

 **KENWOOD**

**HF SSB
TRANSCEIVER**

TS-130S/TS-130V



The TS-130 Series is an incredibly compact, full-featured, all solid-state HF SSB/CW transceiver for both mobile and fixed operation. It covers 3.5 to 29.7 MHz (including the three new amateur bands!) and is loaded with optimum operating features such as digital display, IF shift, speech processor, narrow/wide filter selection (for both SSB and CW modes), and optional (DFC-230) digital frequency controller.

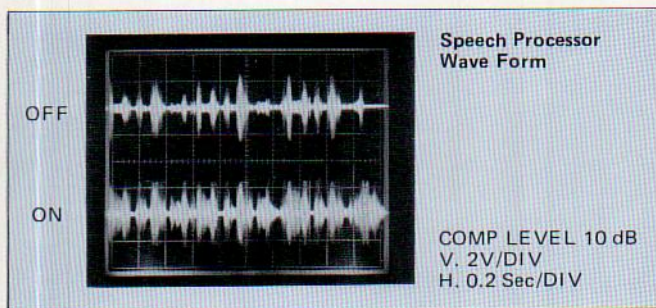
The TS-130S runs high power, and the TS-130V is a low-power version for QRP operation.

80-10 Meters, Including Three New Bands

The TS-130 Series covers all amateur frequencies between 3.5 and 29.7 MHz, including the new 10, 18, and 24MHz bands. It receives WWV on 10MHz, for checking the calibration of the highly accurate digital display. Transmit and receive modes include LSB, USB, and CW.

Built-in Speech Processor

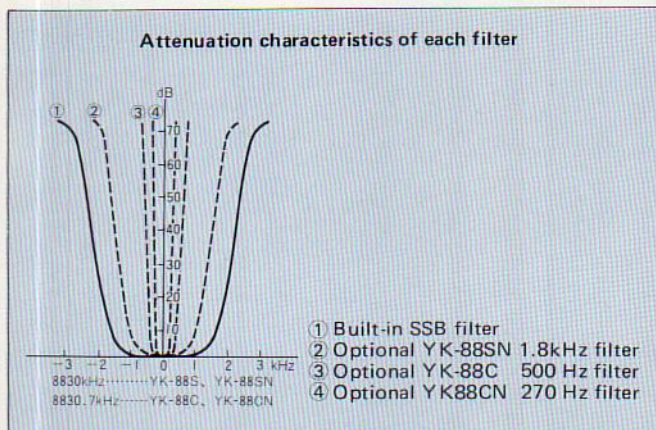
The speech processor in the TS-130 Series combines an audio compression amplifier with changes in ALC time constant to provide extra audio punch and to increase average SSB output power, while suppressing sideband splatter.



CW Narrow/Wide Selection

The "N-W" switch allows selection of wide and narrow CW bandwidths, when an optional CW filter is installed.

In the wide ("W") position, the IF filter bandwidth is the same as in the SSB mode (2.4 kHz), for easy tuning of CW signals. In the narrow ("N") position, greater selectivity is provided if the optional YK-88C (500 Hz) or YK-88CN (270 Hz) CW filter is installed.



SSB	WIDE	2.4 kHz
	NARROW	(1.8 kHz YK-88SN option)
CW	WIDE	2.4 kHz
	NARROW	(500 Hz YK88C option) or (270 Hz YK-88CN option)

SSB Narrow Selection

The "N-W" switch, besides allowing selection of CW bandwidths, also allows a narrow SSB bandwidth to be selected, when the optional YK-88SN (1.8 kHz) filter is installed. This filter is especially handy during contests and in DX pileups, when QRM is especially heavy.

Sideband Mode Selected Automatically

The appropriate sideband mode is selected automatically on each band (LSB on 80 and 40 meters, USB on 30 meters and above).

A mode-switch position is also provided for reversing these modes.

