K5MO

PARAGON SOFTWARE ENHANCEMENT KIT

By

Giehl Electronics

3-1 INTRODUCTION

Than you for purchasing the copyrighted **Paragon Software Enhancement Kit** by **Giehl Electronics, P.O. Box 18335, Cincinnati, Ohio 45218**. Included with this package is the Giehl Electronics ROM chip and the documentation, which includes the introduction, new features, installation, technical information, and detailed operating instructions. All of the documentation is designed to be inserted into your Paragon owner's manual.

3-2 NEW FEATURES

The Giehl Electronics software for the Ten Tec Paragon provides many new features that greatly enhance the operation of the radio. The enhancements are described below.

Ham bands can be accessed by either the ham **UP** and ham **DOWN** keys or by 1 through 0 on the keypad.

Band registers have been added to store the last VFO frequency, mode, and filter for all nine ham bands.

The latest memory channel number accessed is retained for later use.

The VFO tuning rate resolution is user selectable.

Each VFO has an offset of +/- 99.99 kHz and simultaneous receive and transmit offsets are possible.

A 10-minute timer can be turned on to remind the operator to identify.

A symbol appears to the right of the 10 Hz display when transmitting.

Memory Tune and Memory Scan can be operated without affecting the VFO.

The Date and Clock set use the VFO knob to make changes.

The clock displays hours, minutes, and seconds.

The Memory scan routine uses the VFO knob to set the speed of the scan.

The voice function has an enhanced mode to provide additional information to the operator.

The frequency display blanks leading zeroes and decimal points. Zero is now displayed without the slash.

Many functions such as **VOICE** can now be activated while transmitting.

The **UP** and **DOWN** keys can have an increment value selected by the operator of 100 kHz and 1 MHz or 10 kHz and 5 kHz. The 5 kHz increment is useful for short wave listening, and the 10 kHz increment is useful for AM Broadcast reception.

Two additional memory channels have been added to create a total of 64 memory channels *00 to 63) plus the Scratch Pad.

CHAPTER 3

INSTALLATION AND TECHNICAL INFORMATION

3-3 INSTALLATION

Take the top off of the Paragon and examine the ROM RAM RTC board. Note the orientation of the ROM memory chip, then remove it from the socket using a screwdriver or other tool. Examine the Giehl Electronics ROM chip and make sure the pins are straight and at a 90 degree angle from the chip body. **CAREFULLY** insert the new chip in the ROM socket with the notch down.

IMPORTANT: Apply power to the radio and press the **RESET** switch on the side of the radio. Note that pressing the switch all the way in may require a small pointed object. Verify that VFO A is now on at 10 MHz in LSB mode with the 2.4 kHz filter.

3-4 TECHNICAL INFORMATION

3-4.1 Band Registers and Reset

There is one band register for each of the nine ham bands. When either VFO is within a valid ham band, the band registers will save the frequency, mode, and filter for later access when changing bands.

Operating in Memory Scan or Memory Tune does not affect the band registers.

When the RESET switch is pressed, all of the band registers and both VFO's are initialized to LSB mode and the 2.4 kHz filter. Each band register is also initialized to the beginning of the band, which is 1800 kHz for 160 meters, 3500 kHz for 80 meters, 7000 kHz for 40 meters, 10100 kHz for 30 meters, 14000 kHz for 20 meters, 18060 kHz for 17 meters, 21000 kHz for 15 meters, 24890 kHz for 12 meters, and 28000 kHz for 10 meters. VFO A and B are initialized for 10 MHz.

3-4.2 Full Break in CW

Full break in CW is possible up to 80 WPM. There is a 15 ms. keying delay, which changes to 60 ms. when split or the offsets are on. This delay is required to allow the VCO to stabilize before transmitting RF.

Note that the optimum CW waveshape is preserved because the delay is applied equally to the CW key line closing and opening.

When operating at high speeds it is best to use the Paragon CW monitor rather than listening to the transmitted signal because of the delay.

