Aerial-51 ALT-512

(Preliminary)
User Manual

Ver. 1.0c

PART-1: INTRODUCTION

CONTENT

IMPORTANT MESSAGE

> **OPERATING an amateur radio transmitter requires a license in every country of the world! Using the ALT-512 without a license is punishable by law in every country of the world!**

INTRODUCTION

The **ALT-512** is a 12 band, all mode SDR transceiver with a 2.4 in. (6 cm) color TFT display. It has a built-in sound card and all the capabilities of a modern transceiver. It is easy to operate and does not require a computer to operate CW, SSB, FM, or AM modes.

A computer is required for working DIGI modes, but nothing else! A single USB-2 cable to the computer is all that is necessary. The rest is done in the computer. No external sound card, interfaces, boxes, or cables are required

The **ALT-512** has rich capabilities for operating digital modes, including Noise Reduction (NR) and Noise Blanker (NB). It has 4 *front panel adjustable* DSP filters (RX & TX) that are user-definable in bandwidth and frequency response

The **ALT 512** has a 48 kHz panoramic bansdscope and waterfall that are continuosly active on RX and TX; (only one may be displayed at a time). This gives the operator a view of the activity within +/- 24 kHz of the display frequency, helping to find an unoccupied frequency on crowded bands.

The **ALT 512** comes with a hand microphone for voice modes, and has adjustable mic gain, speech com- pressor, and echo chamber. It also has an automatic Iambic CW keyer with A/B modes. It displays output power in Watts, SWR, ALC level and CW speed, either numerically, or as

bar graph. It has a PTT jack with sequencer for controlling an External linear amplifier.

The **ALT 512's 2 VFO's memorize the last used information** on each band. The two VFO's may be used on the same band in SPLIT mode, or on different bands, enabling Cross-Band operation.

The ALT-512's CAT control system emulates the full TS-2000 command set. It connects to the computer with a single USB cable, uses the FTDI chipset, and has its own **audio codec**.

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<u>BEFORE</u> BEGINNING OPERATION

PLEASE, READ THIS ENTIRE MANUAL CAREFULLY

THIS RADIO REQUIRES:

- **A valid amateur radio license for HF and VHF**

- **A regulated power supply (or battery) for [nominal] 12.6 volts d.c., but not less than 10.5 or more than 13.8 volts, at 2.5A.**

- **A 50 Ohms (nominal) antenna for each band to be used**.

- **Optional:**

  - Stereo headphones: 4 to 32 ohms, or ext. speaker 4-8 ohms (passive- not active)

  - Straight Key or Paddle

PART-1: INTRODUCTION

TECHNICAL DATA

<table>
<tr><td colspan="3" align="center">GENERAL INFORMATION</td></tr>
<tr><td>Technology</td><td align="center">SDR</td><td>Direct Digital Conversion</td></tr>
<tr><td>Frequency/ Bands</td><td align="center">1.8 MHz to 70.50 MHz</td><td>Transceive:
• 160, 80, 60, 40, 30, 20, 17, 15, 12, 10, 6 , 4m

Receive-Only:
• 100 to 1800 kHz
• 27.000 to 28.000 MHz
• US: 4m –receive only

Transverters option:
 144 and 432 MHz with 28 MHz IF – drive level 150mW; TRUE FREQUENCY READOUT on 2m and 70cm by setting the frequency shift in menu #36 (Shift VFO)</td></tr>
<tr><td>MODES</td><td align="center">CW, USB, LSB, DIGI, AM, FM</td><td>CAT: USB2 (FTDI)</td></tr>
<tr><td>Digital Modes</td><td align="center">FT4,FT8, JT65, PSK, RTTY, SSTV</td><td>Proprietary Audio Codec</td></tr>
<tr><td>Output Power</td><td align="center">5 to 10 W typical
(varies from band to bands)</td><td>High-SWR Protection (foldback power)</td></tr>
<tr><td>Antenna Impedance</td><td align="center">50 ohms (nominal)</td><td>BNC connector</td></tr>
<tr><td>DC Power Supply</td><td align="center">From 10.5 V to 13.8V d.c. (recomended 12.6V)</td><td>Fuse: 3.15A, 250V, slow blow</td></tr>
<tr><td>Consumption</td><td align="center">RX: average 350mA
TX: up to 2.5A</td><td></td></tr>
<tr><td>Frequency stability</td><td align="center">±3 ppm</td><td align="center">0 to 50 C°</td></tr>
<tr><td>Memory</td><td align="center">100 channels (0-99)</td><td>Stores: Frequency, Mode, VFO (A/B) and more</td></tr>
<tr><td>Speaker</td><td align="center">0.5 W</td><td align="center">built-in</td></tr>
<tr><td>Panoramic bandscope and waterfall</td><td colspan="2" align="center">Active on RX and TX / Adjustable Color Display</td></tr>
<tr><td>Enclosure size</td><td align="center">12.8 x 10.7 x 5.5 cm</td><td>(w.o. knobs and connectors)</td></tr>
<tr><td>Working size</td><td align="center">14.7 x 10.7 x 7 cm</td><td>(with knobs and connectors)</td></tr>
<tr><td>Weight</td><td align="center">580 grams (20.5 oz.)</td><td>(without microphone)</td></tr>
</table>

