BAND SCAN.

Scans automatically within the programmed band width. Scan speed is user adjustable. (Slide pot on top). Memory channels 6 and 7 establish upper and lower band limits. The HOLD switch interrupts the scanning process, but frequency may be adjusted by VFO knob while in scan hold mode.

### IF SHIFT CIRCUIT FOR MINIMUM QRM.

System allows the IF passband to be moved to place interfering signals outside the passband, while keeping the desired signal optimally placed for best gain and signal-to-noise ratio.

### TUNEABLE NOTCH FILTER BUILT-IN.

A sharp notch filter is built into the audio circuit, tuneable, to permit adjustment of system for best interference rejection.

### NARROW-WIDE FILTER SELECTION.

A front panel NAR-WIDE switch allows narrow-wide IF filter selection when optional filters are installed (2.4kHz IF filter built-in). In the SSB mode, with the optional YK-88SN (1.8kHz) filter installed, either 2.4kHz wide, or 1.8kHz narrow may be selected. In the CW mode, with the optional YK-88C (500Hz) or YK-88CN (270Hz) filter installed, 2.4kHz wide, or 500Hz or 270Hz narrow may be selected. In the AM mode, with the optional YK-88A (6kHz) filter installed, 6kHz wide, or 2.4kHz narrow may be selected. In the FM mode, with the optional FM-430 unit installed, a single 15kHz bandwidth is provided.

### SPEECH PROCESSOR BUILT-IN.

A front panel switch activates the speech processor circuit, with its audio compression amplifier and change in ALC time constant, resulting in a marked improvement in intelligibility, accompanied by a substantial increase in average "talk-power."

### ALL SOLID-STATE.

The TS-430S input power is rated at 250 W PEP on SSB, 200 W DC on CW 120 W on FM (optional FM-430 unit installed), and 60 W on AM. A built-in cooling fan, plus multi-circuit final

amplifier protection assures maximum reliability. The solid-state wideband final amplifier eliminates the need for transmitter tuning. Highly efficient wideband receiver front-end eliminates pre-selector peaking. To operate, simply set the band-switch and VFO to the desired frequency. The TS-430S operates on 12VDC, or on 120VAC or 220/240V AC using optional PS-430 AC power supply.

### FLUORESCENT TUBE DIGITAL DISPLAY.

The built-in fluorescent tube digital display indicates frequency and the number of the selected memory channel. The actual operating frequency, to 100Hz (10-Hz modifiable), on any band, and in any mode, is displayed, without need for re-calibration. The unique white fluorescent tubes provide fatigue-free viewing over long operating periods, or during extended mobile operations.

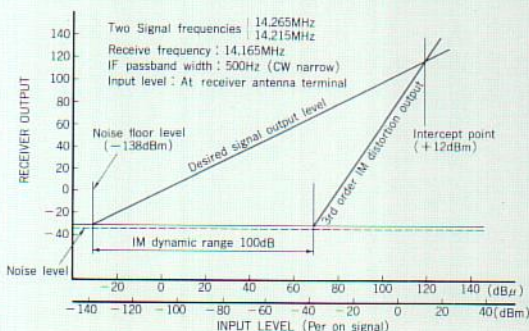
### ALL-MODE SQUELCH CIRCUIT BUILT-IN.

The squelch circuit is effective in suppressing back-ground noise in all operating modes during key-up intervals.

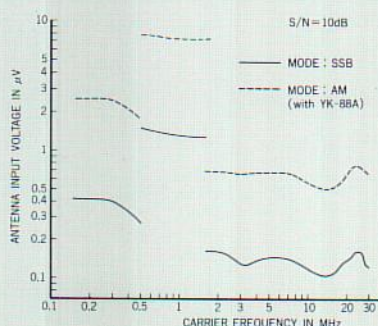
### BUILT-IN NOISE BLANKER.

The TS-430S features an effective noise-blanker circuit. A new type of filter on the input circuit of the noise-

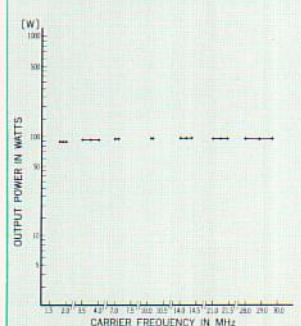
### RECEIVER INTERMODULATION DYNAMIC RANGE CHARACTERISTIC



### RECEIVER SENSITIVITY



### OUTPUT POWER



## OPTIONAL ACCESSORIES

### PS-430 DC Power Supply



Matches to the TS-430S in size, a color and appearance. Supplies regulated 13.8 V DC at 20 A intermittent with built-in cooling fan and protection circuits for maximum reliability. A 120/220/240 V AC line voltage selector provided. Since terminals for 13.8 V at 10 A are also provided, in addition to output power cable for use with the TS-430S, the PS-430 can be used as a power source for other mobile transceivers.

#### SPECIFICATIONS

•Power requirements: 120/220/240 V AC •Output current: 20 A intermittent •Output voltage fluctuation: Within  $\pm 0.7$  V at 2-15 A load current •Power consumption: Approx. 500 W •Ripple voltage: Less than 20 mV at 13.8 V DC 15 A •Output voltage: 13.8 V DC •Dimensions: 173(6.8)W x 96(3.8)H x 245(9.7)D mm(inch) •Weight: Approx. 7 kg (15.4 lbs.)

### KPS-21 (U.S.A. only) DC Power Supply



DC power supply (21 A intermittent) for base station. Protection circuit is built-in.

