

	PAGE
CHAPTER 1	
SPECIFICATIONS	
1.0 General	2
1.1 Transmitter	2
1.2 Receiver	2
CHAPTER 2	
INTRODUCTION	
2.0 Introduction	3
2.1 Features	3
CHAPTER 3	
OPERATION	
3.0 Introduction	4
3.1 Control & Connections	4
3.2 Microphone	9
3.3 Operation	9
CHAPTER 4	
PROGRAMMING	
4.0 Introduction	12
4.1 Frequency Selection	12
4.2 Frequency Scanning	12
4.3 Offset Frequency Operation	14
CHAPTER 5	
CIRCUIT DESCRIPTION	
5.0 Introduction	15
5.1 PLL Circuit	15
5.2 Receiver Circuit	15
5.3 Transmitter Modulation Circuit	15
5.4 Transmitter Amplifier Circuit	15
CHAPTER 6	
ALIGNMENT	
6.0 Required Test Equipment	20
6.1 Alignment Procedures	20
CHAPTER 7	
MAINTENANCE	
7.0 Precautions	24
7.1 Periodic Inspection	24
7.2 Fuse Replacement	24
CHAPTER 8	
DIAGRAMS AND PART LIST	
8.0 PCB Layout & Part List	25

1.0 GENERAL	
Model	RCI-2985DX / RCI-2995DX
Frequency Range	12 meter : 24.8900 ~ 24.9900 MHz 10 meter : 28.0000 ~ 29.6990 MHz
Tuning Steps	100 Hz, 1 KHz, 10 KHz, 100 KHz, 1 MHz
Emission Modes	AM(A3) / FM(F3) / LSB, USB(A3J) / CW(A1)
Frequency Control	Dual Phase-Lock-Loop (PLL) synthesizer
Frequency Tolerance	± 0.005%
Frequency Stability	± 0.001%
Operating Temperature Range	-10°C to +50°C
Microphone	Plug-in (6 pin), Dynamic PTT
Meter Function	Meter #1 : Indicates relative RF Power Output / Antenna SWR Meter #2 : Indicates Received Signal Strength / AM Modulation Level
Input Voltage	110V 60Hz (220V 50Hz Optional)
Antenna Connector	UHF, SO-239
1.1 TRANSMITTER	
RF Power Output : RCI-2985DX : RCI-2995DX	CW/AM/FM : 10W RMS ; USB/LSB : 25W PEP CW/AM/FM : 50W RMS ; USB/LSB : 150W PEP
SSB Generation	Dual-Balanced Modulation
AM Modulation	High and Low level Class B, Amplitude Modulation
FM Deviation	± 4 KHz @ 1 KHz 30mV Audio (± 5 KHz max.)
Clarifier Range	± 5 KHz
Harmonic and Spurious Emissions	> 60dB
AM/FM Frequency Response	400 to 5000 Hz
SSB Frequency Response	400 to 3000 Hz
Output Impedance	50 Ohms
Output Indicators	RF Meter shows relative RF Output Power
1.2 RECEIVER	
Sensitivity	AM/CW : < 0.50µV For 10dB S+N/N FM : < 0.25µV For 12dB S+N/N USB/LSB : < 0.15µV For 10dB S+N/N
AM/FM Selectivity	50dB at 10 KHz
SSB Selectivity	60dB at 4 KHz
Image Rejection Ratio	> 50dB
IF Rejection	> 80dB
Automatic Gain Control (AGC) Figure Of Merit	SSB/CW/AM : 80dB for 50mV for 10dB Change in Audio Output
Squelch	Adjustable-Threshold less than 0.7µV
Audio Frequency Response	400 to 2500 Hz
Distortion	< 10% at 2 Watts Output
Adjacent Channel Rejection	>50dB
Cross Modulation	>50dB
Intermediate Frequency	10.695 MHz (AM-1st, SSB), 445 KHz (AM-2nd)
Clarifier Range	± 5 KHz
Noise Blanker	IF Signal Gate Type
Audio Output Power	3W @ 10% THD
Built-in Speaker	8 Ohms, 4 Watts
External Speaker (Optional)	8 Ohms, 4 Watts

(SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE)

2.0 INTRODUCTION

The Ranger RCI-2985DX / RCI-2995DX is a solid-state, fully synthesized Amateur 10 and 12 meter dual band base station transceiver with full band coverage from 28.0000 MHz to 29.6999 MHz and 24.8900 MHz to 24.9900 MHz and all mode operation, including: AM, FM, USB, LSB, CW and PA modes. The 10 most commonly used frequencies can be pre-programmed by the user for easy channel access.