PART-1: INTRODUCTION

TRANSMITTER		
POWER	5 to 10 Watts - average, band-dependent; front panel or software menu adjustment	Automatic SWR Protection
Metering on Transmit	Selectable: Output Power, SWR, Mic Gain, ALC	Display: either bar graph or digital (numeric)
Metering DC voltage	Numeric or Digital	
VOX SSB	Adjustable Gain and Delay	
Speech Compressor	Adjustable in Menu	"CMR" in menu
Reverb	Adjustable in Menu	"ECHO" in menu
TX Mute /Monitor/	Monitor for voice modes (SSB, AM, FM) and DIGI	
CW Key Type	Selectable: Paddle or Straight Key	
Built-in Auto Keyer	Iambic A/B	Default: B
Auto Key Settings	Speed - MENU NR.04/ Dot/Dash Ratio - MENU NR.05	MENU selectable
CW VOX	Delay Adjustable	From 100ms to 5 Seconds in 100ms steps.
DIGI Level Adjustment	Adjusts Audio Level on Transmit in DIGI Mode	Front panel adjustment
Ext. Amp Control (PTT)	Controls external amplifier with hang-delay in steps of 50ms.	Open Collector Switching
TX DSP filters	Two modes of operation	Default or User Definable
• **SSB TX filters**	Default : 2.800 kHz	Bandwidth: 750Hz to 4.15kHz Passband: 250Hz to 4.4kHz (adjustable)
• **CW TX filters**	Default: 100 Hz	Fixed: 100Hz
• **AM TX filters**	Default: 5.590 kHz	2kHz to 10kHz
• **FM TX filters**	Default: 9.600 kHz	2kHz to 10kHz
DIGI TX filters	Default: 4.000 kHz	Fixed: 4kHZ
TX Bandscope or Waterfall	Monitors Transmited Signal	Push PAN button briefly to toggle the monitor mode between Bandscope **or** Waterfall
SOUND CARD FOR DIGI MODE	**AUDIO CODEC PCM2902/4**	Implemented for all operating systems: WIN, LINUX, & MAC. No additional driver required.

PART-1: INTRODUCTION

RECEIVER		
Technology	SDR (CPU digital delay 21ms)	Direct Digital Conversion
Sensitivity	0.2 Uv/13dB s/n	Preamp ON
Preamplifier	+20 dB	
Attenuator	-12 dB	
Preliminary Filtering	9 BPF and 8 LPF	160m, 80m, 60+40m, 30+20m, 17+15m, 12+10m, 6, 4m, + 100 to 1800kHz
Consumption	Average 350mA	
Bandscope and Waterfall	Bandwidth: 48kHz	Toggles with**[PAN]** Button Front Panel or Menu Adjustments
DSP RX filters	**4 DSP Filters per Mode**	See Below
SSB Filters	**4 DSP Filters per Mode** **Fil-1, Fil-2, Fil-3, Fil-4** **(User Adjustable)**	200Hz to 4.4kHz
CW Filters		20 Hz to 1kHz
AM Filters		2kHz to 12kHz
FM Filters		2kHz to 12kHz
Digital Modes Filters	**4 Fixed Bandwith**	Fil-1: 4Khz / 250 - 4250Hz Fil-2: 2KHz / 250 - 2250 Hz Fil-3: 1KHz / 500 - 1500Hz Fil-4: 500hz / 500 - 1000Hz
Noise Reduction (NR)	Front Panel or Menu Adjustable	
Noise Blanker (NB)	Front Panel or Menu Adjustable	
NOTCH FILTER (NF)	**Active only in SSB mode.** Front panel or Menu Adjustable	
S-Meter	Bar Graph in S-Units + Digital Display	
CW Mode	CW or CWR (Reverse)	Selectable with Mode Button
SQUELCH	Front Panel Button	**Type: 'SSB/AM' or 'FM';** Adjustable Level from 0 to 100
IF – Virtual Intermediate Frequency	**When ON, DSP is operating normal; When OFF— the radio operates as a normal Direct Conversion Receiver.**	**Software MENU Selection** **Must always be ON.**
Sound Card for DIGI MODE	**AUDIO CODEC PCM2904**	Implemented for all operating systems: WIN, LINUX, & MAC. No additional driver required.

PART-1: INTRODUCTION

Accessories

ALT-512 (In the box):

| DC Power Cable | Microphone | CAT CABLE |

DC power cable: red (+) and black (-) with built-in fuse and barrel connector (2.5mm x 5mm).

Microphone: electret type , power thru mic cable (tip). To use dynamic microphone, insert 350nF to 470nF capacitor between the dynamic mic capsule and the mic wire.
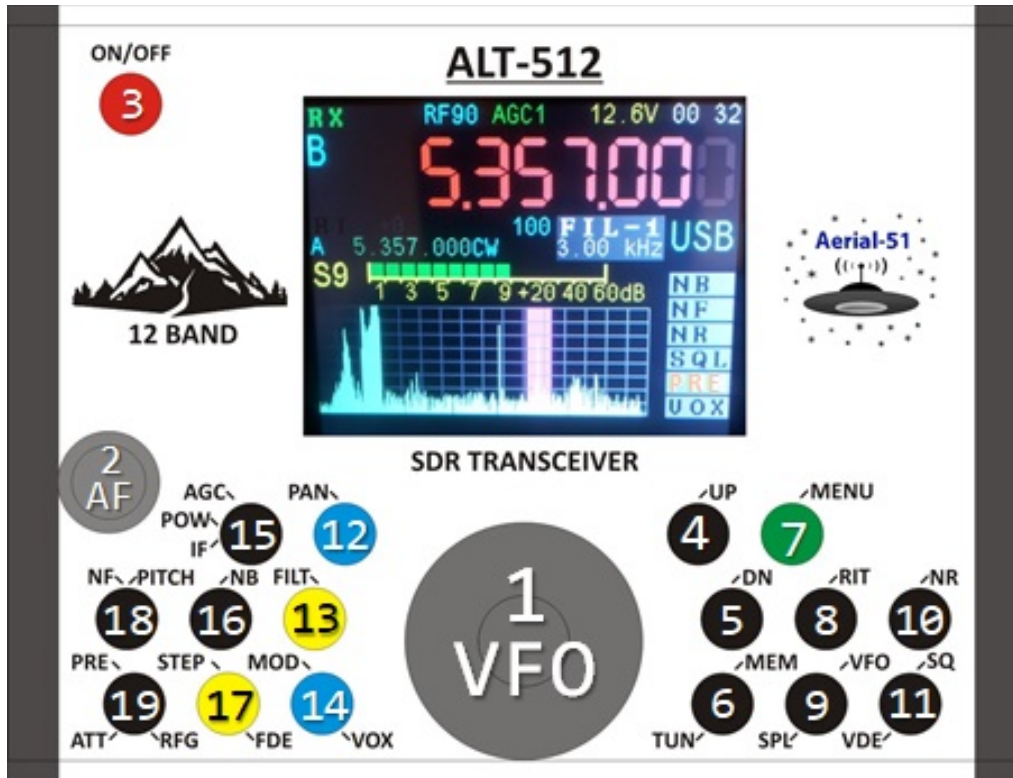
This Manual (Preliminary V.1.0)

CAT cable: standard USB2 cable with "type A" connector on both ends.

