PC-9000 USER MANUAL

HF plus 6 Meter Transceiver

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INTRODUCTION

Congratulations on the purchase of your PC-9000. The PC-9000 is a simple to use 40 Watt HF Transceiver that covers all the HF Amateur Radio Bands plus 20 Watts on the 6 Meter VHF band. The radio will operate USB, LSB and CW as standard modes. With the optional adapter, the radio will also operate FM on 10 and 6 Meters. High or Low Power operation can be selected from the front panel. In the High Power position the transmitter will put out a nominal 40 Watts PEP or Full carrier in the case of CW. The Low Power position will limit the output power to 5 Watts for QRP operation. The PC-9000 uses a single conversion superhet receiver with a 10.7 mHz IF. The IF stage uses a very steep 2.4 kHz crystal filter which provides excellent adjacent channel rejection. The design employs two AGC loops, one at the IF stage and the second in the audio stage. The audio loop contains the Switched Capacitor Filter (SCAF) so that signals rejected with the filter will not affect the operation of this AGC loop (i.e. out of passband signals will not pump the AGC and cause receiver desensing). The IF AGC loop provides only a modest amount of gain reduction while the audio AGC loop provides greater control. This arrangement provides excellent performance in both SSB and CW modes using a single IF crystal filter. The SCAF provides continuous control of the upper limit of the receiver passband from 200Hz to 3 kHz.

Other features of the PC-9000 include RIT (Receiver Incremental Tuning) and SPLIT mode functions as well as a Noise Blanker and built-in Iambic CW Keyer. The AGC rate is also selectable as "Fast" or "Slow". A unique feature of the PC-9000 is the built-in keyboard interface. A standard computer keyboard may be plugged directly into the radio to provide additional capability. The standard software allows the operator to send CW via the keyboard and to move the frequency of operation up or down using the arrow keys. The characters entered on the keyboard appear on the front panel display and scroll across the display as they are sent out in morse. The optional expanded features hardware/software package allows the operator to send and receive RTTY (Radio Teletype) signals as well as decode morse signals all within the radio. This is a patented feature that was introduced on our PC-16000. This option package also allows the operator to directly enter a frequency via the external keyboard and to allow message memories that may be used on both CW and RTTY. Additional frequency memories are also made available with this package.

SETTING UP THE PC-9000

Carefully unpack the radio and check for the following items:

1) PC-9000 Transceiver
2) DC Power Cable
3) Hand Microphone
4) Instruction Manual with Warranty Card

The PC-9000 requires a 13.8 VDC Power source to operate properly. This should be a well regulated Power Supply capable of delivering at least 10 Amps of current. This is the requirement for full output power. If QRP (Low Power) operation only is to be used a 4 Amp power supply is all that is required.

The DC Power Cable should be connected to the terminals of the power supply to be used. The RED wire connects to the POSITIVE (+) supply terminal and the BLACK wire connects to the NEGATIVE (-) supply terminal. The 2 pin socket on the opposite end of the cable connects to the POWER plug on the back panel of the PC-9000 (refer to the back panel photo for the location of this connector). Be sure to check that the POWER switch (on the AF GAIN control is turned off before connecting the power source to the radio.

The PC-9000 requires a properly matched antenna system for the best results in both reception and transmission. Resonant antennas or broadband antennas using an antenna tuner are recommended for best results. The antenna system should always be tuned to present an SWR (Standing Wave Ratio) less than 2:1. The Transmitter will "fold back" its power at high SWR values to protect the Final Amplifier transistor and maintain amplifier stability.

The antenna should be connected to the PC-9000 using a standard UHF (PL-259) coax connector. Refer to the back panel photo for the location of this connector.

If CW operation is planned using the internal iambic keyer, a paddle should be plugged into the PADDLE jack on the back panel of the PC-9000. Refer to the Back Panel photo for a description of the pin connections for the panel. In addition to or instead of the paddle, a standard IBM^{tm} type Keyboard can be plugged into the 7 pin DIN type jack on the right side of the PC-9000.

