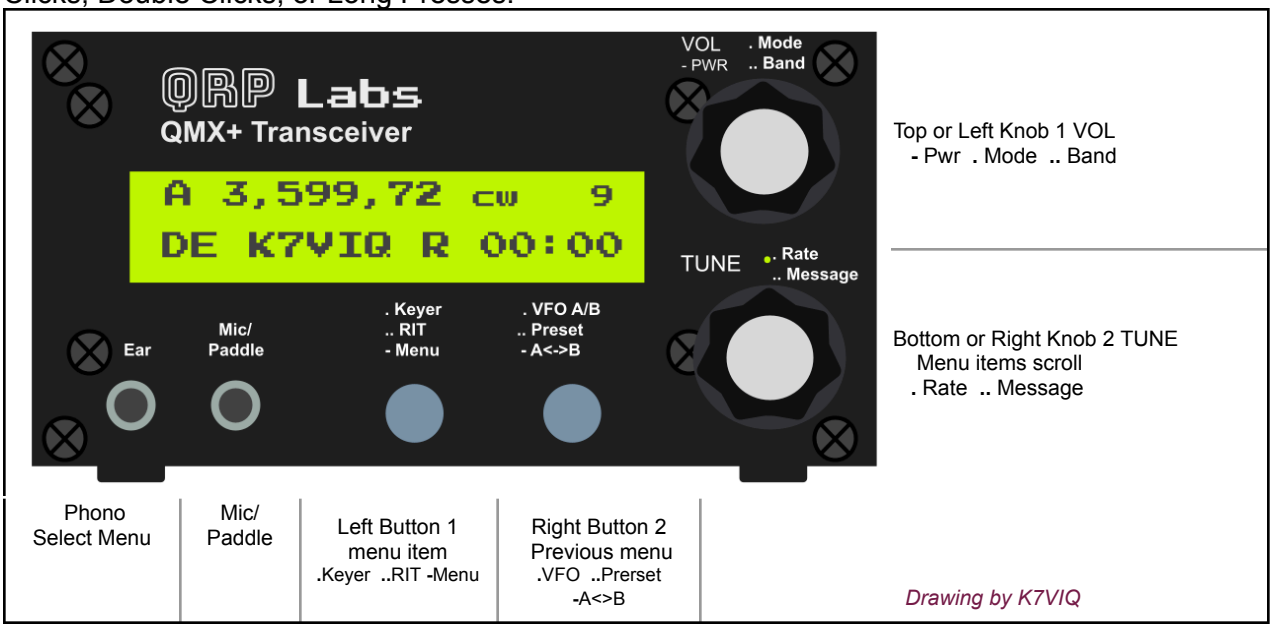
QMX Menu Reference

QMX Menu Reference

See New QMX Version Introduction Information for Firmware 1_02_000

Information about the new Menu organization, Microphone, and SSB settings.

There are 4 controls on the front of the QMX. 2 Buttons and two Knobs. The section for each control has the action for what each control does. The 4 controls are operated with brief Single Clicks, Double Clicks, or Long Presses.



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Edited to match new Firmware: 1_01_003 5/5/25

New updated Operations Manual updated by Hans:
https://qrp-labs.com/images/qmx/manuals/operation_1_02_000.pdf
https://qrp-labs.com/qmxp/ssbbeta.html Very interesting reading.

~ Connections ~

The QMX transceiver has key ports on its Front/Rear or side panels:

- **Phono (Paddle Port)**: 3.5mm stereo jack for CW paddle or straight key. Also supports GPS input (QMX+ internal GPS powered internally; external GPS may need 5V supply).
- **Mic/PTT**: 3.5mm jack for external microphone and Push-To-Talk (PTT) for SSB.
- **USB**: USB-C port for PC connectivity, CAT control, firmware updates, and digital modes.
- **Antenna**: BNC connector for 50-ohm antenna (160m–6m).
- **Power**: 2.1mm barrel connector (center positive) for either the 9V or 12V DC. Max 9V or 12V to avoid damage on your build.

~ Controls ~

Knob 1 (On Top or Left depending on model)

○**VOL** Volume - Turn
. Mode CW, Digital, SSB - Toggles selects CW, Digital and SSB. (SSB is the newest firmware option)
.. Band Double click through all bands 1-12 (Full 160m to 6m Ham band coverage)
- ON/OFF Long Press toggle

Knob 2 (On Bottom or Right depending on model)

○**TUNE** Turn to **Tune Frequency** Up / Down.
. Rate step **.** Single Click - Turn and cursor adjusts to 1, 10s, 100s, 1000s places.
.. Message **..** Double Click - Turn to select pre-programed message 1-12 Click again to send.
In menu mode, Turn “TUNE” to see items, Click Button 1 to Select, Button 2 to Exit.)