Optional DFC-230 Digital Frequency Controller

Combined with the optional compact DFC-230 Digital Frequency Controller, the TS-130 Series has optimum frequency-control functions. The DFC-230 is compact enough for mobile operation, and features a 20Hz step digital VFO, four memories, and digital display. Supplied with the DFC-230 is an UP/DOWN microphone which allows remote frequency control.

The TS-130 Series may also be used with the VFO-120 or VFO-230, as well as the DFC-230.

Optimum Performance in a Compact Package

Miniaturized circuits and all solid-state design have contributed to the extremely small size of the TS-130 Series as well as its optimum operating features and performance. The TS-130 Series is the ultimate HF transceiver for fixed or mobile use, and is easily transported to virtually any location for portable operation (such as Field Day, vacation sites, or DX-peditions).

All Solid-State . . . Easy to Operate

Two power versions are available in the TS-130 Series. The TS-130S runs 200W PEP/160W DC input on 80-15 meters and 160W PEP/140W DC on 12 and 10 meters. The TS-130V runs 25W PEP/20W DC input on all bands. A solid-state, wideband final amplifier in both versions eliminates transmitter tuning. Efficient wideband RF amplifier stages in the receiver eliminate preselector peaking as well. To operate, simply set the band switch and VFO to the desired frequency.

Built-in Digital Display

A standard feature in the TS-130 Series is a built-in digital frequency display. The six-digit display indicates actual operating frequency to 100 Hz on any band and in any mode without recalibration. The display also indicates external-VFO or fixed-channel frequency, RIT shift, and CW transmit/receive shifts. The display's green fluorescent tubes provide fatigue-free viewing over long operating periods. An analog subdial provides backup frequency indication continuously.

IF Shift Eliminates QRM

Kenwood's famous IF shift system allows the IF passband to

VFO-230

Remote VFO



The VFO-230 digital VFO provides maximum efficiency and flexibility for all operating conditions, including split-frequency operation, by combining a 20 Hz step digital VFO with five memories.

FEATURES

- 20 Hz step digital VFO: Provides excellent stability and smooth tuning on CW and SSB
- Five Memories: Frequency can be transferred from VFO (transceiver or VFO-230) to memory or from memory to digital VFO (VFO-230)
- Built-in digital display: Shows digital VFO or memory frequencies. The display range is selected automatically to cover 900.0–599.9 or 400.0–099.9, according to the band. Backed up by analog subdial with 1 kHz divisions
- Cross-operation flexibility: Easy-to-operate function switch provides: RECEIVE/TRANSMIT: Main, RMT, Memo (Main: Transceiver VFO or FIX, RMT: VFO-230 digital VFO, MEM: Memory)
- T-F SET switch: Allows operator to set transmit frequency quickly. Reverses transmit and receiver frequency momentarily, to prevent transmitting on wrong frequency during split-frequency operation
- Expanded frequency coverage: About 100 kHz above and below each 500 kHz band, for MARS and other applications
- Lock switch: To prevent accidental frequency change
- MAIN, RMT, and MEMO indicators: LEDs show functions in operation
- Capability with TS-830S, TS-130 Series, and TS-120S

SPECIFICATIONS

- Oscillating Frequency: 5.4–6.1 MHz
- Frequency Stability: 1×10^{-5} (at normal temperature), 3×10^{-5} (0–50°C)
- Output Signal: 0.2V +3 dB –1 dB
- Power Requirement: 120V AC modifiable, 50/60 Hz, 13W
- Dimensions: 180 (7.2)W x 133 (5.3)H x 287 (11.5)D mm (inches)
- Weight: 3.1 kg (6.8 lbs)

TL-922

HF Linear Amplifier



The TL-922 is an HF linear amplifier operating at maximum legal power, and employing a pair of 3-500Z high performance transmitting tubes. (without the three new amateur bands.)