If operation with an amplifier is planned, the PC-9000 provides an open collector transistor output which can be used to key the external amplifier. The transistor can switch any DC Voltage up to 180 volts at 2 Amps maximum. If an AC voltage or higher current must be switched, the transistor can be used to key a relay which can then be used to key the amplifier.

The PC-9000 is now ready for check out.

Turn on the main POWER switch located on the AF GAIN (Volume) control. The LCD Display

should light up and the power-up message should appear on the display:

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After a few seconds this message will disappear and the standard display format should appear:

14.150.00<-T USB2
14.150.00<-R M200

Since the PC-9000 remembers the last frequency that it was set for, the actual frequency displayed on power-up will depend on the last frequency the PC-9000 was set to when the power was removed in the last operating session. At this point the receiver should be active and the Main Tuning knob can be used to search for signals. The following sections will guide the user through the operation of the various controls and functions of the PC-9000.

COMPONENTS OF THE FRONT PANEL DISPLAY

There are several fields of information on the Front Panel Display which inform the operator of the status of the radio at any given time. The display information can be broken down into the following components:

FREQUENCY INFORMATION:

The PC-9000 displays the Transmit and the Receive Frequencies simultaneously. The Top Line of the display shows the Transmit frequency to the nearest 10 Hz using the first 7 digits of the display. The arrow character (<-) following the frequency indicates that transmitter tuning is active. That is, whenever the tuning knob is moved, the transmitter frequency will change. The **T** following the arrow indicates that this number is the Transmit Frequency. The same information is displayed for the receiver frequency on the bottom line. The only difference is that an **R** is displayed indicating the Received Frequency. In certain modes only one of the two frequencies may be changing with tuning (i.e. RIT or SPLIT Modes). When these modes are active, the arrow character (<-) next to the frequency which is not active will not appear.

MODE INFORMATION:

After the **T** on the top line the display will show the Mode that the PC-9000 is currently set for. The possible modes are:

USB - Upper Sideband Voice Mode
LSB - Lower Sideband Voice Mode
CW - CW (Morse Code) mode
FM - FM (Frequency Modulation) Voice Mode
RTY - RTTY (Radio Teletype) Data Mode

TUNING RATE:

The PC-9000 has 4 possible tuning rates that can be used. The tuning rate is specified as a particular "step size" that the frequency will move each time the encoder is turned and generates a tuning "pulse" to the computer. The encoder used in the PC-9000 is capable of generating a maximum of 120 pulses per dial revolution. Depending on the speed the dial is turned, sometimes the software may miss some of the pulses so the actual number of kHz per dial revolution may vary but the step size will always remain constant. The currently selected step size is indicated on the display by a number from 1 to 4. The PC-9000 also provides a frequency LOCK function. This prevents accidental movement of the frequency (especially useful in mobile operation). When this function is enabled the display will show and "L" instead of the numeric (1 - 4) value. When the frequency is unlocked, the last value displayed before the lock was enable will again appear on the display. The following is a list of the step sizes as they relate to the displayed number:

1 - 10 Hz steps
2 - 100 Hz steps
3 - 1,000 Hz (1 kHz) steps
4 - 10,000 Hz (10 kHz) steps
L - Frequency Locked

CURRENT MEMORY:

The second line of the display shows the current memory that is selected. The memory is displayed as a 3 digit number following the **M** after the received frequency. The standard software for the PC-9000 supports one memory per band. Memories are arranged by band with a maximum of ten memories per band. Since the PC-9000 covers 10 bands there are 100 memories available with the upgrade software option package. The first 2 digits of the memory number indicate the band that memory is available for. As an example, memories on 80 meters would start with 80, 40 meters 40 and so forth. The last digit (0 to 9) would indicate which of the ten memories available for that band is active. For example, memory number 805 would indicate the 6th memory on the 80 meter band. Number 160 would be the first memory on 160 meters while 601 would be the 2nd memory on 6 Meters.