2.1 FEATURES

RCI-2985DX

- 25 Watts PEP of Output Power
- Full Band Coverage
- All Mode Operation
- Brightness Control
- CTCSS Encoder/Decoder (Optional)
- Repeater/Offset Switch
- Programmable Frequencies
- Built-in Dual VFO
- RIT (RX Incremental Tuning)
- Squelch
- Noise Blanker
- RF Gain Control
- RF Power Output Selector
- External Speaker Connection
- PA Mode
- LCD Display
- Multi-Function LCD Meter

RCI-2995DX

- 150 Watts PEP of Output Power
- Full Band Coverage
- All Mode Operation
- Brightness Control
- CTCSS Encoder/Decoder (Optional)
- Repeater/Offset Switch
- Programmable Frequencies
- Built-in Dual VFO
- RIT (RX Incremental Tuning)
- Squelch
- Noise Blanker
- RF Gain Control
- RF Power Output Selector
- External Speaker Connection
- PA Mode
- LCD Display
- Multi-Function LCD Meter

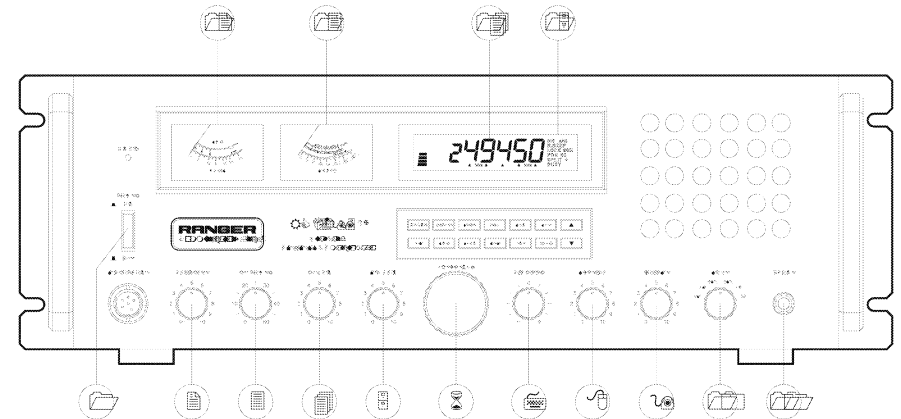


Figure 3-1 Front Panel

3.0 INTRODUCTION

This section explains the basic operating procedures for the RCI-2985DX / RCI-2995DX Amateur 10 and 12 meter dual band base station transceiver.

3.1 CONTROL AND CONNECTIONS

3.1.1 FRONT PANEL

Refer to the above Figure 3-1 for the location of the following controls.

1. POWER ON/OFF SWITCH

Push this switch to apply power to the unit.

2. CALIBRATE CONTROL

This control is used for calibrating the built in SWR meter for accurate SWR readout. Control should normally be left in the fully counter clockwise position for accurate power output meter readings. (This stop is marked "RF,")

3. RF POWER CONTROL

This control allows the user to adjust RF power output.

4. RF GAIN CONTROL

This control is used to reduce the gain of the RF amplifier under strong signal conditions.

5. MIC GAIN CONTROL

Adjusts the microphone gain in the transmit and PA mode. This controls the gain to the extent that full talk power is available several inches away from the microphone. In the Public Address (PA) mode, the control functions as the volume control.

6. CHANNEL SELECTOR

This control is used to select a desired transmit and receive channel.

7. CLARIFIER CONTROL

Allows adjustment of the receive frequency above or below the channel frequency. Although this control is intended primarily to tune in SSB signals, it may be used to optimize AM/FM signals as well.

8. SQUELCH CONTROL

This switch is used to eliminate background noise being heard through the receiver which can be disturbing when no signal is being received. To use this feature of your radio, gently turn the switch fully counterclockwise, and then turn clockwise until the background noise is just eliminated. Further clockwise rotation will increase the threshold level so that only strong signals will be heard.