SPECIFICATIONS

- Frequency Range: 160 meter band–1.8 to 2.0 MHz, 80 meter Band–3.5 to 4.0 MHz, 40 meter band–7.0 to 7.3 MHz, 20 meter band–14.0 to 14.35 MHz, 15 meter band–28.0 to 29.7 MHz, 10 meter band–28.0 to 29.7 MHz
- Mode: SSB, CW, RTTY
- Drive power: 80 Watts or more for full output
- RF Input Power: SSB, 2,000W PEP; CW, RTTY, 1,000 Watts DC
- Circuitry: AB₂ Class Grounded-grid Linear Amplifier
- Input Impedance: 50 ohms
- Output Impedance: 50 to 75 ohms
- Tubes: EIMAC 3-500Z x 2 (option)
- Power Requirements: 120/220/240V AC 50/60 Hz
- Dimensions: 390 (15.6)W x 190 (7.6)H x 407 (16.3)D mm (inch)
- Weight: 31 kg (68 lbs)

MA-5 5 Band Helical Type HF Mobile Antenna



The MA-5 is a multi-purpose handy antenna for field operation as well as for fixed stations. It can be easily installed on the veranda of buildings or guardrails of the roof, etc.

Band: 3.5, 7, 14, 21, 28 MHz
 Impedance: 50 ohms
 VSWR: 3.5, 7, 14 MHz 1.5:1
 21, 28 MHz 1.3:1
 Max. Power Input: 200W PEP

VP-1 Bumper Mount



TL-120 HF Linear Amplifier

(without the three new amateur bands) can be used with TS-120V/130V.
 Input Power:
 3.5–21MHz SSB 200W PEP
 CW 160W DC
 28MHz SSB 160W PEP
 CW 140W PEP



MB-100

Mobile Mount



PC-1

Phone Patch (available only where phone patch operation is legal)



HS-4

Headphones (8Ω)



HS-5

Deluxe Headphones (8Ω)



HC-10 Digital world clock

The HC-10 is a highly advanced world clock with dual display which can memorize 10 world major cities and 2 additional regions. This clock incorporating a precise quartz and digital display system as well as a built in microcomputer can also recall and display the starting time of QSO for logging purpose.



MC-50

50kΩ/500Ω Desk Microphone



MC-30S (500Ω)

Noise-Cancelling Hand Microphone

MC-35S (50kΩ)

Noise-Cancelling Hand Microphone



YK-88SN SSB NARROW FILTER 1.8 kHz

CW NARROW FILTER 270 Hz

YK-88C CW FILTER 500 Hz



SP-40 Mobile Speaker

Speaker Diameter: 5.7 cm full range dynamic speaker.
 Max. Input Power: 3Watts
 Impedance: 4 ohms
 Frequency Response: 300 Hz to 5 kHz
 Dimensions: 68 (2.7)W x 64 (2.6)H x 54 (2.2)D mm (inch)
 Weight: 260g (0.6 lbs)



TS-130 SPECIFICATIONS

Frequency Range:	80m Band	3.5 ~ 4.0 MHz
	40m Band	7.0 ~ 7.3 MHz
	*30m Band	10.1 ~ 10.15 MHz (10.0 MHz WWV)
	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

* Receive only (Transmission on these bands is possible with a small modification.).

Mode: SSB/CW

Power Requirement:

TS-130S	TS-130V
RX: 0.7A 13.8V DC	RX: 0.7A 13.8V DC
TX: 19A 13.8V DC	TX: 4A 13.8V DC

Final Power Input:

TS-130S	TS-130V
80–15m Band 200W PEP for SSB operation 160W DC for CW operation	All Band 25W PEP for SSB operation 20W DC for CW operation
12–10m Band 160W PEP for SSB operation 140W DC for CW operation	

Audio Input Impedance: 500Ω ~ 50 kΩ
 RF Output Impedance: 50Ω
 Frequency Stability: Within 100Hz during any 30 minute

period after warmup.
 Within ±1 kHz during the first hour after 1 minute of warmup.