Not Pictured:
- 2mm Allen Wrench
- 2.5mm Allen Wrench

PART-2: PANELS AND CONTROLS OVERVIEW

FRONT PANEL CONTROLS

NOTE:
- '*Push*' = momentary push.
- '*Long-Push*' = 1 second or longer

(1) [VFO]
- **Normal Operation:** Used for changing the frequency of the VFO's.
- **In Menu Mode:** Used for changing the value within the sub-menus.

(2) AF GAIN CONTROL

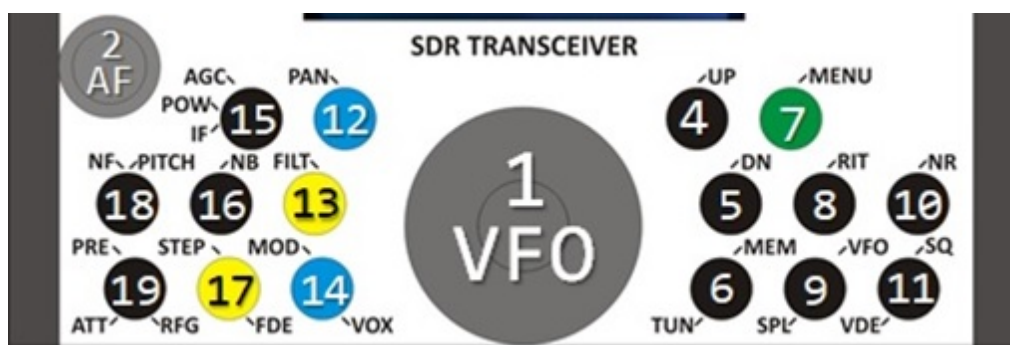### (3) [ON/OFF]: Used to turn the radio On and Off.

(4) [UP]
- **Normal Operation:** *Push* to change band to next higher band.
- **In Menu Mode:** Used to step through the sub-menus. *Push* **[UP]** changes to next higher sub-menu.

(5) [DN] (Down)
- **Normal Operation:** *Push* to change band to next lower band.
- **In Menu Mode:** Used to step through the sub-menus. *Push* **[DN]** changes to next lower sub-menu.

(6) [MEM]/[TUN]: (Tune)

- **[MEM]:** *Push* activates memory operations.

- **[TUN]:** *Long-Push* generates a reduced-power signal for the purpose of tuning an external ATU. Turn OFF with *Push*.

(7) [MENU]: *Push* Toggles the Software Menu ON or OFF.

(8) [RIT]: Receive Incremental Tuning

- **IN RX Mode:** *Push* Toggles RIT ON or OFF

- **IN TX Mode:** *Push* Toggles XIT ON/OFF

(9) [VFO]/[SPL]: VFO Selection / Split

- **[VFO]:** *Push* to toggle between VFO-A and VFO-B

- **[SPL]:** *Long-Push* enables Split-VFO Operation.
  Disable SPLIT with another *Long-Push*

(10) [NR]: Toggles Noise Reduction ON or OFF

(11) [VDE]/[SQ]:

[VDE]: **V**OX **DE**FINE (GAIN); *Lon- Push* activates the VOX GAIN adjustment menu.

[SQ]: Squelch: 2 adjustable modes: 'FM' or 'SSB/AM'.

- *Push* toggles Squelch ON/OFF

- Adjust level with **[VFO]** knob.

(12) [PAN]: *Push* Toggles display between Bandscope/Waterfall. *Long-Push* activates menus for adjustment.

(13) [FILT]: (Filter); *Push* selects DSP filters (Fil-1 to FIL-4). *Long-Push* activates filter adjustment menu.

(14) [MOD] (Mode)**/[VOX]**

- **[MOD]:** *Push* toggles through modes: CW/CWR/DIG/ AM/FM/ USB/LSB, etc.

- **[VOX**]: *Long Push* toggles VOX ON and OFF
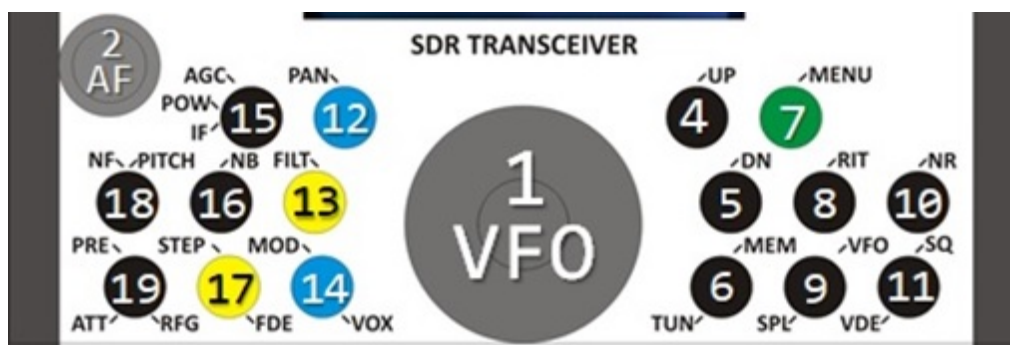
(15) [AGC]/[POW]/[IF]

- **[AGC]:** *Long-Push* activates the AGC time-constant adjustment.

- **[POW]:** (Power) When in transmit mode (*PTT keyed*) **Push** to enter the TX Power Adjustment menu.

- **[IF]:** *Push* Toggles the ***Virtual Intermediate Frequency*** ON or OFF. ***Should always be ON!***

(16) [NB]: Noise Blanker; ***Push*** toggles the NB ON or OFF; ***Long-Push*** activates the NB adjustment menu.

