

1.2 SPECIFICATIONS

1.2.1 General

a. Frequency Coverage. All amateur bands 1.8 to 30.0 MHz in full 1 MHz ranges. An additional 1 MHz band may be added in each of the three ranges, 2.0 to 3.0, 4.0 to 7.0, and 8.0 to 14.0 MHz, by installing appropriate crystals.

b. VFO's. Two identical, permeability-tuned precision oscillators; 1 MHz tuning range with nominal 25 kHz per knob revolution.

c. Readout. Accuracy, linearity, and resetability to 100 Hz at any point in any band after calibration at any 100 kHz checkpoint in that band. Integrated circuit digital frequency counter with miniature, high-intensity long-life Nixie display instantly shows actual frequency being received or transmitted.

d. Spotting. Push button provides audio beat note for spotting when using separate VFO's or Transmit Offset/Transceive Mode.

e. T/R Switching. Push-to-talk or fast-attack VOX; instantaneous break-in CW; fast key-up receiver recovery independent of AGC decay. Isolated terminals for control of external amplifier.

f. CW Keyer. Built-in electronic keyer, 5 to 60 wpm. Separate jacks for keyer paddle and manual key.

g. Frequency Control Modes. Transceive with either VFO, "split" using both VFO's, transceive on either VFO plus independent receive-only on the other, or "Transmit Offset" transceive (transmit frequency tracks receiver and may be instantly offset up to plus or minus 3 kHz from receive frequency).

h. Emission Modes. SSB, CW, FSK, compatible AM.

i. Power Supply. Built-in heavy-duty supply for 115/230 volts, 50 to 400 Hz. Silectron transformer for exceptional regulation and power with very small size and weight. Requires approximately 100 watts receive, 400 watts peak at full input.

j. Construction. All critical circuitry (except P.A. and large power supply components) is modular on glass epoxy etched circuit boards.

k. Size and Weight. 16-1/4"W, x 7-1/4"H, x 14" deep overall, less feet. 35 pounds.

1.2.2 Receiving System

a. Active Devices. 16 digital integrated circuits, 14 linear integrated circuits, 100 transistors (both bipolar and MOS FET) one ceramic metal P.A. tube.

b. Sensitivity. Better than 10 db signal-plus-noise-to-noise ratio for 0.25 microvolt input at 28 MHz (2 kHz bandwidth).

c. Selectivity. Standard (SSB) - 2 kHz at -6 db, 1.5:1 (6:60 db) shape factor. Optional:
1. Standard CW - 400 Hz with 4:1 shape factor;
2. Deluxe CW - 300 Hz with 2:1 shape factor;
3. Standard FSK - 1200 Hz with 2:1 shape factor (internal sockets provided for two optional filters).

d. Ultimate Attenuation. More than 60 db.

e. Image and IF Rejection. More than 60 db.

f. Internal Spurs. Less than 1 μ v equivalent. (Except at 1.912 MHz.)

g. AGC. Fast attack with selectable 10 ms decay or 300 ms hang time; less than 6 db audio output change for signal level from 1 μ v to 100 mv.

h. Front End Dynamic Range. A 10 microvolt desired signal will be modulated less than 10% by an unwanted 10,000 μ v signal 10 kHz away modulated 30% at 400 Hz, or by a similar 100,000 μ v signal 5% removed in frequency.

i. Audio Output. 1 watt.

j. IF Shift. Second IF adjustable up to plus or minus 2 kHz with respect to IF filter passband for interference rejection and receiver audio passband selection. Tracking error, zero.

k. Dual Receive. Two channels usable separately or simultaneously; continuously variable relative RF gain control. Either channel may be used for transceiving and the other for receive-only.

l. Noise Blanker. Pre-IF blanker with adjustable threshold.

1.2.3 Transmitting System

a. Tuning. Pretuned bandpass output filter requires no adjustment when feeding nominal 50-ohm resistive load in amateur bands; manual tuning and loading for out-of-band or high SWR operation. Driver broadband 1.8 to 30.0 MHz.

b. Power Amplifier. Solid-state, completely broad-band driver; rugged, ceramic-metal 8072 tetrode final amplifier conduction-coupled to massive extruded heat sink. 150 watts continuous dissipation rating at 25°C ambient.

c. Power Level. Nominal 300 watts PEP input, all bands and modes. Output continuously adjustable down to less than 1 watt.

d. Duty Cycle. Continuous at rated PEP input all modes.

e. Carrier and Unwanted Sideband Suppression. 60 db.

f. Distortion. Third-order intermodulation products more than 30 db below each of two equal tones at full rated output.

g. Speech Processing. RF envelope clipper plus sixteen pole crystal filter in SSB and compatible AM (USB with carrier) modes. Clipping adjustable 0 to 20 db nominal.

h. Metering. Clipping, drive level, plate and screen currents, forward and reflected RF power.

1.3 RECOMMENDED ACCESSORIES

a. Speaker. Only use the Signal/One Model CX7S speaker or one having the following characteristics:

1. Typical Size: 6 x 9 inches
2. Voice Coil: 3.2-ohm impedance
3. Magnet: 3.2-ounce Alnico V
4. Typical Rating: 8 watts
5. Frequency Range: 60 to 10,000 Hz or better.

b. Headphones

1. Impedance: Low
2. Frequency Range: 60 to 10,000 Hz or better.

c. Microphone. Only use the Signal/One Model CX7M microphone or one having the following characteristics:

1. Output Level: -57 db or better
2. Response: 60 to 10,000 kHz, or better

3. Impedance: High

4. Switching: With or without push-to-talk function.

d. Antenna. The Model CX7 is a deluxe integrated station of exceptional performance. It is designed for use with an antenna having an input impedance of 50 ohms. The use of random length wire antennas will degrade performance unless a good antenna coupler, with a 50-ohm output, is used. Do not use an antenna having a S.W.R. of more than 3:1.

1.4 OPTIONAL FILTERS AND CRYSTALS

The following optional filters and crystals may be purchased directly from Signal/One or Model CX7 distributors and can be installed by the Model CX7 owner following the instructions in paragraph 4.7 of Section IV.

- a. Standard CW Filter: 400 Hz bandpass
- b. Deluxe CW Filter: 300 Hz bandpass
- c. Standard FSK Filter: 1200 Hz bandpass
- d. "A" Frequency Crystal: Provides capability to operate between 2.0 and 3.0 MHz frequency.
- e. "B" Frequency Crystal: Provides the capability to operate in either the 4.0 to 5.0, 5.0 to 6.0 MHz, or 6.0 to 7.0 MHz frequency range. (Specify which range when ordering.)
- f. "C" Frequency Crystal. Provides the capability to operate in either the 8.0 to 9.0, 9.0 to 10.0, 10.0 to 11.0, 11.0 to 12.0, 12.0 to 13.0, or 13.0 to 14.0 MHz frequency range. (Specify which range when ordering.)

1.5 PREPARATION FOR USE

1.5.1 Unpacking. Carefully lift the transceiver out of the packing material and examine it for visible damage. If the transceiver has been damaged in shipment, save the box and packing material, and notify the transportation company. Check the tuning controls and switches for freedom of action. Be sure to remove the accessory jumper plug and the power cord and plug from the packing material also. Fill out and mail the warranty registration card.

1.5.2 Normal Operation Interconnections

a. Connect the accessory plug and power plug, with cord, to the applicable rear panel connector.