METER FUNCTIONS

The PC-9000 uses a backlit analog meter to indicate the received signal strength of incoming signals and to indicate the relative output power of the transmitted signal. On receive the signal strength is indicated as S Units from 0 to 9 and then as db (decibels) over S9. Each line on the red portion of the S meter scale over S9 indicates 10 db.
On Transmit the bottom scale is used to indicate *relative* output power. If the Transmitter is terminated in a 50 ohm resistive load the SET mark on the power scale will indicate approximately 40 watts of output power (HF High Power). For 5 Watts of output power (QRP Low Power position) the meter will show a reading of approximately 2. An output power of 20 Watts (Maximum on 6 Meters) will read between 3 and 4 on the meter. Note again these are relative indications. This is not an absolute power meter. The readings will also vary if the load (antenna system) is mismatched and reactive.
Note that if the FM Adapter is installed, the S-meter will not function on receive for FM signals.

SETTING THE FREQUENCY AND TUNING RATE

The Frequency of operation may be set by turning the Main Tuning Knob to move across the currently selected band. When the frequency reaches the bottom or top of the selected band it will stop moving until turned in the opposite direction. Different tuning rates may be selected to allow fine tuning of a signal or quickly moving from one end of a band to the other. The different tuning steps have been described in the 'Components of the Front Panel Display" Section under "Tuning Rate". To review, the available step sizes are; 10Hz, 100Hz, 1 kHz and 10 kHz. Most tuning can be done with the 100 Hz step selected (Step size 2). This will allow reasonable tuning of both CW and SSB signals. Switching to the 10 Hz step (Step size 1) will allow fine tuning of a signal and give an "analog feel" to the tuning. A lot of SSB signals tend to be on even 1 kHz frequencies. Placing the radio on an even 1 kHz value and switching to step size 3 (1 kHz) will allow a fairly rapid scan of a band for SSB signals. The 4th step, 10 kHz, has been provided to allow a rapid movement from one end of a band to the other. This is especially useful when moving between CW and SSB segments of a band or for some of the larger bands such as 6, 10 or 15 Meters. Use this large step to move to the desired segment of the band and then switch back to one of the finer rates.

The Tuning Rates are changed by pressing the TUNE RATE button on the front panel until the desired rate number appears on the display. Note also that the LED next to the TUNE RATE button also indicates the step size. If the LED is off the 10 Hz rate is selected. If it is on steady the 100 Hz rate is selected. A slow blink indicates 1 kHz steps while a fast blink indicates the 10 kHz step size has been selected.

In certain applications it may be desirable to disable the Main Tuning knob to "lock" the frequency in place so it may not accidentally change (in a mobile installation for instance). The LOCK button on the front panel will enable this feature and cause the Tune Rate number on the display to switch to an "L". Pressing the button again will unlock the knob and put the last step size back into effect.

CHANGING / SELECTING A BAND

To move from one band to the next press the BAND button on the Front Panel. Repeatedly pressing this button will cause the radio to move upward from one band to the next until it has cycled through all 10 bands and then start over at the bottom band again (160 Meters). The sequence is 160, 80, 40, 30, 20, 17, 15, 12, 10, 6 and then back to 160. The band is indicated by the frequency and the memory number on the display.

CHANGING / SELECTING A MODE

To change the mode of operation, the MODE button is repeatedly pressed until the desired mode appears on the top line of the display. The button will allow cycling through all the available modes in the radio, CW, USB, LSB, FM then back to CW. If the RTTY option is installed, this mode will also be added to the list. When the various modes are selected, the frequency on the display will change to automatically setup the correct Transmit/Receive offset for that mode. For example, for SSB and FM the TX and RX frequencies are normally equal to each other. In CW however, an 800 Hz offset is introduced to allow the receiving station to hear an 800 Hz note when the key is pressed. If both frequencies were made equal the other station would be tuned to a "zero beat" and not hear anything at all unless the receiving stations receiver were tuned off frequency to create a beat note. If the RTTY option is installed an offset of 2250 Hz would be introduced to correspond to the mark frequency of the transmission.

USING RIT AND SPLIT MODES

The previous section described the way Transmit and Receive frequencies relate to each other for the various modes of operation. There are times when these "standard" offsets may not be the best choice. The PC-9000 includes RIT (Receiver Incremental Tuning) and SPLIT modes to allow modification of these standard offset values.