(17) [STEP]/[FDE]

- **[STEP]:** *Push* toggles through the different tuning rates of the VFO.

- **[FDE]: Function Defining Executive** – *Push* to step through items of sub-menus.

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(18) [NF]/[PITCH]

- **[NF]:** Notch Filter (SSB Mode Only);

    o **In RX Mode:** *Push* to toggle Notch Filter ON or OFF. **Long-Push** activates NF adjustment menu.

    o **In TX mode,** *Push* to toggle Echo ON/OFF. ***Long-Push*** activates Echo adjustment menu.

- **[PITCH]:** (In CW Mode Only); **Push** to activate menu for adjustment of Offset Frequency.

(19) [PRE]/[ATT]/[RFG]

(Preamp/Attenuator/RF Gain)

- **[PRE]/[ATT]:** *Push* to toggle through activating Preamp, Attenuator, Both OFF.

- **[RFG]:** *Long-Push* to activate **RF Gain** adjustment. Adjust with **[VFO].** *Push* to exit.
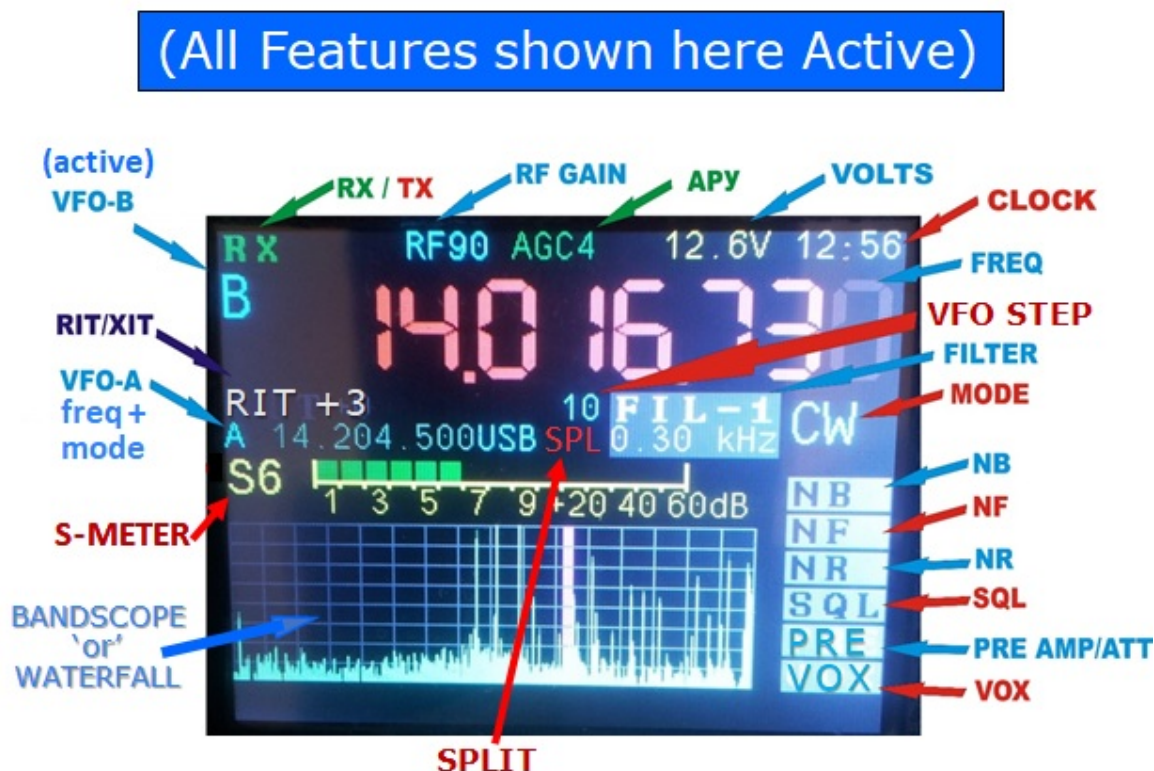
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PART-2: PANELS AND CONTROLS OVERVIEW

DISPLAY

TFT 2.4 INCH color display with 66,000 colors.

In the picture below, all possible RX functions are shown active for the purpose of explanation. You will not see all features active at once during normal operation.

NOTE: The screen is shown here in RECEIVE mode.

During TRANSMIT mode, the menu on the right is replaced with a smaller menu showing only functions applicable to TX.
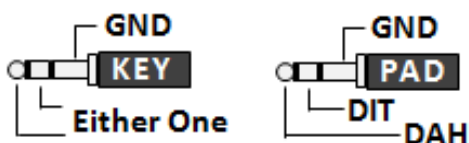
During TX, the contents of the S-Meter line is replaced by the TX Meter. showing (one at a time, selectable) PWR/SWR/ALC/MIC.

PART-2: PANELS AND CONTROLS OVERVIEW

Left Side Panel

KEY: The ALT-512 can operate with a straight key or paddle. The connection is via a 3.5 mm stereo phone-jack – as described below:

MIC: The ALT-512 is supplied with an electret (condenser) hand-microphone with a 3.5mm stereo phone-plug (Pin-out below). To us another type of mic (i.e., dynamic), insert a 270-470nf capacitor in series with the **MIC+** line.
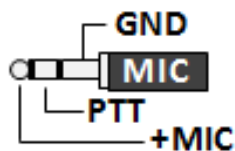
MON (+SIDETONE): Adjust monitor level or sidetone level to the desired level using a tiny screwdriver inserted through the small MON-hole. **CAUTION: ROTATE CAREFULLY!**

HEAD**PHONE**S: The ALT-512 can be used with any stereo headphones from 4 to 64 ohms impedance (lower impedance works better). A (passive) external speaker may also be connected here. It accepts a 3.5mm stereo Phone-Plug.

CAT (+built-in audio codec and SOUND CARD): The ALT-512 can interface to most common types of computers via a USB2 cable with **Type-A plugs** on both ends. It has an FTDI chipset and uses its own audio codec (PCM2904), thus no additional driver is required!

Its **CAT Interface** is fully compatible with the KENWOOD TS-2000's CAT Command set.