9. VOLUME CONTROL

Turn clockwise to set the desired listening level.

10. MODE SELECTOR

This selector allows you to select one of the following operating modes: FM/AM/USB/LSB/CW/PA.

11. PHONE JACK

Accepts a plug from a headset of 4 to 32 Ohm impedance. Insertion of the plug will disable the built-in speaker and external speaker connected to External Speaker jack.

12. RF/SWR METER

Used for two purpose - to indicate approximate transmitter power when transmitting and antenna SWR (standing wave ratio). Note that the power meter has separate scales for AM, FM, SSB and CW transmission, respectively.

13. SIGNAL/MODULATION METER

This meter indicates signal strength when receiving and modulation percentage when transmitting in the AM mode. Modulation readings are most accurate when using maximum output power. The modulation meter does not show movement in FM or SSB, but the Power Output meter (RF/SWR) does indicate RF out in these modes.

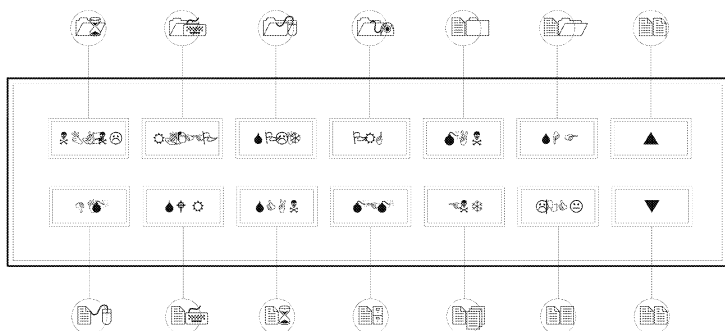
14. FREQUENCY DISPLAY

The frequency display indicates the frequency of the selected channel you wish to operate on.

15. FUNCTION INDICATORS

The indicators permit you to know instantly the mode to which the unit is engaged.

3.1.2 PROGRAMMING KEY PAD



16. NB/ANL/OFF SWITCH

In the NB/ANL position, the RF Noise Blanker and the Automatic Noise Limiter in the audio circuits are also activated. The Noise Blanker is very effective in eliminating repetitive impulse noise such as ignition interference.

17. ROGER BEEP BUTTON (R.BEEP)

In the Roger Beep position, the radio transmits an audio tone at the end of your transmission to indicate that transmission has ended. As a courtesy to others, use the Roger Beep only when necessary.

18. SPLIT BUTTON (SPLIT)

This control activates the offset frequency function. It causes the transmit frequency to be offset either above or below the receive frequency by a user programmable amount to allow operation of a FM Repeater.

19. PROGRAM BUTTON (PRG)

This button is used to program operating or scanning frequencies into memory. See the OPERATION section of the manual for further details.

20. MANUAL BUTTON (MAN)

This is used to return the unit to manual mode.

21. SHIFT BUTTON (SHF)

This is used to select 100 Hz, 1 KHz, 100 KHz or 1MHz frequency steps.

22. UP/DOWN SELECTOR ($\sigma\tau$)

These buttons are used in conjunction with the shift key to move the frequency upward or downward to select a desired frequency.

23. LOCK BUTTON (LOCK)

This button is used to lock a selected frequency. Press it to activate the switch. In this position, it disables the Frequency Selector Control, up/down buttons on the front control panel and remote up/down buttons on the microphone. Repressing the switch will unlock the frequency.

24. ENTER BUTTON (ENT)

This is used to program memory channels. See the OPERATION section of this manual for more information on using this control.

25. MEMORY BUTTON (MEM)

This button is used to program memory channels. Detailed information on how to use this control is provided in the OPERATION section of this manual.

26. SCAN BUTTON (SCAN)

This is used to scan frequencies in each band segment. The OPERATION segment of this manual provides detailed information on using the SCAN control.

27. SWR BUTTON (SWR)

This button is used to check SWR.

28. DIM BUTTON (DIM)

This button adjusts the display backlighting in four different steps to best match the ambient light.