1st Left Button - Select

. Key speed . Single Click - Turn the Tune knob (Knob 2) to set key speed, then Click the Exit button (Button 2) to save
.. RIT **.. Double Click** - Receiver Incremental Tuning allows the receive frequency to be adjusted while the displayed transmit frequency remains the same. Useful if the other station is off-tune, drifting; working DX stations who may be listening on a different frequency some kHz away from their transmit frequency. This radio transceiver allows RIT values from -9,999Hz to +9,999Hz
- Menu **- Long Press for ~ Menu ~ Items Below** Then Turn “TUNE” to see Menu items - Click Button 1 to Select a Menu Item, Button 2 to Exit.

Right Button 2 - Exit

. VFO A&B **.** Single Click - Turn **TUNE to choose** between VFO’s shown on display (A, B or A & B).
.. Preset **..** Double Click - Turn **TUNE** dial **to choose Preset Freq 1-16.**
- A<->B **-** Long Press **toggle VFO A <> B** to top as A.
(Click Button 2 to back out/make a choice. Labeled VFO A/B)

~ Menu ~

Access the menu, **long-press button 1** and then **turn the tune dial**. Short-click **button 1 to select** a menu item. Turn the tune dial to navigate settings. Some menu items have sub-menus that can be accessed by pressing **button 1** again and navigating with the tune dial. **Press button 2 select** and set an option and return to previous menu/s to back out.

~ Audio

AGC Settings – AGC On / Threshold S 8 / Slope dB per dB 80 / Noise Filter 10 / Hang Time 80 / Smooth Samples 50 - Recovery dB/s 10 / Sample Blocks 2 / S9 sounds like S 0 / AGC display ON
AGC display per bar 3
Volume Step 0.25 / 0.5 / 1 / 2 / 4 dB - increase / decrease receiver vol. per step
Audio Attenuator 0 / 20 / 40 / 60 / 80 / 100dB – when minimum volume too loud
Mute at min. volume YES - mutes audio at minimum volume

~ CW

CW Keyer - *Sub Menu - press Button 1 again and button 2 to get back to the main menu.*
Keyer mode (Iambic A / Iambic B / Ultimatic / Straight)
Keyer swap - NO -paddles left/right hand
Keyer weight - (500 = Normal 1:3)
Auto Space - ON/OFF The CW characters is forced to be 3 dit lengths
Semi QSK - Auto, Contest, Custom dits, Custom decidits, Custom ms, OFF
Custom Semi QSK - 000 - *adjust delay between xmitted elements (dits and decidits). Setting represents lengths of dits and tenths of dit lengths (decidits) or deci-dits. 75 equals 7.5 dit lengths of delay.*
Practice mode ON/OFF - *P displays after Freq. (Bk On/Off)*
Strght mode - Both If you are using a mono 3.5mm plug with your straight key, then set this configuration to “Tip” so that the ring connection (available only on stereo plugs) is ignored.
GPS protection - ENABLED If QMX detects a GPS receiver has been plugged in so that the radio is not continuously keyed by the incoming GPS serial data

CW Decoder - *Sub Menu - press Button 1 again and button 2 to get back to the main menu.*
Noise blank - 10
Speed Average - 07
Amplitude average - 60
Enable Rx - decode YES/NO
Enable Tx - decode - YES/NO
Enable edit - YES/NO - Enable CW decoding while editing of messages stored.
Prefer prosigns - YES
SK or VA - SK/VA - *Rarely written as VA Prosigns for "end of transmission" or "end of contact"*
CW passband - 300 - None
CW center - 700
Auto-offset/tone - YES, NO
CW offset - 700
Sidetone Freq. - 700
Sidetone volume - 60
Sidetone abs/rel - Absolute, Relative
CW-R OFF, ON
Choose filters - 50, 100, 200, 300 ENABLED, 400 - Choose Filters *(by combining 8 filters separate and together, 54 filters are available)*

~ Digi

with defaults - *Turn "TUNE" to see items, Click Button 1 to Select, Button 2 to Exit.*
VOX - OFF/ON
Rise threshold - 80
Fall threshold - 60
Minimum cycles - 1 - (0-99)
Minimum samples - 480
Discard samples - 1 - (0-99)
TX shift threshold - 500
Sideband USB