COM PORT SETTINGS:

- (RIG Type: TS-2000)
- **Baud rate: 9600**
- **Data bits :   8**
- **Parity: NONE**
- **Stop bits: 1**

PART-2: PANELS AND CONTROLS OVERVIEW

Right Side Panel

DC 12.6V: power source via standard coaxial (barrel) connector.
SIZE: 2.5mm x 7mm.

ANT: BNC Female Jack; 50 Ohms (nominal) impedance.

PTT: RCA Phono Jack; Open-Drain MOS transistor switch, **3A max**. Delay: 50ms. Use to switch external linear amplifier's T/R relay.

SPKR: Internal 8 Ohms, 0,5 watt loudspeaker; The speaker is switched off automatically when you connect headphones or an external speaker to the radio.

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DETAILED BUTTON DESCRIPTION

This section of the manual goes into much more detail about the operation of each of the front panel buttons.

ALL features adjustable here are also adjustable within the Software Menu.

Details about the adjustments and settings within each feature are described in the "MENU" section of this manual.

Due to the small size of the radio and large number of features, it was not possible to include all of the labels on the front panel. Some of the features may be considered "hidden features." They were not hidden for any special reason, there was simply not enough space on the panel to write all of the names.

Hidden Features (i.e., "XIT") will be shown in the text below like this: **{XIT}**.

Normal Features will be shown like this: **[RIT]**

Push = Momentary (short) push of the button.

Long-Push = Push the button for 1 second or more.

NOTE: The "[VFO]" name is used twice in this document; once to designate the **VFO knob** and again to designate the **button** for selecting VFO-A or VFO-B.

When adjusting values within a menu and it says **change with [VFO]**, it is referring to the VFO knob, not the button.

1. **[VFO]: TUNING / Multi-Functional Knob**

PART-3: DETAILED BUTTON OPERATION

- During normal operation, the [VFO] knob is used for changing frequency. Clockwise (CW) rotation increases the frequency; Counter-Clockwise (CCW) rotation decreases the frequency.

- When in MENU mode, **[VFO]** is used for changing/selecting values within some of the menu items.

2. **[AF]: Audio Gain Control** (Volume Control); Rotating the volume control CW increases the audio gain; rotating CCW decreases the audio gain.

3. **[ON/OFF] Button:** Powers the radio ON or OFF.

4. **[UP]:**

- During normal operation, each push of the **[UP]** button changes to the next higher band.

- In "MENU Mode" pushing **[UP]** changes to the next higher menu item. When it reaches the top, pushing it again returns to Menu #0.

5. **[DN]: DOWN**

- During normal operation, each push of the **[DN]** button changes to the next lower band.

- In "MENU Mode" pushing **[DN]** changes to the next lower menu item. When it reaches Menu #0, pushing again returns to the top, Menu #39.

6. **[MEM]/[TUN]: Memory / Tune**

Storing to Memory:

- *Push* **[MEM]**; the next free memory slot is displayed. *Push* **[DN]** to copy VFO and other data (i.e., mode) to 'that' memory location, then *Push* **[MEM]** again to store the data.

- Or, select a different memory location with the **[VFO]** knob; rotating CW moves to the next higher memory slot; rotating CCW moves to the next lower memory slot. After selecting a memory slot, *Push* **[DN]** and then *Push* **[MEM]** to store the data in that slot.

Recalling from Memory:

- *Push* **[MEM]**, then select memory location with the **[VFO]** knob (as described above), then *Push* **[UP]** and then *Push* **[MEM]** to upload the memory contents to the VFO.

PART-3: DETAILED BUTTON OPERATION

[TUN] (Tune): A ***Long-Push*** of **[TUN]** places the radio in transmit, generating a signal with about 1/3 of maximum power. Use this feature to tune an antenna tuner or check SWR. The signal can be either two-tone (SSB), or single-tone (carrier). Select the desired tone type in the software menu with 'Item #34' ("type tone").

Deactivate Tune with another short push of the **[TUN]** button.

7. **[MENU]:** push this button to place the radio in ***Menu Mode***; the Menu has 40 menu items, from 0 to 39.

- Several of the Menu Items have variable parameters that are selected by rotating the **[VFO].** Other items are simply switched ON or OFF (Enable or Disable); select choice with **[VFO].**

- Some of the menu items have sub-menus. These are usually selected with the yellow **[FDE]** or blue **[MOD]** button. More info for each is found in the back of the manual in the Menu section.

8.   **[RIT]/{XIT}:** Receive Incremental Tuning / Transmit Incremental Tuning.

- **[RIT]: in Receive Mode**, a momentary ***Push*** of **[RIT]** activates the RIT (Receive Incremental Tuning). Each VFO has its own RIT.   To exit RIT, ***Push*** **[RIT]** again.

  ZERO RIT: *Long-Push* **[RIT]** (for more than one second).

- **{XIT}** **: TX Incremental Tuning**;   Although the button is only labeled with "RIT", it also functions as the "XIT" button when **in Transmit Mode.**

  You must be in Transmit Mode to activate or deactivate XIT.

  A momentary ***Push*** of **[XIT]** *while you are transmitting* activates XIT. Each VFO has its own XIT. To exit, ***Push*** **[XIT]** again.

  ZERO XIT: While in TX, ***Long-Push*** **[XIT]** for more than one second.

9.   **[VFO]/[SPL]** (SPLIT):

  [VFO]: a momentary ***Push*** toggles between VFO-A and VFO-B.

  [SPL] (SPLIT)**: *Long-Push*** **[SPL]** at least 1 second to activate Split Mode; When activated, the red letters **SPL** will appear in the center of the display.

10. **[NR]/[MUTE]: Noise Reduction / Mute-Monitor**

  [NR]: During Receive Mode, ***Push*** **[NR]** to activate Noise Reduction. NR is most affective in CW mode. It is also effective in SSB, but may distort the received signal slightly. To adjust the NR level, ***Long-Push*** **[NR]** for more than one second and adjust with the **[VFO]** (from 0 to 100).