Carrier Suppression: Better than 40 dB
 Sideband Suppression: Better than 50 dB
 Spurious Radiation: Better than 40 dB
 Harmonic Radiation: Better than 40 dB
 Audio Freq. Response: 400 to 2,600 Hz, within –6 dB
 Receiver Sensitivity: 0.25 μV at 10 dB S/N
 Image Ratio: Better than 50 dB
 IF Rejection: Better than 70 dB
 Receiver Selectivity:
 SSB/CW WIDE 2.4 kHz (–6 dB), 4.2 kHz (–60 dB)
 SSB NARROW 1.8 kHz (–6 dB), 3.3 kHz (–60 dB)
 With optional YK-88SN filter
 CW NARROW 500 Hz (–6 dB), 1.5 kHz (–60 dB)
 With optional YK-88C filter
 or 270 Hz (–6 dB), 1.1 kHz (–60 dB)
 With optional YK-88CN filter

Audio Output Impedance: 4 ~ 16Ω

Audio Output: 1.5W

Dimensions:

TS-130S	TS-130V
241(9.6)W x 94(3.8)H x 293(11.7)D mm (inch)	241(9.6)W x 94(3.8)H x 235(9.4)D mm (inch)

Weight:

TS-130S	TS-130V
5.6 kg (12.4 lbs)	4.9 kg (10.8 lbs)

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

a group A band (10, 14 and 18MHz), and another on a group B band (24.5 and 28MHz ... or 3.5MHz by changing an inside connector). Fixed channels are handy for mobile operation and club or net activities.

Rugged Construction and Handsome Styling

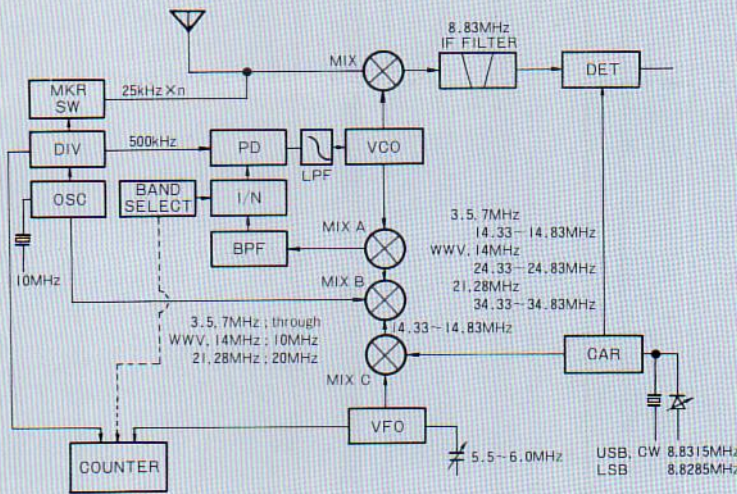
The TS-130 Series is styled to enhance the appearance of any fixed or mobile station, while providing maximum ease of operation with a functional layout of controls. The transceiver, with its front panel of rugged alloy die casting and advanced mechanical engineering throughout, will take virtual-

ly any rough treatment typically encountered in mobile, portable, or contest operation.

Other Versatile Provisions

- The front-panel meter functions as an S-meter on receive and as an Ic (TS-130S) or RF (TS-130V) meter and ALC meter (for adjusting microphone gain) on transmit.
- RIT, VFO, and FIX front-panel LED indicators.
- Capability to operate with any impedance microphone from 500 ohms to 50k ohms.
- Accessory terminal for use with linear amplifier or other equipment.