3.1.3 REAR PANEL

Figure 3-2 represents the location of the following connections:

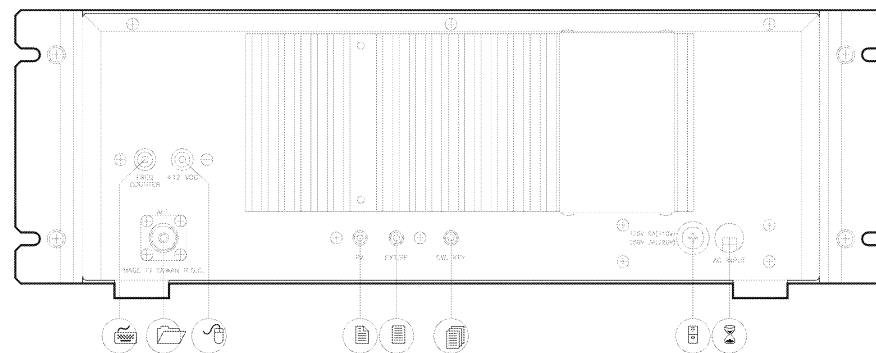


Figure 3-2 Rear Panel

1. ANTENNA

This jack accepts 50 ohms coaxial cable with a PL-259 type connector.

2. PA. SPEAKER

This jack is for PA operation. Before operating, you must first connect a PA speaker (8 ohms, 4 W) to this jack.

3. EXT. SP.

This jack accepts a 4 to 8 ohm, 4 watt external speaker. When the external speaker is connected to this jack, the built-in speaker will be disabled.

4. CW KEY

Used for Morse code operation. Connect a CW key to this jack and set the **MODE SELECTOR** switch to the CW position.

5. FUSE

Accommodates a fuse for AC input circuit protection. Use a 125V 5A fuse for replacement.

6. AC POWER CORD

Connect to AC power outlet for AC mains supply.

7. FREQUENCY COUNTER OUTPUT JACK

This "RCA Phono," type jack provides output for connecting an optional frequency counter so that you can watch the transmit frequency on an external frequency counter.

8. +12 VDC

This "RCA Phono," type jack provides 12 VDC power for an optional external cooling fan.

3.2 MICROPHONE

1. PTT SWITCH

The receiver and transmitter are controlled by the push-to-talk switch on the microphone. Press the switch and the transmitter is activated, release the switch to receive. When transmitting, hold the microphone two inches from your mouth and speak clearly in a normal voice. The transceiver comes complete with a low impedance (500 ohm) dynamic microphone.

2. REMOTE UP/DOWN SWITCH

An operating frequency can be increased or decreased simply by pushing either of these buttons.

3.3 OPERATION

3.3.1 CHANNEL SELECTION

Frequency selection for the RCI-2985DX / RCI-2995DX is simple. Select a desired operating frequency by rotating the Frequency Selector, or using the (σ) Up and (τ) Down buttons on the front panel or the microphone. Press the LOCK button to lock into the selected frequency. This will disable the Frequency Selector and the up/down buttons on the front panel and the microphone. Repeating the LOCK button unlocks the frequency. Use the SHF button to step frequency in 100 Hz, 1 KHz, 10 KHz, 100 KHz or 1

MHz increment when you select a band segment. The frequency step is indicated by a small triangle directly under the corresponding digit on the frequency display.

3.3.2 MODE SELECTION

To select an operating mode on your RCI-2985DX / RCI-2995DX, simply rotate the MODE selector and place it in the desired operating mode position FM/AM/USB or LSB modes are for your voice communications. In the CW position, you can transmit CW if you have connected an external key to the accessory jack provided on the back of the radio. In the PA position, the transceiver can be used as a Public Address system. Before operating in PA mode, you must first connect a PA speaker (8 ohms, 4 Watt) to the jack located on the rear panel.

3.3.3 RF POWER CONTROL

This feature allows the adjustment of the RF output power continuously over the range of 1W through 25W (RCI-2995DX : 2W through 150W).

3.3.4 RECEIVE SCANNING

Receive scanning allows you to find active frequencies in the entire band segment. To begin scanning, slowly turn the Squelch control clockwise until the receiver noise disappears. Press the Scan button. The unit should start scanning from the lower to the higher frequencies. Pressing the Scan button again will change the direction of scanning. Each time you press the Scan button, "SCAN+," or "SCAN-," will displayed on the LCD display. The radio will stop on any active frequency for the entire duration of the transmission. When the transmission stops, the RCI-2985DX / RCI-2995DX will wait approximately 2 seconds before it resumes scanning. If you want to deactivate Scan mode while it is scanning, press the MAN (manual) button or turn the Squelch control counterclockwise until you hear the receiver noise. The Manual button will disable Scan function.