  Deactivate Noise Reduction with another ***Push*** of **[NR]**.

  [MUTE]: During Transmit Mode, ***Push*** **[MUTE]** to toggle the internal Transmitter Monitor ON or OFF. "OFF" enables monitoring of the transmitted SSB, DIGI, AM, or FM signal. "ON" mutes the monitor. The Monitor Level is adjusted using a small screw driver inserted through a tiny hole **"MUT"**, located on the left side panel.

PART-3:   DETAILED BUTTON OPERATION

11. [SQ] / [VDE]: SQUELCH **/ V**OX **DE**FINE (VOX GAIN)

[SQ]: Squelch is only active during RX. It has 2 Modes: 'SSB/AM' & 'FM'. The squelch mode is selected automatically when you select the operating mode of the radio. Each mode has its own separate adjustments.

To activate Squelch, *Push* **[SQ]** momentarily and adjust the squelch level with the **[VFO]** knob. The squelch level is shown on the bottom line of the display.

With no received signal, turning the VFO knob CW, increase the squelch level until the audio shuts off and SQL in the display's menu lights up (3rd from bottom).

NOTE: While the squelch level is displayed, the frequency cannot be changed with the VFO knob. To return the VFO knob to normal operation, *Push* **[SQL]** again.

To turn squelch OFF, *Push* **[SQL]** and rotate the VFO knob CCW to 0. *Push* **[SQL]** again to return VFO knob to normal operation.

[VDE]: VOX DEFINE: This is 'VOX Gain'.

- *Long-Push* **[VDE]** for more than 1 sec. to enable adjustment of VOX Gain (VOX sensitivity). The Gain level is shown on the bottom line of the display.

- Adjust level with the **[VFO]** knob. The recommended value is about 80, but it also depends on the ambient noise in the shack.

- Push **[VDE]** to exit menu and return to normal operation.

12. [PAN]: Panadapter; 'Bandscope' or 'Waterfall'

The Panadapter, in Bandscope mode (here referred to as "**PAN**") works in both RX and TX modes. The Waterfall (here referred to as "**WTR**") only works in RX mode. To distinguish between them, the ALT-512 shows 3 modes: 'TPAN', 'RPAN', and 'RWTR'. (T=TX; R=RX).

A *PUSH* of the **[PAN]** button, toggles the Panadapter between Bandscope and Waterfall. A *Long-Push* opens a menu to adjust several parameters in the selected mode

When in '**PAN**' mode, the adjustable parameters are '**Scale**', '**Shift**' and '**AVG**' (Average). Toggle between these parameter adjustments using the blue **[MOD]** button.

When in '**WTR**' mode, the adjustable parameters are '**Speed**', '**Scale**', and '**Shift**'. *Push* blue **[MOD]** button to select the parameter to be adjusted.

Default Settings (after reset):

- **Bandscope: Scale = 3.0; Shift = 65 ; AVG = 100**
- **Waterfall: Scale = 3.0; Shift = 65; Speed = 4**

PART-3: DETAILED BUTTON OPERATION

13. [FILT]: (DSP) FILTERS

Each mode has its own set of 4 DSP filters (FL-1, FL-2, FL-3, FL-4) available on RX. TX has 2 DSP options: 'Default' & 'User-Definable'.

RECEIVER (RX) FILTERS:

- Filters are selected with a *PUSH* of the yellow **[FILT]** button. Successive pushes steps through the filters.

- Each of the filters for **LSB/USB** have front-panel adjustments for bandwidth and passband (upper band-stop/lower band-stop**). *Long-Push* of [FILT]** opens the filter adjustment menu. *Push* blue **[MOD]** to toggle between lower and upper band-stop. *Push* yellow **[FDE]** to toggle through FL-1/FL-2/FL-3/FL-4.

  - o The bandwidth is set for these modes by setting the lower band-stop of the passband and the upper band-stop.

  - o The difference between the upper band-stop frequency and the lower band-stop frequency defines the bandwidth.

  - o Moving either or both band-stops sets the passband.

  - o *Push* **[FILT]** to exit the adjustment menu.

  - o SEE EXAMPLE BELOW.

- Each of the **AM; FM; & CW** filters have front-panel, user-adjustment for bandwidth. The passband of the AM and FM filters is not adjustable. The **CW passband** can be adjusted in the 'PITCH' menu using the **[PITCH]** button.

  - o *Long-Push* of **[FILT]** opens the adjustment menu. Select filter to be adjusted with *Push* of yellow **[FDE]**. Adjust bandwidth with **[VFO]** knob. *Push* **[FILT]** to exit the adjustment menu.

  - o For **CW pitch adjustment**, see detailed knob description for **[PTICH]**.

- Each of the filters for **DIGI** mode are pre-set, not adjustable. Select filter with successive *Push* of **[FILT].**

  - o For list of fixed filter parameters, see RECEIVER SPECIFICATIONS.

    EXAMPLE ON NEXT PAGE

PART-3: DETAILED BUTTON OPERATION

EXAMPLE (RX) SSB FILTER ADJUSTMENT: (CHANGE FIL-3)

- **Set FIL-3: Bandwidth: 2.4 kHz; Passband: 600Hz to 3kHz**

  o *Long-Push* **[FILT]** to enter filter adjustment menu. The parameter to be adjusted is shown in the bottom line of the display.

  o *Push* yellow **[FDE]** until FIL-3 is selected (in the bottom line).

  o *Push* blue **[MOD]** once or twice until "**LF**" is selected. It looks like this: **"RX SSB FIL-3, LF 300"** ('300' might be any other value).

  o Rotate **[VFO]** to change 300 to 600.

  o *Push* blue **[MOD]** once to select "**HF**". The display might now look like this: **"RX SSB FIL-3, HF 2700".** ('2700' might be any other value).

  o Rotate **[VFO]** to change 2700 to 3000. (notice the frequencies are in Hz, not in kHz).

  o *Push* **[FILT]** to save changes and exit the filter adjustment menu.

  o **CHECK YOUR WORK: *Push* [FILT]** a few times until **FIL-3** is selected. It should now display **2.4 kHz**

TRANSMIT (TX) FILTERS: There are two TX filters per mode. FL-1 is 'default' and FL-2 is 'user-definable'. If you wish, you can re-define FL-1 to your preference, but when you perform a RESET of the transceiver, FL-1 will always revert to the factory default value.