3-4.3 VFO Tuning Rate

The AM and FM modes have a 17 kHz per revolution tuning rate that is not affected by the **FAST** key, USB, LSB, CW, and RTTY modes have a tuning rate that is set by the operator. This rate is doubled if the **FAST** key is on.

All modes have their tuning rates multiplied by four when turning the main tuning knob quickly.

3-4.4 Transmit keys

These key functions are allowed during transmit and will beep: **TUNE**, **LSB**, **USB**, **FM**, **6.0**, **2.4**, **1.8**, **.50**, **.25**, **A=B**, **A/B**, **FAST**, **VOICE**, **LCK**, **CLEAR**, **RX OFF**, **TX OFF**., and **DISP**.

These key functions are not allowed during transmit and will not beep: **CW**, **AM**, **SPOT**, **SPLIT**, **0** to **9**, '.', **ENTER**, **SHIFT**, **ML**, **MLC**, **STO**, **RCL**, **MT**, **MS**, **UP**, and **DOWN**.

CHAPTER 3

DETAILED OPERATION INSTRUCTIONS

3-5.1 Overview

This section details the operation of the various commands available to the operator. Commands shown with an asterisk (*) are only available when operating with VFO A or B.

3-5.2 Mode Selection

Modes are selected by pressing the **CW**, **USB**, **LSB**, **AM**, or **FM** keys. **RTTY** mode is selected by pressing **SHIFT CW***. When **FM** mode is selected, the 6.0 kHz filter is chosen for correct S-meter operation, but the bandwidth is actually 15 kHz.

3-5.3 Filter Selection

Filters are selected by pressing the **6.0**, **2.4**, **1.8**, **.50**, or **.25** keys. Filters are independent of the selected mode.

3-5.4 VFO Operation*

Press **A/B** to swap between A or B as the current VFO.

Press **A=B** to copy the frequency, mode, filter, offset keys, and offset value from the current VFO to the other VFO.

Press **SPLIT** to enable or disable swapping VFO's whenever a receive or transmit transition takes place. Any combination of offsets can be active with **SPLIT**.

Press and hold **SPOT** to listen on the frequency that the transmitter will operate on as determined by any combination of **SPLIT** and offsets. Note that while **SPOT** is on, the tuning knob can adjust the transmit frequency.

3-5.5 Receive and Transmit Offsets*

The receive and transmit offsets are activated by pressing the **RX OFF**, or **TX OFF** keys. Both offsets can be turned on at the same time. Whenever either offset is on, the main tuning knob will only affect the offset frequency, which has a range of +/- 99.99 kHz.

When the receive offset is active, reception occurs on the frequency determined by the main frequency combined with the offset.

When the transmit offset is active, transmission occurs on the frequency determined by the main frequency combined with the offset.

Note that there are independent offsets for VFO A and B, and that the offset values remain as they were last set unless cleared.

3-5.6 Offset Clear*

Press CLEAR to clear the offset for the current VFO A or B.

3-5.7 Direct Frequency Entry*

Press **ENTER**. The first one of two digits entered determine the MHz frequency. Then press the decimal point and enter the remainder of the frequency.

If the desired frequency is less than a MHz, press the decimal point first.

If **ENTER** is pressed, any remaining frequency digits will be zero.

3-5.8 Tune Operation

Press **TUNE** to enable or disable the transmitter tune. The beep tone will stay on as long as **TUNE** is enabled. Tune is disabled if the frequency is invalid of if the VFO knob is moved to an invalid frequency.

If the transmit offset is on, the tune carrier will appear on the frequency determined by the offset combined with the main frequency.
Tune operation is disabled when **SPLIT** is on.

3-5.9 Display Operation
Press **DISP** to switch the display between Date, Time, and Tag.

3-5.10 10 Hz Display*
Press **SHIFT 10 Hz** to enable or disable the display of the 10 Hz digit on the main frequency display.