~ SSB

USB LSB - *Turn "TUNE" to see items, Click Button 1 to Select, Button 2 to Exit. See SSB Beta Introduction*
Transmit EQ - Use EQ YES / Global gain 0 / Bass Freq. 300 / Bass Gain 0 / Bass Slope 0.7 / Treble Freq. 2000 Treble Gain +7 / Treble slope 0.9.
Mic AGC - AGC ON YES / Max gain 10 / Hold time 10 Recovery 2.
Filter RX - 2500 - The filter bandwidth used for SSB reception
Filter TX - 2500 - The filter bandwidth used for SSB transmission
Input - Ext. mic/USB/Two-tone - Ext-mic / built-in USB receiving audio from PC / 2-tone intermod test sig. Gen.
USB gain - 255
Mic. gain - 50
Mic. compression - 0 - gain increases avg. to peak power of SSB xmit, giving extra punch in weak conditions.
Mic. noise cancel - ON/OFF - On recommended
Mic. noise gate - Noise gate ON / Threshold / 70 / Samples 100 / Attack slope 10
VOX - OFF / Vox threshold 20 / VOX hold time 10
Drive level - 900 - Specifies the maximum drive level to the amplitude modulator
CESSB - ON/OFF - Controlled Envelope removes amplitude envelope overshoots which occur in SSB xmitters
Predistortion - *Click Left Button 1 again for sub-menu, Button 2 to back 2 main menu.*
  Phase predistort - ON/OFF
  Ample.PD threshold - 70
  Ampl. predistort - ON/OFF
  PTT to TX delay - 0
Transmit EQ - *Click Left Button 1 again for sub-menu, Button 2 to back 2 main menu.*
  Use EQ - NO
  Global gain - -20
  Bass Freq. - 300
  BassGain - 0
  Bass Slope - 0.7
  Treble Freq. - 2.000
  Treble Gain - 0
  Treble Slope - 0.9

~ Presets

16 Frequency presets -*Turn "TUNE" to see presets, Click* ***Button 1 to Select****,* ***TUNE to preset desired****,* ***Button 1 to select****, Tune to change preset,* ***Button 2*** *to Save and Back up 1 menu level.*

~ Messages

14 items - 12 Messages *"TUNE" to see Menu items, Click Button 1 to Select, "TUNE" to see Message 1-14, Button 2 to Exit.)*
Messages 1-12 message memories *(last two can be used for custom splash screen)*
There are 5 Edit characters: Right arrow=shift mst right, Left arrow=delete char under cursor, Filled left arrow=delete message, Empty square=save message, Return arrow=save message from cursor left
Interval of message sent.
Repeat times of the message.

~ VFO

VFO Modes - A - ENABLE/DISABLE VFO A, B, and Split
VFO tune rates - 10MHz YES / 1MHz YES / 100kHz YES / 10kHz YES / 1kHz YES / 500Hz YES / 100Hz YES / 10Hz YES
RIT tune rates - 1kHz NO / 500Hz NO / 100Hz NO / 10Hz NO / 1HZ NO

~ Beacon

Mode - OFF, CW, WSPR, FSKCW
Frequency of beacon - 0
Frame - 0 minutes
Start - 0 minutes past the hour
WSPR call - (Callsign)
WSPR location - (Maidenhead Grid Location)
WSPR power - 37
Set time - 00:00 - Set manually on powerup w/ QMX /+ with no GPS or Save with QMX+ w/ GPS

~ Display/controls

Battery display - *Click Left Button 1 again for sub-menu*
  Enable - OFF / Icon / Voltage - *Turn "TUNE" to select option - Right Button 2 to Select & go back*
  Batt. full - 12,000
  Batt. step - 1,000
Pwr/SWR display - *Click Left Button 1 again for sub-menu*
  Pwr/SWR display ON
  Update interval - 99 - *Turn "TUNE" to select option - Right Button 2 to Select & go back.*
  Controls system update frequency (99 ms default) for display and processing, balancing responsiveness and efficiency.
  TX->RX hang time - 50 - Sets the delay (50 ms default) between ending transmission and activating the receiver, ensuring smooth TX/RX switching.
S-meter display - *Click Left Button 1 again for sub menu menu*
  S-meter - ON/OFF - *Turn "TUNE" to select option - Right Button 2 to Select & go back*
  Update interval - 50
  AGC display - ON/OFF
  AGC dB per bar - 3
Dbl. click - 300
Cursor blink - OFF/ON
Custom splash- NO - *(See Operations manual)*
Clock - OFF
Delim - **,** Comma / **.** Dot for European
Backlight - ON / OFF