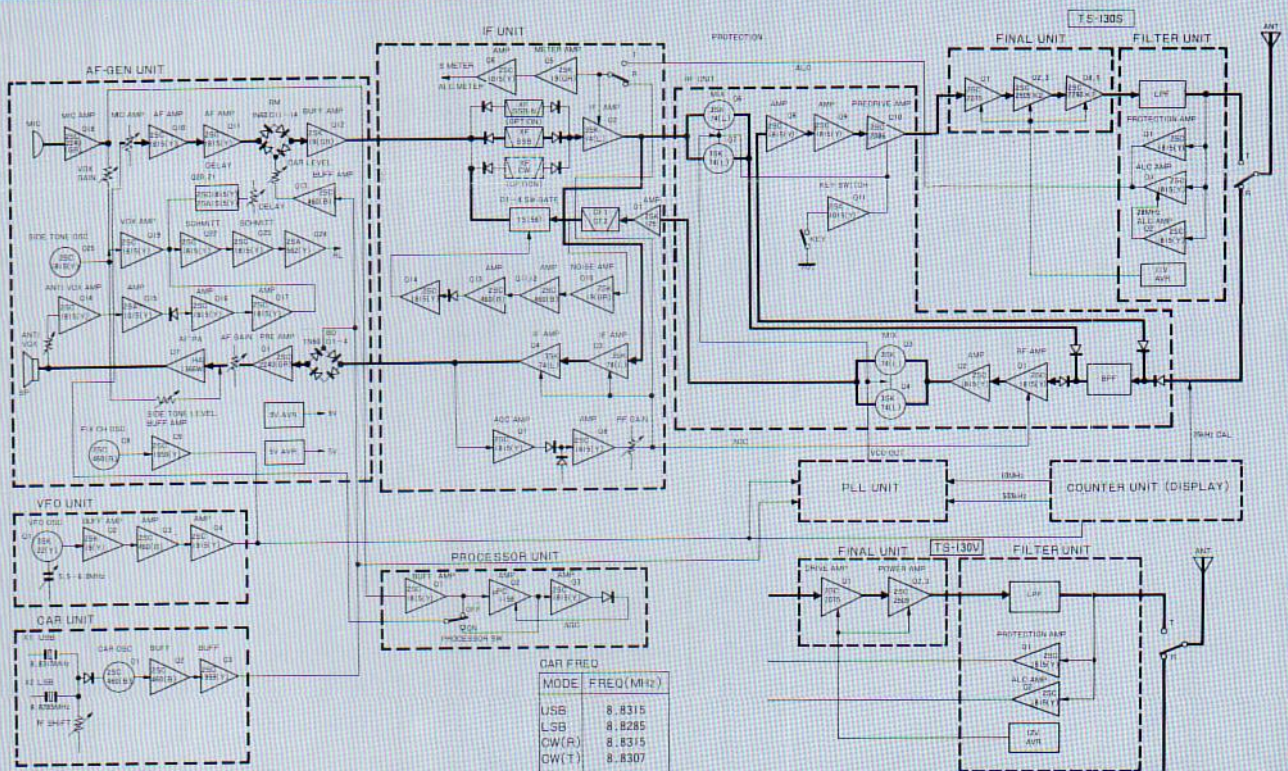
Frequency Composition Diagram



HET FREQ(VCO)

BAND	FREQ(MHz)
3.5	12.33 ~ 12.83
7	15.83 ~ 16.33
10	18.83 ~ 19.33
14	22.83 ~ 23.33
18	26.83 ~ 27.33
21	29.83 ~ 30.33
24.5	33.33 ~ 33.83
28	36.83 ~ 37.33
28.5	37.33 ~ 37.83
29	37.83 ~ 38.33
29.5	38.33 ~ 38.83