3-5.11 Lock Operation*
Press **LCK** to enable or disable the main tuning knob lock for the VFO. Note that there are locks for each VFO.

3-5.12 Voice Operation
Press **VOICE** to activate the voice readout. The operator will hear the frequency, and optionally, the mode and VFO if the extended voice is enabled.

3-5.13 Extended Voice Operation*
Press **SHIFT VOICE** to enable or disable the extended voice.
When the extended voice is enabled, the current frequency, mode, and VFO will be heard.
If the mode is changed the new mode will be heard.
If **A/B** is pressed the new VFO will be heard.
When the extended voice is disabled, the frequency will be heard without the mode or VFO.

3-5.14 Fast Operation*
Press FAST to enable or disable the **FAST** LED which affects the VFO tuning and the increment **Up** and **Down** rate.

3-5.15 UP and DOWN Operation*
Press **UP** and **DOWN** (arrow keys) to move frequency as determined by the **FAST** LED and the increment value. If the key is held in the increment will automatically repeat.
If the increment value is set *high* and **FAST** is on the increment is 1 MHz, or 100 kHz if **FAST** is off.
If the increment value is set *low* and **FAST** is on the increment is 10 kHz, or 5 kHz if **FAST** is off.

3-5.16 Up/Down Increment High/Low*
Press **SHIFT .** (period) to switch the increment between high and low.

3-5.17 Band Selection*
Band selection is done by pressing **1** through **9** to select the 160 through 10 meter ham band, or by pressing **SHIFT HBU** or **SHIFT HBD** to move up or down a ham band. If **HBU** or **HBD** is held in the band changing will repeat.

3-5.18 VFO Tuning Rate Set*
The VFO tuning rate is preset to 1.70 kHz per revolution whenever the radio **RESET** switch is pressed.
To view or change then tuning rate, press **SHIFT RATE**. Turn the VFO knob to select the tuning rate or **1.02**, **1.28**, **1.70**, **2.56**, or **5.12** kHz per knob revolution. Then press **ENTER**.

3-5.19 10 Minute ID Timer
Press **SHIFT 0** (zero) to enable or disable the 10 minute timer. If the timer is enabled, a double beep will be heard. If the timer is disabled, a single beep will be heard.
If the 10 minute timer is enabled a double beep will be heard every ten minutes when the right three digits of the clock are 0:00.

3-5/20 Software Version*

Press **SHIFT**. The press and hold **ENTER**. The software version "**GIEHL ELECTRONICS *XX***" will be displayed, where *XX* is the version number.

3-5.21 Memory Overview

The Paragon has 64 memory channels ranging from **00** to **63**. There is also a *scratch pad memory* which is designed for quick access.

All memory channels store the frequency, mode, filter, and *tag*.

If a valid memory channel is recalled by **Memory Recall (RCL)**, **Memory Tune (MT)**, or **Memory Scan (MS)** the memory channel number will be displayed to the right of the frequency until the VFO knob is turned.

3-5.22 Memory Store*

Press **STO** to save the VFO frequency, mode, and filter into a memory channel. Note that two underscores under the **MEM** LED that prompt the operator to do one of the following:

1. Enter **00** to **63** for the channel number;
2. Press **ENTER** for the first available clear channel starting at **00**;
3. Press **CLEAR** to return to the VFO;
4. Press **STO** for the *scratch pad.*

If there are no clear memory channels, ***FULL*** will be displayed until the VFO knob is turned.

Whenever storing into the *scratch pad* memory, the tag will be obtained from what is stored in channel **00** or blanks if channel **00** is empty.

Note that storing into an existing channel will overwrite the frequency, mode, and filter, but not necessarily the tag.

The operator is then prompted by the underscores to enter *tag* data. Up to 7 alphanumeric characters are entered, press **ENTER** to terminate the *tag* and substitute blanks for any underscore characters.

If **CLEAR** is pressed the previous tag will be used if it exists, blanks if it does not.