RIT is used to move the Receive Frequency only, leaving the Transmit Frequency at its current value. This feature is useful when a station you are in contact with may be drifting or constantly changing both his RX and TX frequency by retuning your signal without using his RIT or Clarifier function. If you were to do the same thing, retuneing him each time he transmits, the two signals would just keep moving up or down the band possibly causing interference to adjacents signals. By using the RIT function you change your receive frequency only and leave your transmit frequency where it is. The receiving station does not have to keep changing his frequency to retune your signal.

The RIT function is invoked by pressing the RIT key on the Front Panel. The green RIT LED next to the button will come on. The arrow (<-) next to the Transmit Frequency will blank indicating the Transmit Frequency will not change when the Tuning knob is turned. As long as the Tuning knob is being moved the radio will remain in the RIT mode. After a few seconds of the Tuning knob not moving, the RIT mode will be turned off and the arrow will appear next to the Transmit Frequency again. The next time the knob is moved both the RX and TX frequencies will change again. If the

offset between the TX and RX frequencies do not match the "standard" offset for the current mode the RIT LED (Green) will blink indicating this condition. To clear the RIT offset press the SPLIT button then the RIT button. The RX and TX frequencies will match up with the proper offset for the current mode.

The timeout function has been included so that the so that the TX Frequency will not be left behind accidentally once you resume tuning after transmitting.

SPLIT MODE:

SPLIT Mode functions similar to the RIT Mode except SPLIT Mode allows individual tuning of either the Transmit or the Receive frequencies and there is no timeout function. This function is useful for working split mode DX stations and for setting up repeater splits on 10 or 6 Meters for FM work. The SPLIT Mode is invoked by pressing the SPLIT button on the Front Panel. The red SPLIT LED next to the button will light and the arrow (<-) next to the Transmit Frequency will disappear. This indicates that the Receiver is now the only frequency that will tune when the Tuning knob is moved. Pressing the SPLIT button again will cause the arrow to move up to the Transmit frequency indicating that this will be the frequency under control of the Tuning knob. Repeatedly pressing the SPLIT key will move the arrow between the RX and TX frequencies. To leave the SPLIT Mode press the RIT button and the TX and RX frequencies will automatically move back to the receive frequency with the proper offset for the currently selected mode.

USING THE SWITCHED CAPACITOR FILTER (SCAF)

The PC-9000 utilizes an adjustable SCAF filter to set the bandwidth of the radio. The filter works at the audio section of the receiver but it is contained within the AGC loop. This means as signals are filtered out of the audio passband the AGC voltage (and the S-meter) will be unaffected by the filtered signals. The filter acts as an adjustable Low Pass Filter whose corner frequency can be continuously varied from about 350 Hz to 2.8 kHz. The FILTER Knob on the Front Panel controls this frequency. For SSB operation the filter should be left near the high end (full CCW) and backed off just enough to eliminate any adjacent channel interference. This will result in the best voice fidelity. For CW the filter can be used in almost any position required to eliminate adjacent channel QRM. Note as the filter is narrowed down below 800 Hz the receiver may need to be retuned to peak the audio since the normal 800 Hz note will start to fall outside of the filter passband.

The combination of the 2.4 kHz crystal filter in the "soft" IF AGC loop along with the adjustable SCAF filter in the "tight" AF AGC loop result in excellent filtering characteristics for both SSB and CW operation. Note that these filters are not active on the FM Mode. The FM adapter contains an 8 kHz wide ceramic filter for FM reception.

SETTING THE AGC RATE

The PC-9000 allows the operator to select one of two different AGC rates. There is a FAST rate which allows rapid recovery of the AGC, even on high speed CW signals, and there is a SLOW rate which lets the AGC voltage "hang" for a short period before starting to decay. In general the SLOW AGC should be used for SSB reception while either FAST or SLOW is suitable for CW. The AGC setting has no effect on FM reception since there is a separate AGC circuit on the FM Adapter itself.