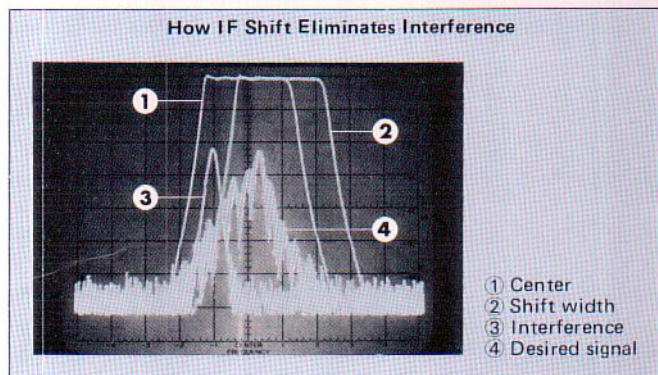
TS-130 BLOCK DIAGRAM



CAR FREQ

MODE	FREQ(MHz)
USB	8.8315
LSB	8.8285
CW(R)	8.8315
CW(T)	8.8307

be moved around the received signal and away from interfering signals and sideband splatter. Selectivity improves even more with the installation of the optional YK-88SN 1.8 kHz filter, YK-88C 500 Hz filter, or YK-88CN 270 Hz filter.



Innovative Single-Conversion PLL System

The TS-130 Series utilizes a new PLL circuit which does not require a crystal element for each band. As shown in the diagram, the VCO frequency is obtained in the PLL circuit by synthesizing the VFO and CAR frequencies, the 10 MHz reference frequency supplied by the counter, and the divided frequency of 500 kHz. Band changing is accomplished by changing the preset division ratio of the programmable divider in the PLL. This eliminates the need for a heterodyne crystal element for each operating band, resulting in simplification of circuitry, and a marked improvement in overall stability. The single-conversion PLL system also improves the spurious characteristics during transmission and reception, and makes IF shift operation and mono-dial indication available on any mode.

Built-in RF Attenuator

The carefully designed TS-130 Series receiver front end includes a 20dB RF attenuator which may be switched in to provide optimum rejection of intermodulation distortion.

Built-in Cooling Fan (TS-130S)

When the temperature of the heatsink for the final amplifier rises to 90 degrees centigrade because of long transmissions, the cooling fan is activated automatically.

Protection Circuit for Final Transistor

The final-amplifier stage includes a protection circuit which detects VSWR (TS-130S and TS-130V) and temperature (TS-130S). The circuit automatically reduces output power when either parameter is excessive.

Expanded Frequency Coverage

The TS-130 Series built-in stable VFO, as well as the optional VFO-120 external VFO, covers more than 50 kHz above and below each 500 kHz band. The optional DFC-230 and VFO-230 cover about 100 kHz above and below each band, for MARS and other applications.

Built-in VOX Circuit

The compact TS-130 Series features VOX as well as push-to-talk operation. VOX gain, VOX delay, and anti-VOX controls are on top of the cabinet, for easy adjustment. The system also allows semi-break-in operation on CW, with the sidetone-oscillator circuit.

Built-in Noise Blanker

The TS-130 Series features an effective noise-blanker circuit. A new type of filter on the input circuit of the noise 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.