3.3.5 SPLIT FUNCTION

This function enables you to offset the transmit and receive frequencies for FM repeater operation. The transmitter frequency can offset either higher or lower than the receive frequency. To split frequencies, press the MAN button and the Split button to select either +/- split frequency. If the + split is selected, the transmit frequency will be higher than the receive frequency. If - split is selected, the transmit frequency will be lower than the receive frequency.

3.3.6 MEMORY FUNCTION

The RCI-2985DX / RCI-2995DX can store up to 10 most frequently used frequencies (from 0 to 9). To program a frequency into memory, follow the procedure described below:

- (1) Press the **MAN** button.
- (2) Press the **PRG** button.
- (3) Press the **MEM** button ("MEMORY," and "0," should appear on the left-hand side of the **LCD** display). Pressing the **MEM** button will advance the channel number from "0," to "9,".
- (4) Select the desired frequency you wish to store in memory.
- (5) Press the **ENT** button.

- (6) Repeat the same procedure to program other memory channels.

3.3.7 MEMORY CHANNEL SCANNING

You can scan and select any of these 10 preset frequencies by following the procedure described below:

- (1) Press the **MAN** button.
- (2) Press the **MEM** button.
- (3) Slowly turn the Squelch knob clockwise until the receiver noise disappears.
- (4) Press the Scan button. The unit will scan from lower to higher frequencies. When you press the button again, it will scan from higher to lower frequencies.
- (5) To stop scanning a certain channel, press the **MAN** button, or turn the Squelch knob counterclockwise until you hear the receiver noise.

3.3.8 METER

The meter built into your RCI-2985DX / RCI-2995DX on the left hand side of the **LCD** display provides the following information:

1. SIGNAL/MODULATION METER

In transmit mode, it provides a visual indication of modulation percentage when transmitting in the AM mode and received signal strength on the receive mode.

2. RF/SWR METER

This meter has two purpose. It indicates relative transmitter power when transmitting and antenna SWR (Standing Wave Ratio). In order to achieve maximum radiated power, it is important that your antenna be in good condition, properly adjusted and matched to your transceiver. The built-in SWR (Standing Wave Ratio) meter allows you to measure your antenna condition. To operate this function, connect your antenna to the transceiver antenna connector, set the mode switch to AM and adjust the MIC Gain to minimum. Select a frequency near the middle of the band you plan to use most. Activate the SWR function and press the PTT button on the microphone. A bar on the meter is an indication of the antenna matching. If there is no bar, it indicates that your antenna system is perfectly matched. The less bar, the better matched. If several bars appear, your antenna needs adjusting. The SWR function is self calibrating.

3.3.9 CTCSS - OPTIONAL

The RCI-2985DX / RCI-2995DX can operate with CTCSS frequencies for accessing repeaters, with an optional CTCSS (Continuous Tone Coded Squelch System) encoding device installed.

3.3.10 PROCEDURE TO RECEIVE

- (1) Be sure that the power source, microphone and antenna are connected to the proper connectors before going to the next step.
- (2) Press the **POWER** switch to apply power to the transceiver.

- (3) Set the **VOL.** to a comfortable listening level.

- (4) Set the **MODE** switch to the desired mode.

- (5) Listen to the background noise from the speaker. Turn the **SQUELCH** knob slowly clockwise until the noise just disappears. The **SQUELCH** is now properly adjusted. The receiver will remain quiet until a signal is actually received. Do not advance the control too far or some of weaker signals will not be heard.

- (6) Set the **CHANNEL** selector switch to the desired channel.

- (7) Set the **RF GAIN** control fully clockwise for maximum RF gain.

- (8) Adjust the **CLARIFIER** control to clarify the SSB signals or to optimize AM/FM signals.

3.3.11 PROCEDURE TO TRANSMIT

- (1) Select the desired channel of transmission

- (2) Set the **MIC GAIN** control fully clockwise.

- (3) If the channel is clear, depress the push-to-talk switch on the microphone and speak in a normal voice.

4.0 INTRODUCTION

This section explains the basic programming procedures for the RCI-2985DX / RCI-2995DX Amateur 10 and 12 meter dual band base station transceiver.