~ Protection

See operations manual for usage. *Turn "TUNE" to see items, Click Button 1 to Select, Button 2 to Exit.*
SWR protection - ENABLED
SWR threshold - 3
TUNE % - 50
GPS protection - ENABLED
Supply voltage - Prevent TX
Min voltage - 7
Max voltage - 13

~ System config

See operation manual for config. usage. *Turn "TUNE" to see items, Button 1 to Select, Button 2 to Exit.*
Band version - *Displays the band version of your QMX*
TCXO frequency - 25.000.000
Band limits - ITU Region 2, Japan, None
RX outside band - OFF/ON
CAT timeout - ENABLED / DISABLED
CAT timeout(s) - 120
USB serial ports - 1
PTT as serial 3 - NO
IQ Mode - DISABLED - the raw I and Q channels from the ADC are fed to the USB sound card directly, without any demodulation. This is suitable for people wishing to experiment with using QMX as an SDR front end, with PC SDR software to demodulate I and Q channels.
Set time - 00:00
GPS source - Paddleport / QMX+ Internal
Real time clock - QMX RTC, Software,
Real time clock - Software, QMX+ RTC - Internal install a CR2032 coin cell battery
Advanced config - CAUTION! Danger! Proceed anyway? DO NOT DISABLE!!
DO NOT MEDDLE HERE! See operation manual if you decide to go further.

~ Hardware tests

Turn "TUNE" to see items, Click Button 1 to Select, Tune for submenu, Button 2 to Exit.
AF filter sweep
RF filter sweep
Image sweep
Tune SWR
LPF sweep
PA mod. Test
Test ADC I/O
SSB Calibration
Microphone test
Diagnostics
GPS viewer

~ Factory reset

Factory reset - Sure? Click Tune - Seconds away from doom.

~ Update firmware

Sure? Click Tune - See main operations manual

~ CW clarifications

~ CW

CW Keyer - *Sub Menu - press Button 1 again and button 2 to get back to the main menu.*
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Keyer swap - NO -paddles left/right hand
Keyer weight - (500 = Normal 1:3)
Auto Space - ON/OFF The CW characters is forced to be 3 dit lengths
Semi QSK - Auto, Contest, Custom dits, Custom deci-dits, Custom ms, OFF
Custom Semi QSK - 000 - *adjust delay between xmitted elements (dits and decidits). Setting represents lengths of dits and tenths of dit lengths (decidits) or deci-dits. 75 equals 7.5 dit lengths of delay.*
Practice mode ON/OFF - *P displays after Freq. (Bk On/Off)*
Strght mode - Both If you are using a mono 3.5mm plug with your straight key, then set this configuration to “Tip” so that the ring connection (available only on stereo plugs) is ignored.

GPS protection **-** ENABLED If QMX detects a GPS receiver has been plugged in so that the radio is not continuously keyed by the incoming GPS serial data

CW Decoder - *Sub Menu - press Button 1 again and button 2 to get back to the main menu.*
Noise blank - 10
Speed Average - 07
Amplitude average - 60
Enable Rx - decode YES/NO
Enable Tx - decode - YES/NO
Enable edit - YES/NO - Enable CW decoding while editing of messages stored.
Prefer prosigns - YES
SK or VA - SK/VA - *Rarely written as VA Prosigns for "end of transmission" or "end of contact"*
CW passband - 300 - None
CW center - 700
Auto-offset/tone - YES, NO
CW offset - 700
Sidetone Freq. - 700
Sidetone volume - 60
Sidetone abs/rel - Absolute, Relative
CW-R OFF, ON
Choose filters - 50, 100, 200, 300 ENABLED, 400 - Choose Filters *(by combining 8 filters separate and together, 54 filters are available)*

\~ CW: Comprehensive Guide

This section delves into the CW (Morse Code) functionalities of the QMX, offering detailed control over keying, decoding, and various audio settings. Navigating within the CW menus is achieved through the radio's button interface.

CW Keyer - *Sub Menu: Access this submenu by pressing Button 1 again after initially entering the CW menu. To return to the main menu, press Button 2.*

This submenu provides extensive control over the integrated electronic keyer.