The AGC speed is changed by pressing the AGC button on the Front Panel. When the LED next to the button is ON, the AGC is set to the SLOW speed. When the LED is OFF, it is FAST.

THE NOISE BLANKER

The PC-9000 includes an impulse type Noise Blanker circuit to reduce or eliminate impulse type (i.e. ignition) noise. Since the Noise Blanker operates by blanking the IF signal during a noise pulse there can be some distortion of the audio signal under severe noise conditions when a large amount of blanking is taking place (The signal is essentially having a "hole" punched in it for each noise pulse).

The Noise Blanker is activated by pressing the NB button on the Front Panel. When ON, the red LED next to the button will be ON. Pressing the button again will turn the Blanker and the LED OFF.

TRANSMITTING WITH THE PC-9000

The Transmitter can be turned on in a variety of ways depending on the mode of operation. The following lists the various operating modes and the method for enabling the transmitter in each mode:

SSB (USB / LSB): To enable Transmit in this mode the Micro-Phone must be plugged in and the PTT (Push To Talk) switch on the microphone must be Pressed. Note that in the SSB modes there will be no output power without a voice or audio input to the microphone. Power out-put will vary with speech in this mode.

CW (Morse Code): Transmitting in CW can be done in three different ways. First, a paddle can be used to operate the internal iambic keyer. Each time a code element is sent the PC-9000 will automatically switch from Receive to Transmit. The PC-9000 uses a semi-breakin CW mode which means that you can hear the Receiver audio between letters as you are sending. The second method of keying the Transmitter in CW is to use the built-in Keyboard interface. Plug a standard IBM^{tm} type keyboard into the 7 pin DIN connector on the right side of the PC-9000 (the power should be turned off when this is done). Follow the instructions in the section "Using an External Keyboard with the PC-9000" of this Manual. The keyboard will also Operate in the semi-breakin mode as was described for the paddle. The last way to key the Transmitter is to attach a line to the PTT connection on the microphone con-nector and use a "straight key". The MOX button on the Front Panel will also key the Transmitter like a straight key.

FM (Frequency Modulation): FM operation is similar to SSB where the Microphone PTT switch must be depressed to activate the transmitter. In this mode, however, the full output power of the Transmitter will appear as long as the PTT Switch is pressed. There will be no varia-tion in the output power while speaking

into the microphone. Releasing the PTT Switch will change the radio over to Receive again.

The MOX button should be used to tune the antenna system when using non resonant antennas and a tuner. It is recommended that the radio be placed in the Low Power mode and in CW. Key the transmitter and use the 5 watt output to adjust the tuner to get a match to the antenna system. Once the system is matched the power can be raised and the desired mode selected. **Remember, the antenna system should always present an SWR of 2:1 or less for proper operation.**

USING THE IAMBIC KEYER

The PC-9000 has a built-in iambic keyer which can be used in conjunction with a paddle for sending CW. The paddle requires a 3.5 mm stereo type phone plug on its cable to mate with the paddle jack on the rear panel of the Pc-9000. Refer to the connector drawings for proper wiring of the cable to the paddle. The speed of the keyer can be set by pressing the KEY SPD button on the Front Panel. The display should change and the bottom line should look like:

KEYSPEED 25 WPM

The speed can now be raised or lowered by turning the Main Tuning knob CW or CCW. When the desired speed is set press the KEY SPD button again and the Frequency display will re-appear. The keyer will now operate at the new speed that was set.

Since this keyer is iambic an iambic type paddle is recommended for the most efficient use of the keyer. The iambic function allows sequences of alternate dots and dashes to be sent by "squeezing" both the dot and dash paddles simultaneously. If the dot paddle was pressed first in the squeezing motion the string will be dot-dash-dot dash-dot-dash....etc. If the dash paddle was pressed first the string will be dash-dot-dash-dot.....etc until the paddles are released.

USING A STRAIGHT KEY WITH THE PC-9000

Since there is no separate straight key input on the PC-9000, the transmitter must be keyed via the PTT (Push to Talk) line on the microphone connector if a straight key is to be used. A separate connector may be wired up according to the Microphone wiring diagram at the end of this manual to ground the PTT line with the straight key.