Enhanced Selectivity with Innovative MCF

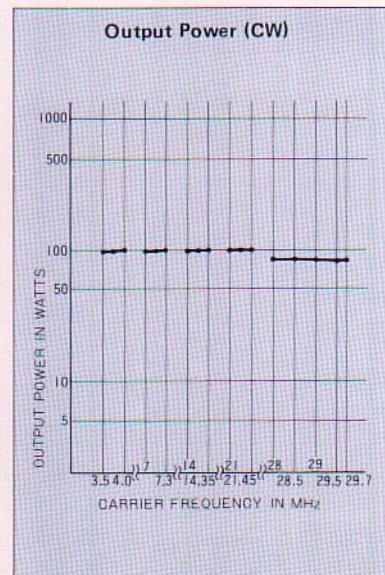
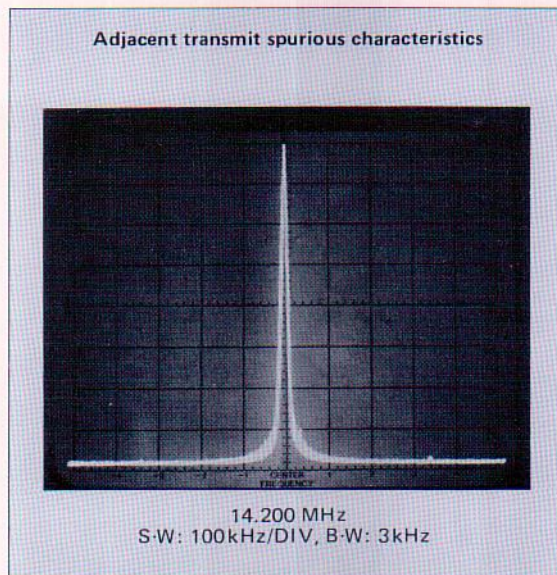
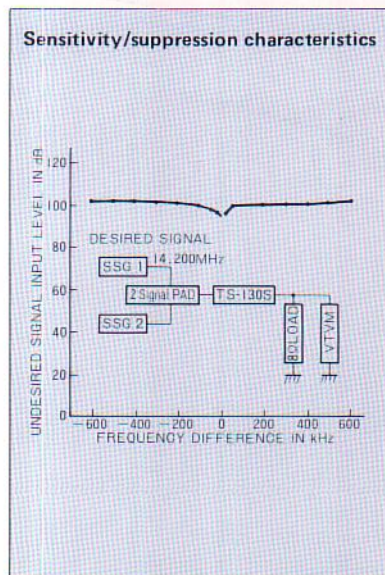
IF selectivity in the TS-130 Series is determined by a new type of monolithic crystal filter. The built-in SSB filter and the optional YK-88SN, YK-88C and YK-88CN filters have the same outstanding characteristics as an eight-pole crystal filter, but are manufactured in much smaller packages.

Built-in 25 kHz Marker

A built-in marker provides 25 kHz signals which are derived from the 10 MHz master oscillator. The 25 kHz marker provides an accurate frequency reference for the TS-130 Series or any other rig to be calibrated.

Fixed Channels

Four crystal elements can be installed for fixed-frequency operation. One crystal may function on the 7MHz band, another on the 21MHz band, another on





PS-30

SP-120

TS-130S

VFO-120

DFC-230

Digital Frequency Controller

The very compact DFC-230 Digital Frequency Controller provides maximum efficiency and flexibility for mobile and fixed operation, by combining a 20 Hz step digital VFO with four memories.

FEATURES

- 20 Hz step digital VFO: Highly stable, with smooth tuning • Four memories: Frequency can be transferred from VFO to memory or from memory to VFO. An audible "beep" indicate memory input and recall • Built-in digital display: Shows digital VFO or memory frequency. The display range is selected automatically to cover 900.0-599.9 or 400.0-099.9, according to the band • Compact size: Only 148 (5.9) W x 51 (2) H x 166 (6.6) D mm (inch). Perfect for mobile installation • UP/DOWN manual scan: Frequency can be shifted with UP/DOWN microphone (supplied with DFC-230) or with FAST STEP switch on front panel. Scan speed is selectable in single, slow, or fast continuous 20 Hz steps from the UP/DOWN microphone • Cross-operation switch: Allows split-frequency operation, with transceiver VFO on transmit and DFC-230 (VFO or memory) on receive, or vice versa • RIT (receiver incremental tuning): Wide frequency range with either digital VFO or memory, using the main tuning knob, UP/DOWN microphone, or FAST STEP switch, while RIT switch is on • Expanded frequency coverage: About 100 kHz above and below each 500 kHz band, for MARS and other applications • RIT, VFO, and MEMO indicators: LEDs show functions in operation • Compatibility with TS-830S, TS-120S/V and TS-130S/V.

SPECIFICATIONS

- Oscillating Frequency: 5.4-6.1 MHz • Frequency Stability: 1×10^{-5} (at normal temperature), 3×10^{-5} (0-50°C) • Output Signal: 0.2V $^{+3}$ dB $^{-1}$ dB • Power Requirement: 9V DC, 30 mA, 13.8V DC, 300 mA (obtained from TS-130S/V, TS-830S, or TS-120S/V) • Dimensions: 148 (5.9)W x 51 (2)H x 166 (6.7)D mm (inch) • Weight: 1.3 kg (2.9 lbs)



VFO-120

Remote VFO

Allows split-frequency operation when DX chasing, net monitoring, and finding an unused frequency while retaining the original frequency.