- The default filter parameters for each mode are shown in TRANSMITTER SPECIFICATIONS.

- To adjust the TX filter, first select the mode, then put the radio in TX mode (i.e., push the PTT button on the Mic). Once the menu opens, you may release the PTT and adjust the filters without transmitting.

- **NOTE: Adjust the TX filters exactly like the procedure for RX filters (above).**

- *Long-Push* **[FILT]** to enter the TX filter adjustment menu.

- Next, select either FIL-1 or FIL-2 with *Push* yellow **[FDE].**

- Select 'LF', then 'HF' with *Push* blue **[MOD].** Set desired frequencies for each of these band-stops.

- IMPORTANT NOTE: The ALT-512 DSP filters have very steep skirt. If you set the bandwidth too narrow, your transmitted audio will sound clipped (because it is). Default for SSB is 2.8kHz. You might try setting it even wider if desirable.

PART-3: DETAILED BUTTON OPERATION

14. [MOD] (MODE) / [VOX]: (lower **BLUE** button)

Push **[MOD]** to sequence **CW, CWR, DIGI, USB, LSB (optional: AM, FM).**

If **AM & FM** are desired, they can be activated in the software MENU Item #17. These must be set for <u>each</u> band you wish to use them on. The new sequence will then be: **CW, CWR, DIGI, AM, FM, USB, LSB** for all bands where AM/FM have been enabled.

Long-Push **[VOX]** to turn the VOX on or off.
Once activated, it remains ON even after Band Change or Mode Change.

In some Menus (i.e., PAN), the blue **[MOD]** button is used to sequentially step through the sub-menus.

15. [AGC] / [POW] / [IF]

[AGC]: Automatic Gain Control; A *Long-Push* opens the AGC time-constant menu, where you can adjust the AGC Delay from 1 to 10. "1" is longest delay (slow), and "10" is the shortest delay (fast). Exit menu with another *Push*. **This is set separately for each band:**

- Normally SSB is set to slow (1-3)
- Normally CW is set to fast (7-10).
- Note: the level of AGC is shown in the center of the top line of the display.

[POW]: (TX PWR); You must be in TX mode to adjust this (i.e., push the PTT button on the mic). Then *Push* **[POW].** You can release the PTT button while you are adjusting the power.

The TX Power is seen on the bottom line of the display, and displayed in percentage from 10% to 100%. Adjust Power Level with **[VFO].**

Push **[POW]** to exit the menu.

[IF]: Virtual Intermediate Frequency, or V-IF

When V-IF is OFF, the receiver works as a Direct Conversion receiver. When V-IF is ON, the receiver is working with a virtual IF, whose V-IF frequency is only a few kHz removed from the actual working frequency. In this mode, the radio is using the full suite of DSP enhancements.

THEREFORE: ALWAYS LEAVE THE RECEIVER WITH V-IF 'ON'.

V-IF may be switched ON or OFF with *Push* **[IF],** or in software MENU Item # 02.

- When using the software menu, the state of the V-IF is shown in the bottom line of the display as either ENABLE or DISABLE.
- When switching V-IF ON or OFF with the [IF] button, there is no front-panel indication whether the V-IF is ON or OFF.
    - **The pictures on the next two pages show how to see if V-IF is ON or OFF:**

Lower Sideband (LSB):

In both cases the radio is still "transceive" on the same frequency. However when the Virtual IF is enabled, the RX display shifts to the right *in LSB Mode*.

CONTINUED ON NEXT PAGE.

PART-3: DETAILED BUTTON OPERATION

Upper Sideband (USB):