4.1 FREQUENCY SELECTION

Frequency selection in the RCI-2985DX / RCI-2995DX can be accomplished using anyone of the three following methods:

- (1) The first method of frequency selection is through the use of the **SHF** (Shift) key and the (σ) Up and (τ) Down arrows. To accomplish this, press the **SHF** button until the cursor arrow is positioned under the digit of the frequency that is to be changed, then use the (σ) Up arrow to increase the number. If a decrease in frequency is desired, press the (τ) Down arrow. Perform the steps described above for each digit of the frequency until the desired frequency is displayed in the LCD display window.
- (2) The second method of frequency selection is accomplished using the **SHF** button and the frequency select knob located on the front panel. Use the **SHF** button in the manner described above to select the digit to be changed. Proceed to rotate the frequency select knob clockwise to increase the frequency. Rotate the frequency select knob counterclockwise to decrease the frequency.
- (3) The third method of selecting the operating frequency of the radio is through the use of the **SHF** button and the Channel (σ) Up and (τ) Down buttons located on the microphone. Frequency selection by this method is accomplished in the same manner as with the (σ) Up and (τ) Down arrows on the keypad. The only difference is that the Channel Up and Down buttons on the microphone is used.

4.2 FREQUENCY SCANNING

Frequency scanning can be achieved using one of two methods: the first method involves the scanning of pre-programmed memory channels. The second method permits the user to scan all frequencies between a pre-set upper and lower scan limit. Both of the methods of the frequency scanning.

4.2.1 ALL FREQUENCY SCANNING

To allow all Frequency Scanning, one must first program the upper and lower scanning limits. The scan limits are simply the highest and lowest frequencies that will be scanned. To program these limits, perform the following steps:

- (1) Press the **PRG** (Program) key.
- (2) Press the **SCAN** key (“**PRG SCAN+**” should appear in the lower right corner of the display window).
- (3) Using the **SHF** key and the (σ) Up and (τ) Down arrows, select the upper scan limit, then press **ENT**.
- (4) Press the **SCAN** key again (“**SCAN-**” should appear in the display window).

- (5) Using the **SHF** key and (σ) Up and (τ) Down arrows, select the lower scan limit, then press **ENT**.

The upper and lower scan limits have now been programmed. To activate the scan feature, return the radio to manual operation and press the **SCAN** button. If the display shows “**SCAN+**”, the radio will scan from the lower limit to the upper limit. If “**SCAN-**” is displayed, the unit will scan from the upper limit to the lower limit. To change from **SCAN+** to **SCAN-** or vice versa, press **SCAN**.

NOTE

When programmed, the upper and lower scan limits will also act as the upper and lower operating limits of the radio. The radio now cannot be programmed to operate above or below the scan limits.

4.2.2 MEMORY SCANNING

The RCI-2985DX / RCI-2995DX has 10 non-volatile (i.e. memory resident) memory locations which can be programmed with any available frequency within the operating band of the radio. The scan function of the unit can be programmed to scan these memory channels. The radio will then scan only those memory channels which have been programmed. The first step in utilizing the memory scan function is to program the desired frequencies into the radio memory. This can be accomplished by performing the following steps:

- (1) With the radio operating in the manual mode, press the **PRG** (Program) key.
- (2) Press the **MEM** (Memory) key. “**PRG**,” should be displayed in the lower right-hand corner of the LCD display window. In the upper left portion of the display, “**MEMORY**,” should be displayed. Directly below **MEMORY**, a number between 0 and 9 will be displayed. This number represents the memory location currently being displayed. Pressing the **MEM** key will increase the memory counter to the next memory location and the contents of that memory location will be displayed.
- (3) Using the **SHF** key and the (σ) Up and (τ) Down arrows, enter the frequency to be stored in the memory location displayed. After the desired frequency has been entered, press **ENT**.
- (4) Repeat steps (2) and (3) for all the memory locations to be programmed.
- (5) After all desired memory locations have been programmed with frequencies, return the unit to the manual mode of operation by pressing the **MAN** key.
- (6) To initiate memory scanning, press **MEM** and then press **SCAN**. As previously discussed, the display will show “**SCAN+**” or “**SCAN-**,” to indicate whether the radio is scanning from the lowest or the highest memory location or vice versa.
- (7) To return the radio to normal (non-scanning) operation, press the **MAN** key.