USING AN EXTERNAL KEYBOARD WITH THE PC-9000

When an external keyboard has been plugged into the PC-9000 it can be used to send CW without the use of a paddle or straight key. To invoke the keyboard send mode press the Alt-F1 keys simultaneously while in the CW mode. The bottom line if the display will blank and a blinking cursor will appear to the far left of the line. Typing a character on the keyboard will immediately

cause it to key the transmitter and send its character in Morse code. As characters are typed they will be sent or put into the keyboard buffer (16 characters long) if they are typed in faster than the keyspeed is set for sending them out. If the buffer fills (i.e. reaches the end of the line on the display) it will ignore the next character pressed and change the sidetone beep to a low tone indicating a buffer full condition. If this occurs just wait for a character or two to be sent then type in more characters. If an error occurs when you are typing, the backspace key can be used to erase the character. A new character can then be typed in to replace it. If you wish to pause the transmission of characters that are on the display simply press the **Esc** key. This can be useful if running with another station using break-in operation. To resume transmission of the current buffer press the **Enter** key. If you wish to erase the remain characters in the buffer after a pause press the **Esc** key once again. You can also buffer up some characters to send at a later time by pressing the **Esc** key while the buffer is empty. You can now type in up to 15 characters on the display. When you wish to send them just press the **Enter** key and the buffer will be sent. The speed that the characters are sent is controlled by the Keyer Speed (See previous section on the Iambic Keyer) function as in the Iambic Keyer. In this way you can switch between the paddle and the keyboard and always be sending at exactly the same speed.

Some of the keys are used for special CW characters. These are listed below:

From the Keypad Area (gray keys)

"-" = AR (an "@" will be displayed)
"+" = SK (a "+" will be displayed)
"\" = AS (a "*" will be displayed)
"SHIFT-DEL" = error code (8 dots) (a "!" will be displayed)

The external keyboard can also be used to move the frequency of the radio by using the right and left arrow grey keys on the keyboard. The frequency will move according to the currently selected tuning step size.
The F8 Key can also be pressed to change bands.

RESETTING THE PC-9000

If the software on the PC-9000 crashes or if a new version of software is installed, it may be necessary to reset the software to its default state. This can be done by turning the power off. Hold the "DECODE" button in. Turn the power on while holding the "DECODE" button pressed. You will hear the relays click twice. Release the "DECODE" button and allow the unit to finish its power up sequence. All default values will now be loaded into the memories and the software will be reset.

SPECIFICATIONS

Standard Features Include:

- SSB and CW on 160 thru 6 Meter Ham Bands
- Four selectable tuning rates: 10 Hz, 100 Hz, 1 kHz and 10 kHz step size
- Highly effective Impulse Noise Blanker
- Frequency Lock Button
- Low noise, Highly Selective receiver design with custom design 2.4 kHz crystal filter and a variable (350 Hz to 2800 Hz) SCAF (Switched Capacitor Audio Filter) in the audio AGC stage.
- Receiver MDS: -128 dbm Third Order Dynamic Range: 92 db IP3: +10db
- In Band RIT/SPLIT Capability
- Amplifier Control Jack
- Nominal 5 Watt or 40 Watt Transmitter output power (20 W on 6 Meters)
- Built-in Iambic keyer and Keyboard Interface for CW
- Fast/Slow AGC Selection
- Rugged, all aluminum construction - PC Boards are commercial quality G-10 epoxy glass
- Compact size - 8in W x 2.7in H x 7.5in D
- Weight: 4 lbs

Power Consumption:

Receive: 1.5 Amps
TX (40W): 8 Amps (nominal)
TX (5W) : 3 Amps (nominal)
Requires a 13.8 VDC Regulated Power Source (11.5 VDC to 14.5 VDC operation guaranteed - slightly lower output at voltage less than 13.8 VDC)