- **Keyer mode**
  - **Iambic A:** Generates alternating dits and dahs as long as both paddles are held. Releasing one paddle sends the opposite element until the paddle is fully released.
  - **Iambic B:** Similar to Iambic A, but completes the current element being sent when

a paddle is released, even if the other paddle is still held.
    - **Ultimatic:** When both paddles are squeezed, it sends a continuous stream of alternating dits and dahs. Releasing either paddle stops the stream, and the last element sent might be partial depending on the timing.
    - **Straight:** Disables the electronic keyer, allowing for manual keying using a straight key connected to the radio.
- **Keyer swap** - YES/NO: This setting allows you to reverse the function of the left and right paddles to accommodate your preferred keying style. Selecting "YES" will swap the dit and dah paddle assignments. The default setting is "NO," meaning the left paddle typically sends dits and the right paddle sends dahs (depending on your physical paddle wiring).
- **Keyer weight** - (500 = Normal 1:3): This parameter adjusts the ratio of the dit length to the dah length and the space between them. The value represents tenths of a millisecond. A setting of "500" corresponds to the standard 1:3 ratio (one unit for a dit, three units for a dah, and one unit for the space between elements of a character). Higher values will lengthen the dahs and inter-element spaces relative to the dits, making the CW sound "heavier" or slower at the same WPM (Words Per Minute).
- **Auto Space** - ON/OFF: This configuration therefore allows you to switch on automatic character spacing if you wish. In this case, if you press a paddle too SOON, before the 3 dit durations have elapsed after the last character completed, the keyer will wait until the correct time to start the next character.
- **Semi QSK** - Auto, Contest, Custom dits, Custom deidirts, Custom ms, OFF: This setting controls the radio's ability to rapidly switch between transmitting and receiving during CW operation. "QSK" (Quick Send/Receive) allows you to hear between the individual dits and dahs you are sending.
    - **Auto:** The radio automatically determines the optimal timing for switching between transmit and receive based on the keying speed.
    - **Contest:** Provides very fast switching, optimized for quick exchanges common in radio contesting. This often involves a minimal delay between transmit and receive.
    - **Custom dits:** Allows the user to define a specific delay period in terms of dit lengths before the radio returns to receive mode after a dit.
    - **Custom decidits:** Delay is specified by the “Custom Semi QSK” parameter, interpreted as a number of 1/10th dit lengths; for example a setting of 75 would mean 7.5 dit lengths.
    - **Custom ms:** Allows the user to set a specific delay in milliseconds before the radio returns to receive mode after the cessation of transmitting.
    - **OFF:** Disables Semi QSK, meaning there will be a noticeable delay between when you stop transmitting and when the radio is fully ready to receive.
- **Custom Semi QSK** - 000 - *adjust delay between xmitted elements (dits and decidits). Setting represents lengths of dits and tenths of dit lengths (decidits) or deci-dits. 75 equals 7.5 dit lengths of delay.* This setting is active when either "Custom dits" or "Custom decidits" is selected under the "Semi QSK" option. The numerical value allows fine-tuning of the delay. As the description indicates, the value represents the delay in terms of dit lengths and tenths of dit lengths. For example, "75" signifies a delay of 7 dit lengths plus 5 tenths of a dit length. This fine-grained control enables operators to tailor the QSK timing to their specific keying speed and preferences.
- **Practice mode** ON/**OFF** - Normally you would leave Practice mode switched OFF. However if you want to practice sending CW, and see if the CW Decoder can decode you, then you can switch Practice mode to ON. In practice mode, the radio does everything it normally would, except that it never sends any RF power to the antenna! During practice

mode, a ‘P’ is shown in the display to the right of the frequency on the top row. .

- **Strght mode** - Both: Available settings are “tip”, “ring” and “both”. This controls the action of a key plugged into the key jack during Straight Key mode only. It is inherited from the QCX-series transceivers; if a 3.5mm mono plug was used with the QCX+, the longer ground barrel shorted the ring to ground causing continuous keying. This configuration menu is the solution to that problem. If you are using a mono 3.5mm plug with your straight key, then set this configuration to “Tip” so that the ring connection (available only on stereo plugs) is ignored.
- **GPS protection** - ENABLED: If QMX detects a GPS receiver has been plugged into the paddle port, it will automatically set up a temporary “Practice mode” (if practice mode is not already enabled) so that the radio is not continuously keyed by the incoming GPS serial data and 1pps. A ‘G’ character appears in the display to the right of the frequency on the top row (where the ‘P’ would be shown in Practice mode). You can disable this automatic protection feature by setting the GPS protection mode parameter to DISABLE.