4.3 OFFSET FREQUENCY OPERATION

The RCI-2985DX / RCI-2995DX has an offset or split frequency feature that will permit the radio to be operated in a half-duplex mode. This will allow the user to talk on FM repeaters operating in the 10 and 12 Meter dual band.

NOTE

The FM repeaters may require a subaudible (CTCSS) tone be transmitted to gain access to the repeater. The RCI-2985DX / RCI-2995DX is not factory equipped with a CTCSS encoder/decoder.

The split frequency function offsets the transmitter frequency either above or below the receive frequency by a user programmable amount. In the following example, programming of a 100 KHz offset will be described. Before attempting to program the offset frequency, ensure that the radio is operating in the manual mode by pressing the **MAN** key.

- (1) Press the **PRG** (Program) key.
- (2) Press the **SPLIT** key. The LCD display window will display “00000” with “PRG” and “SPLIT” being displayed in the lower left hand corner.
- (3) Using the **SHF** key and the (σ) Up and (τ) Down arrows as described earlier, program the display to read “010000”.
- (4) Press **ENT**. A 100 KHz offset has now been programmed into the radio.
- (5) Return the radio to manual operation by pressing the **MAN** key.
- (6) Using the **SHF** key and the (σ) Up and (τ) Down arrows as described previously, set the radio for the desired receive frequency.
- (7) Press **SPLIT**. In the lower right corner of the display, either “SPLIT+” or “SPLIT-” will be displayed. If **SPLIT+** is displayed, the transmitter will be offset 100 KHz above the receive frequency when keyed. If **SPLIT-** is displayed, the transmitter will be offset 100 KHz below the receive frequency.

NOTE

When the transmitter is keyed, the frequency display will change to show the frequency being transmitted.

- (8) To return the radio to simplex operation (i.e., same transmit and receive frequency), press the **MAN** key.

5.0 INTRODUCTION

This section explains the technical theory of operation for the RCI-2985DX / RCI-2995DX Amateur 10 and 12 meter dual band base station transceiver.

5.1 PLL CIRCUIT

The Phase Lock Loop (PLL) circuit is responsible for developing the receiver’s first local oscillator signal and the transmitter’s exciter signal. The PLL circuit consists primarily of IC2, IC3, Q29, Q32, Q33, Q34, Q36, Q37, Q38 and L16. The PLL circuit is programmed by the rotary channel switch GPS-0751. The switch allows IC (U601) on CPU PCB to communicate the correct binary data information to the programmable divider inside of IC2. IC2 then controls the VCO (Voltage Controlled Oscillator) to oscillate on the correct frequency. This signal is fed either into the receiver’s first mixer (for receive operation) or the transmitter’s mixer (for transmit operation).

5.2 RECEIVER CIRCUIT

The incoming RF signal comes into the radio via the antenna and into the front-end pre-amp, Q19. The RF signal is fed into the mixer circuit of Q20 and Q21. The signal is then filtered by L8, L9 and L10 then into the AM/FM IF section of the receiver (depending on the mode of operation). The signal is then detected by either the AM detector or FM detector and then fed to the audio amplifier section of the receiver and finally out to the speaker.

5.3 TRANSMITTER MODULATION CIRCUIT

- (1) The transmitter modulation circuit modulates the low-level RF signal from the PLL exciter circuit with the user’s audio voice signal from the microphone. The audio from the microphone is then amplified and fed into the balanced modulator circuit.
- (2) If the transceiver is in the AM mode, the AF Power amplifier modulates the last RF amplifier, which produces a true amplitude modulated RF signal.
- (3) If the transceiver is in the FM mode, the audio signal is not mixed with 10.6975MHz oscillator but instead phase modulates the basic exciter signal from the PLL circuit in the TX mixer.
- (4) If the transceiver is in the SSB mode, the audio signal is mixed with the 10.6975MHz oscillator in IC5.

5.4 TRANSMITTER AMPLIFIER CIRCUIT

The transmitter takes the basic exciter signal from the TX mixer and amplifies it through a series of amplifiers consisting of Q64, Q63, Q62, Q61, Q60 and EPA010010B (only for RCI-2995DX) where it is then sent out to the antenna connector.