Frequency Stability: +/- 4 ppm

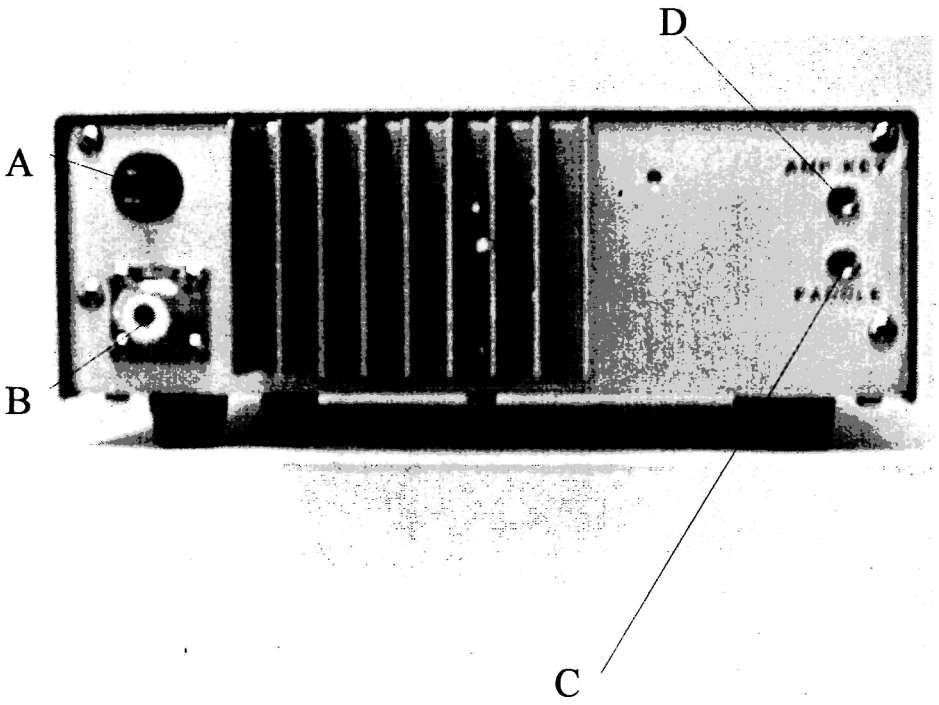
FRONT PANEL LAYOUT

FRONT PANEL CONTROLS

A	S-Meter / Relative Output Power Meter
B	Keyer Speed Setup Switch
C	Microphone Connector
D	FM Squelch / Decode Sensitivity Control
E	Audio Output Jack
F	TX Key Switch (MOX)
G	SCF (Switched Capacitor Filter) Cutoff Frequency Control
H	Noise Blanker (NB) ON/OFF Switch
I	RIT (Receiver Incremental Tuning) Select Switch
J	SPLIT Mode Select Switch
K	Power ON/OFF / Volume (AF Gain) Control
L	High / Low Output Power Select Switch
M	Frequency Tuning Rate Select Switch
N	Frequency Tune LOCK Select Switch
O	Main Tuning Knob
P	MODE Select Switch
Q	BAND Select Switch

R LCD Display
S DECODE Function ON/OFF Switch
T AGC (Automatic Gain Control) FAST/SLOW Select Switch

REAR PANEL LAYOUT

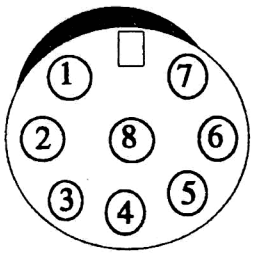


A - DC Power Plug
B - Antenna Connector
C - Paddle Jack
D - Amplifier Key Jack

Paddle Jack Requires a 3.5 mm Stereo Phone Jack - connect as follows:

Tip - DASH
Ring - GND
Ring 2 - DOT

Microphone Connector: **This is a standard 8 pin Microphone connector wired as shown.**



- **Pin 1: N/C**
- **Pin 2: N/C**
- **Pin 3: N/C**
- **Pin 4: N/C**
- **Pin 5: GND**
- **Pin 6: PTT**
- **Pin 7: Shield (GND)**
- **Pin 8: Microphone Input**

PATCOMM CORPORATION
FLOWERFIELD M100
ST. JAMES, NEW YORK 11780

LIMITED WARRANTY

Warranty Terms:

Subject to the Limitations of Warranty and the Warranty Procedures described below, PATCOMM CORPORATION hereby warrants this product to be free of defects in materials and workmanship in normal use for a period of twelve (12) months (the " Warranty Period") from the date of the original purchase at retail (the "Limited Warranty").