The VFO-120 also incorporates T.F. set switch which prevents transmitting on the wrong frequency during split-frequency operation and also allows quick setting of transmit frequency. LED indicators show VFO functions at a glance.

SPECIFICATIONS

- Oscillator Frequency: 5.50-6.00 MHz • Oscillator Circuit: Clapp • Output Voltage: 0.2V ± 1 dB (across 470Ω load) • Frequency Stability: Within 100 Hz per 30 minutes after 3 minutes warm-up (at room temperature) • Solid-state Complement: FET; 2, Transistor; 2, Diode; 6 • Power Source: From TS-130 Series • Dimensions: 123 (4.9)W x 96 (3.8)H x 235 (9.9)D mm (inch) • Weight: 2.5 kg (5.6 lbs)



PS-30 (for TS-130S)

Power Supply

Supplies regulated 13.8V DC at 20A intermittent load with complete ease and safety due to the use of generous heat sinks and an automatic reset electronic overload trip.

SPECIFICATIONS

- Power Consumption: Approx. 600W • Output Voltage: 13.8V DC • Output Current: 20A (intermittent load 50% duty cycle), 15A (continuous load current) • Output Voltage Fluctuation: Within ± 700 mV (at 20A load current), Within 400 mV at 2-20A load current • Ripple Voltage: Less than 20 mV at 13.8V DC 20A • Power Requirements: 120/220/240V AC • Dimensions: 180 (7.2)W x 133 (5.3)H x 287 (11.5)D mm (inch) • Weight: 8.9 kg (19.6 lbs)



PS-20 (for TS-130V)

Power Supply

Supplies regulated 13.8V DC at 4A continuous, 4.5A intermittent load with complete ease and safety due to the use of generous heat sinks and an automatic reset electronic overload trip.

SPECIFICATIONS

- Power Consumption: Approx. 100W • Output Voltage: 13.8V DC • Output Current: 4.5A (intermittent load 50% duty cycle), 4A (Continuous load Current) • Output Voltage Fluctuation: Within ± 50 mV (at load current 4A), Within 0.1V at 0-4A of load current • Ripple Voltage: Less than 5 mV at 13.8V DC 4A • Power Requirements: 120/220/240V AC • Dimensions: 123 (4.9)W x 96 (3.8)H x 235 (9.4)D mm (inch) • Weight: 3.8 kg (8.4 lbs)



AT-130

Antenna Tunner

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: 50Ω • Output Impedance: 20 to 300Ω, unbalanced • Through Power: 150W max. (3.5 MHz band, 120W) • Insertion Loss: Less than 0.5 dB at optimum match (SWR Meter) • Frequency Range: 3.5 to 29.7 MHz • Max. Power: 150W • Measurable Range: 1:1 to 10:1 • Min. Power Required: 2W (General) • INPUT Connector: UHF type (50Ω) • ANT Connector: UHF type (50Ω) GND: Wing nut and STUD • Dimensions: 152 (6.1)W x 60 (2.4)H x 159 (4.9)D mm (inch) • Weight: 1.6 kg (3.5 lbs) approx.



SP-120

External Speaker

A good looking compact speaker matching the TS-130S/V styling and designed for home station use. A low distortion speaker unit provides clear reproduction of the TS-130S/V high quality audio.

SPECIFICATIONS

- Speaker Diameter: 7.5 cm • Max. Input Power: 1W • Input Impedance: 8 ohms • Frequency Response: 300 Hz to 5 kHz • Dimensions: 123 (4.9) W x 96 (3.8) H x 235 (9.4) D mm (inch) • Weight: 1.3 kg (2.9 lbs)



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