CW Decoder - *Sub Menu: Access this submenu by pressing Button 1 again after initially entering the CW menu (or from the CW Keyer submenu). To return to the main menu, press Button 2.*

This submenu configures the built-in CW decoder, which attempts to automatically translate received Morse code into readable text on the radio's display.

- **Noise blank** - 10: This parameter defines the duration of the noise blanker in milliseconds. The microcontroller’s 24- bit stereo I Q ADC samples audio at 48ksps (thousand samples per second). Blocks of 32 samples are analysed by an implementation of the Goertzel algorithm (kind of a single bucket of a Fourier Transform), which results in a digital filter bandwidth of 250Hz. In other words, it results in a measurement of the amplitude 250 times per second, i.e. once every 4 milliseconds. The amplitude is analysed by logic which compares it to a threshold amplitude to decide if a tone has been detected or not. Impulse noise that generates shorter pulses than the noise blanker parameter, is ignored. If the noise blanking period is too short, then noise impulses will not be blanked effectively. On the other hand, if the noise blanking period is too long, then it will impair the decoder’s ability to decode high speed Morse. For example, 24wpm Morse has dits lasting 50 milliseconds. . A higher value generally indicates more aggressive noise blanking, which can help in noisy environments but might also distort or miss weak CW signals. The value "10" represents default.
- **Speed Average** - 07: The duration of dits and dahs is measured in order to define a threshold at which to define a tone burst as a dit or a dah, and whether to define no tone at all as an inter-symbol, inter-character or inter-word gap. The measurement of this timing is implemented via an exponential moving average, whose averaging duration is determined by this parameter (the weight of each new measured symbol in the accumulated average). If the exponential moving average is too fast (the parameter value is too low) then noise etc will throw off the timing averages too easily. If the exponential moving average is too slow (the parameter value is too high), then too many characters of the other station’s transmission will be missed, while we try to adjust to the speed of his sending. This can be particularly offensive in some contest or pileup situations where exchanges are very short.
- **Amplitude average** - 60:The decoder maintains an amplitude threshold, which it uses to decide whether a tone is detected or not. The level of this threshold must be varied automatically in order to cope with stations having a wide range of different signal strengths. Other perils may include QSB (signal fading) of the station you are listening to. The amplitude threshold is implemented via an exponential moving average. The

weighting of each new sample (every 4ms) added to the accumulated exponential moving average value is the reciprocal of this parameter. If the exponential moving average is too fast (the parameter value is too low) then noise etc will too easily throw off the amplitude threshold and it may take time to recover to its proper level. If the exponential moving average is too slow (the parameter value is too high), then it may take too long to adjust to the received station's amplitude, resulting in missed characters while the decoder slowly adjusts itself. It would also be too slow to automatically respond to QSB (signal fading).

- **Enable Rx** - decode YES/NO: This toggles the CW decoder for received signals. Setting it to "YES" activates the decoder when receiving CW, displaying the decoded text. Setting it to "NO" disables the decoder for incoming signals.
- **Enable Tx** - decode - YES/NO: This setting controls whether the decoder also attempts to decode the CW being transmitted by the radio itself (sidetone). Setting it to "YES" will display the decoded representation of your own transmitted CW, which can be useful for self-monitoring and verifying sending accuracy. Setting it to "NO" disables decoding of the transmitted CW.
- **Enable edit** - YES/NO - This parameter enables CW decoding while editing. When YES, anything you key during editing of NUMBER or TEXT type configuration parameters, edits the parameter. This is a really useful feature that makes it very easy to enter frequencies or stored messages, for example. Enable CW decoding while editing of messages stored: This option determines if the CW decoder remains active even when the operator is editing stored messages within the radio's memory. Setting it to "YES" allows you to see decoded CW in real-time while managing your stored messages, which could be useful if the messages themselves contain Morse code. Setting it to "NO" disables the decoder during message editing.
- **Prefer prosigns** - YES: When set to "YES," the decoder will attempt to interpret standard CW prosigns (procedural signals like SK for "end of contact" or CQ for "calling any station") and display them as their common abbreviations or meanings rather than as individual letters. Setting it to "NO" would likely cause the decoder to display prosigns as a sequence of individual characters.
- **SK or VA** - SK/VA - *Rarely written as VA Prosigns for "end of transmission" or "end of contact"*: This setting likely dictates which prosign the decoder prioritizes or displays for the end-of-contact indication if both "SK" and "VA" are received. The note indicates that while "SK" is the more common prosign