#### SPECIFICATIONS

•Power requirement: 120 V  $\pm 10$  V AC, 60 Hz •Power consumption: less than 400 W •Output voltage: 13.8 V DC  $\pm 0.1$  V •Output current: 21 A intermittent (50% duty cycle), 16 A continuous •Ripple component: less than 1 mV (r.m.s.) (at 16 A output current 120 V AC  $\pm 10$  V input) •Regulation: better than  $\pm 0.05$  V •Protection circuit: current limiting circuit activates at 23-27 A •Operating temperature:  $-10^{\circ}\text{C}$  -  $+45^{\circ}\text{C}$  ( $14^{\circ}\text{F}$  to  $113^{\circ}\text{F}$ ) •Dimensions: 200(7.9)W x 125(4.9)H x 230(9.1)D mm(inch) •Weight: 7.8 kg (17.2 lbs.)

### SP-430 External Speaker



An attractive, compact speaker to match the TS-430S styling. It is designed for fixed-station use. This low-distortion speaker provides clear reproduction of the high-quality audio from the TS-430S.

#### SPECIFICATIONS

•Speaker diameter: 7.5 cm •Max. input power: 1 W •Input impedance: 8  $\Omega$  •Frequency response: 300 Hz - 5 kHz •Dimensions: 123 (4.8)W x 96 (3.8)H x 235 (9.3)D mm (inch) •Weight: 1.3 kg (2.9 lbs.)

### TL-922/TL-922A (for U.S.A.) HF Linear Amplifier



The TL-922/TL-922A are class AB<sub>2</sub> grounded grid linear amplifiers developed by KENWOOD through advanced high-power technology using two high-performance EIMAC 3-500Z power tubes. TL-922A covers 160 m-15m, TL-922 covers 160m-10m.

#### FEATURES

•Pair of EIMAC 3-500Z high performance transmitting tubes •Class AB<sub>2</sub> G-G circuit •Excellent IMD (intermodulation products distortion) characteristics •Perfect safety protection •Blower turn-off DELAY circuit •Variable threshold level type ALC circuit •Two easy-to-read meters •Attractive matching with KENWOOD HF transceivers

#### SPECIFICATIONS

•Frequency Range: 1.8-2.0MHz, 3.5-4.0MHz, 7.0-7.3MHz, 14.0-14.35MHz, 21.0-21.45MHz, 28.0-29.7MHz (not on TL-922A) •Mode: SSB CW, RTTY •Drive power: 80W or more for full output •RF input power: SSB = 2,000W PEP, CW, RTTY = 1,000W DC •Circuitry: AB<sub>2</sub> class grounded-grid linear amplifier •Input impedance: 50  $\Omega$  •Output impedance: 50-75  $\Omega$  •Cooling: forced air •Fan motor delay stop time: 140  $\pm$  30 seconds •ALC: negative going adjustable threshold -8V DC max. output (typical) •Tubes: 2 x 3-500Z (optional) •Power requirement: 120/240V 28A, 50/60Hz or 220/240V 14A, 50/60Hz •Dimensions: 390(15.4)W x 190(7.5)H x 407(16.0)D mm (inch) •Weight: 31kg (68 lbs.)

\*The model TL-922A is available only in U.S.A.

### AT-230 Antenna Tuner



The AT-230 antenna tuner includes the new three bands and functional features such as a through-line wattmeter, SWR meter and antenna selector switch.

The AT-230 greatly adds to the effectiveness of your station.

#### SPECIFICATIONS

(ANTENNA COUPLER) •Frequency Range: 9 Amateur bands from 1.8 to 30.0 MHz •Input Impedance: 50  $\Omega$  •Output Impedance: 10 to 500  $\Omega$ , unbalanced •Through Power: 200 W max. (WATTMETER) •Type: Through line wattmeter •Frequency Range: 1.8 to 30.0 MHz •Measurable RF power: Up to 20/200 W, switched •Kinds of RF Power: Forward and reflected power, switched •Impedance: 50  $\Omega$  •Accuracy: Better than  $\pm 10\%$  of full scale (SWR METER) •SWR detection: Toroidal core directional coupler •Measurable Range: 1.1 to 10 •Min. Power Required: 4 W (GENERAL) •Connectors, INPUT: UHF type, 50  $\Omega$  •Connectors, ANT-1: UHF type; ANT-2: UHF type; ANT-3: Wire antenna only; GND •Dimensions: 180 (7.1)W x 133 (5.2)H x 287 (11.3)D mm (inch) •Weight: 3.4 kg (7.5 lbs.)

### AT-130 Antenna Tuner



The AT-130 is a compact and lightweight antenna tuner designed for base or mobile use. (Includes the new three bands.)

#### SPECIFICATIONS

(Antenna Coupler) •Frequency range: 8 Amateur bands from 3.5 to 29.7 MHz •Input impedance: 50  $\Omega$  •Output impedance: 20 to 300  $\Omega$ , unbalanced •Through power: 150 W max. (3.5 MHz band, 120 W) •Insertion loss: less than 0.5 dB at optimum match (SWR meter) •Frequency range: 3.5 to 29.7 MHz •Max. power: 150 W •Measurable range: 1:1 to 10:1 •Min. power required: 2 W (General) •Input connector: UHF type (50  $\Omega$ ) •ANT connector: UHF type (50  $\Omega$ ) GND: Wing nut and STUD •Dimensions: 152(6.0)W x 60(2.4)H x 159(6.3)D mm(inch) •Weight: 1.6kg (3.5 lbs.) approx.

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