Limitations of Warranty:

A. PATCOMM CORPORATION is not liable for any express warranties except the Limited Warranty described above.

B. The Limited Warranty extends only to the original retail purchaser, and shall not be valid or enforceable unless such original purchaser fully completes, signs and mails to PATCOMM CORPORATION, within ten (10) days from the date of such original purchase at retail, the Owner's Warranty Registration Card included with this product.

C. The Limited Warranty shall be limited to repair or replacement of any materials found to be defective, any servicing or adjustment of the product which PATCOMM CORPORATION believes is necessary, or replacement of the product should such repair, servicing, or adjustment be deemed by PATCOMM CORPORATION, to be ineffective. The repair or replacement of defective materials, and the servicing, adjustment, or replacement of the product, under the terms of this warranty, shall be performed free of charge by PATCOMM CORPORATION, or by an authorized PATCOMM CORPORATION Amateur Products Dealer.

D. Any tampering with, misuse or unauthorized modifications of, or damage (for any reason) to this product shall relieve PATCOMM CORPORATION from any further obligations under this Limited Warranty.

E. The Limited Warranty applies only to the product as it existed at the time of the original purchase by the original purchaser, and shall not preclude PATCOMM CORPORATION from later making any changes in design, adding to, or otherwise improving subsequent versions of this product, or impose upon PATCOMM CORPORATION any obligation to modify or alter this product to conform to such changes, additions, or improvements.

F. PATCOMM CORPORATION assumes no responsibility for any consequential damages caused by, or arising out of, any such defect in materials or workmanship.

G. TO THE FULLEST EXTENT PERMITTED BY LAW, PATCOMM CORPORATION SHALL NOT BE RESPONSIBLE FOR ANY IMPLIED WARRANTY WITH RESPECT TO THIS PRODUCT.

H. If the original retail purchaser timely complies with the Warranty Procedures described below and PATCOMM CORPORATION elects to send the purchaser a replacement product rather than repair the product returned to PATCOMM CORPORATION, (the "original product"), then the Limited Warranty shall apply to the replacement product only for the remainder of the original product's Warranty Period.

I. Warranty statures vary from state to state, so some of the above limitations may not apply to you.

Warranty Procedures:

A. To obtain the benefits provided by this Limited Warranty, the original purchaser at retail must comply with the following procedures:

1. As a first step in seeking warranty assistance, and without expense to PATCOMM CORPORATION, contact the authorized PATCOMM CORPORATION Amateur Products Dealer from whom this product was originally purchased (the "Dealer") and describe fully the defect for which the warranty assistance is sought. The Dealer may be able to advise you regarding field adjustments or procedure changes which may resolve the difficulty.

2. If the dealer's suggestions do not remedy the product's problems, then without expense to PATCOMM CORPORATION, return this product to the dealer or to PATCOMM CORPORATION, 7 Flowerfield M100, St. James, New York 11780. PATCOMM CORPORATION assumes no responsibility for any PATCOMM CORPORATION product or other items, sent to such dealer or PATCOMM CORPORATION not in accordance with PATCOMM CORPORATION instructions.

3. Include with the PATCOMM CORPORATION product being returned for warranty service a copy of the original purchase receipt, without which warranty service will not be provided.

B. Upon receipt by PATCOMM CORPORATION or the dealer of this product returned in accordance with the above-described Warranty Procedures, all reasonable efforts will be expended by PATCOMM CORPORATION to cause this product to conform to its specifications. PATCOMM CORPORATION will return the repaired product (or a replacement product) free of charge to such purchaser, with the decision as to whether to repair or replace this product to be made at the sole desecration of PATCOMM CORPORATION.

MODEL #_____ SERIAL #_____