3-5.23 Memory Recall*

Press **RCL**. The operator is now prompted to do one of the following:

1. Enter **00** to **63** to recall a channel;
2. Press **RCL** to recall the *scratch pad*;
3. Press **CLEAR** to return to the VFO;
4. Press **ENTER** to recall the last accessed memory channel.

If a valid channel is recalled, the VFO is loaded with the frequency, mode, filter, and *tag*.

If the channel is empty, the VFO is restored.

3-5.24 Memory Tune*

Press **MT**. The last accessed memory channel will be displayed. Turn the VFO knob to change memory channels or press **00** to **63** to recall a particular channel. If a recalled channel does not exist, the next highest channel will be displayed.

Transmit is allowed during Memory Tune. The **ML**, **MLC**, **SHIFT GL**, **SHIFT GLC**, **SHIFT MC**, **SHIFT** b, **VOICE**, **TUNE**, **DISP**, **CW**, **USB**, **LSB**, **AM**, **FM**, **6.0**, **2.4**, **1.9**. **.50**, and **.25** keys are active.

The mode and filter can be temporarily changed without affecting the memory channel.

Press **CLEAR** or **MT** to exit Memory Tune with no changes to the VFO.

Press **ENTER** to load the displayed memory channel frequency, mode, filter, and *tag* into the VFO. The transmit and receive offsets will be turned off if they were on, but the offset value will be preserved.

If no valid memory channel exists when entering Memory Tune, the VFO is restored.

Changing memory channels is inhibited while transmitting.

3-5.25 Memory Scan*

Press **MS**. Memory Scan starts at the current memory channel.

Press **CLEAR** or **MS** to stop scanning and restore the VFO.

Press **ENTER** to load the memory channel frequency, mode, filter and tag into the VFO.

Change the scan rate and direction by turning the tuning knob clockwise to scan up, and counter clockwise to scan down.

The scan hold time ranges from 200 ms. to a maximum of 3.2 seconds.

If no valid memory channels exist of if all memory channels are locked out, the VFO will be restored.

3-5.26 Memory Channel Clear

Press **SHIFT MC** to clear a memory channel. Note that the key is ignored with no beep if the memory channel number is not displayed.

3-5.27 Memory Lock Operation

Press **ML** to lock the currently displayed memory channel. Note that the key is ignored with no beep if the memory channel number is not displayed.

3-5.28 Memory Lock Clear Operation

Press **MLC** to clear the lock of the currently displayed memory channel. Note that the key is ignored with no beep if the memory channel number is not displayed.

3-5.29 Global Lock Operation

Press **SHIFT GL** to lock all memory channels.

3-5.30 Global Lock Clear Operation

Press **SHIFT GLC** to clear the lock on all memory channels.

3-5.31 Time Set*

Press the **DISP** key until the time is displayed. Press **SHIFT SET**. Turn the VFO knob until the proper time is displayed, then press **ENTER** to start the clock. Note that the clock uses a 24 hour format.

3-5.32 Date Set*

Press the **DISP** key until the date is displayed. Press **SHIFT SET**. Turn the VFO knob until the proper date is displayed. Press **ENTER** to set the new date, or **CLEAR** to restore the original date.

3-5.33 Tag Overview

When the **TAG** is selected and the last accessed memory channel number is visible to the right of the frequency, the tag from that memory channel will be displayed.

If no memory channel number is displayed memory channel **00** will supply the default tag.

3-5.34 Tag Set*

The operator can modify the tag for any valid memory channel without affecting the mode, filter, or frequency of the memory channel. In order to do this, either VFO must be used with the memory channel number displayed to the right of the frequency as described in the *Memory Overview*.

Press the **DISP** key until the Tag is displayed. Press **SHIFT SET.**

The operator is then prompted by the underscores to enter tag data. Up to 7 alphanumeric characters can be entered. If less than 7 characters are entered, press **ENTER** to terminate the tag and substitute blanks for any underscore characters.

If **CLEAR** is entered, the previous tag will be used if it exists, blanks if it does not.