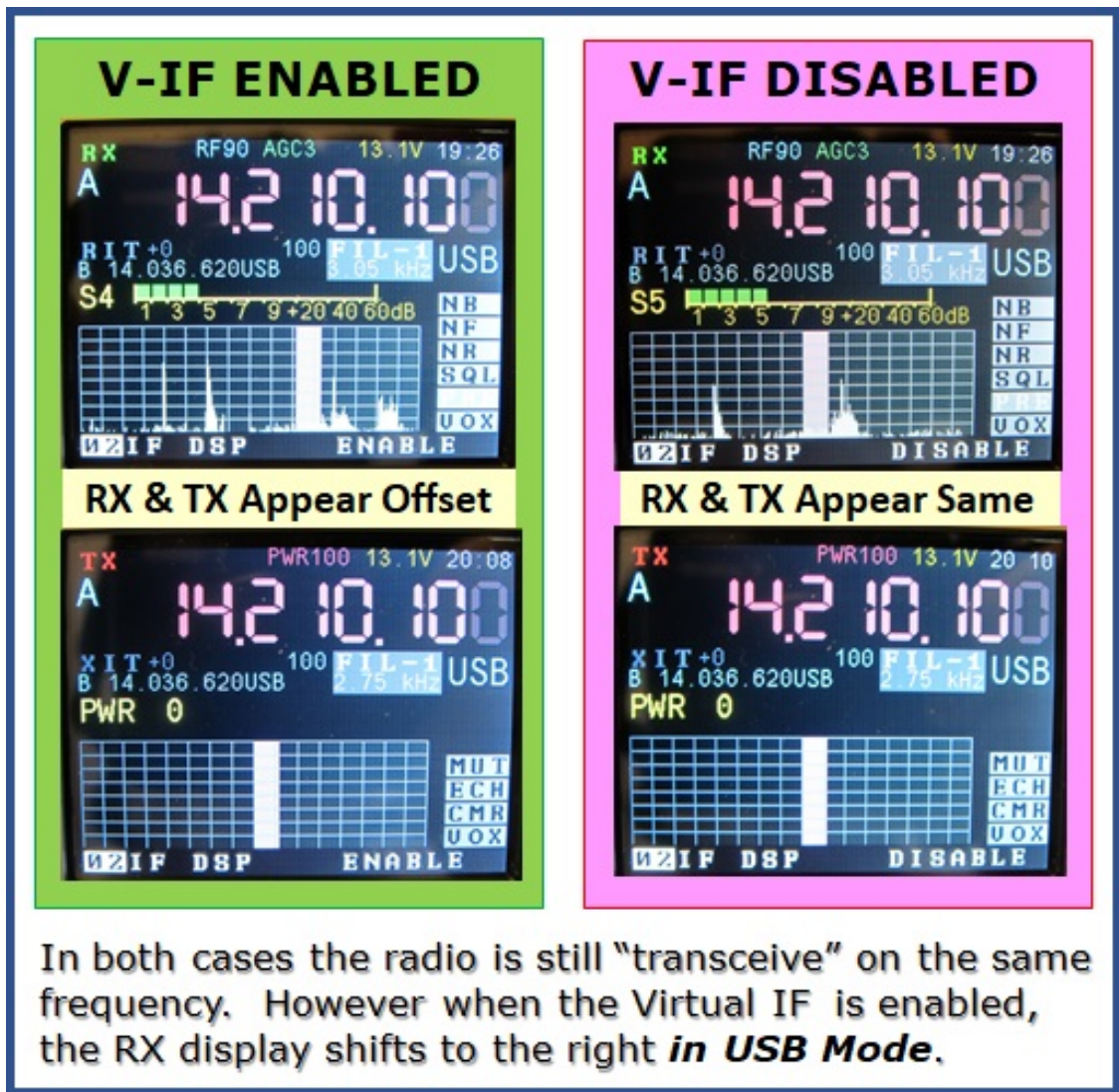**V-IF ENABLED** / **V-IF DISABLED**

RX & TX Appear Offset / RX & TX Appear Same

In both cases the radio is still "transceive" on the same frequency. However when the Virtual IF is enabled, the RX display shifts to the right *in USB Mode*.

16. **[NB]/{CMR}: Noise Blanker / Speech Compressor**

[NB] — Noise Blanker

The **Noise Blanker** is activated with a *Push* of **[NB]**. A *Long-Push* of **[NB]** activates the adjustment menu. Adjust with **[VFO]** from 40 to 100. The preferred setting depends on the type of interfering noise. Adjust for best noise rejection. Deactivate with *Push.*

{CMR}: Microphone (Speech) Compressor with Soft Limiter

The radio must first be in TX mode to activate the speech compressor. Push PTT on the Mic to enable TX mode.

- *Push* **{CMR}** to activate the speech compressor.
- Long-Push **{CMR}** to enter the CMR adjustment menu. The compression level is shown in the bottom line of the display. The exact setting depends on which microphone is used, and the characteristics of operator's voice. The default Level is 25. To exit the CMR menu, *PUSH* **{CMR}** again. (May be in TX or RX mode to do this.)
- In TX Mode*, Push* **{CMR}** again to deactivate the compressor.

PART-3: DETAILED BUTTON OPERATION

17.   [STEP] / [FDE] / [LOCK]

[STEP]: The STEP button changes the speed of changing frequency when you rotate the VFO knob. There are 5 steps to choose from. The size of each step varies, depending on the mode of operation, as shown below:

VFO Speed:

STEP	CW	SSB/DIGI	AM/FM
1	1Hz	10Hz	100Hz
2	10Hz	100Hz	500Hz
3	100Hz	1kHz	1kHz
4	1kHz	2.5kHz	2.5kHz
5	2.5kHz	5kHz	5kHz

{LOCK}: Locks the VFO tuning knob.

When locked, turning the VFO knob does not change the frequency.

Long-Push **{LOCK}** to lock the VFO knob.

Long-Push **{LOCK}** again to unlock the VFO knob.

[FDE]: **F**unction **D**efinition **E**xecutive

This button is used to step through sub-menu items within some of the menus. Also used together with the other yellow button (**[FILT]**) when setting filter parameters.

18. [NF] / [PITCH] / {CW SPEED} / {ECHO}

[NF]: Notch Filter for SSB;   (two types)

- ***Push*** **[NF]** to enable or disable the Notch Filter.
- ***Long-Push*** **[NF]** to enter the adjustment menu. Select 'type 1' or 'type 2' using **[VFO].** Choose the type that best eliminates the disturbing signal.

PART-3: DETAILED BUTTON OPERATION

[PITCH] : CW Offset Frequency

This feature controls the offset of the transmitting frequency from the received frequency. Thus, it defines the frequency (tone) at which the operator prefers to listen to the CW signal. **Default is 720 Hz.**

- *Push* **[PITCH]** to enter the adjustment menu. The current value is shown in the bottom line of the display.

- Adjust the offset for your preferred frequency (400 Hz to 1200 Hz).

- *Push* **[PITCH]** again to exit adjustment menu.

{CW SPEED} : Adjusts the speed of the internal Keyer

- You must be TX mode to adjust the speed. When in CW mode, push the PTT button on the Mic, or key a dit or dah on the paddle to enter TX mode, then…

- … *Long-Push* **[PITCH]** to open the CW Speed adjustment menu; the current speed is shown in the bottom line of the display.

- Adjust speed with **[VFO]**

- *Push* **[PITCH]** to exit CW Speed menu.

{ECHO}: TX Audio Reverberation; Only in SSB Mode.
Use this feature with caution!

Echo adds reverberation to the transmitted audio. This sometimes enhances the audio punch, when working DX.

Only a very small amount of reverberation should be used.

NOTE: There are 3 adjustments within the ECHO menu:

- **ECH. Delay** from 20 to 120; default is 50
- **ECH. Depth** from 1 to 50; default is 7
- **ECH. Level** from 1 to 50; default is 50

o *Push* **{ECHO}** (PITCH button) when in TX mode to enable Echo.

o *Push* **{ECHO}** again (while in TX mode) to disable Echo.

o *Long-Push* **{ECHO}** when in TX mode to enter the Echo adjustment menu. The current value is shown in the bottom line of the display.

o Toggle through ECHO menus with *Push* blue **[MOD]** Adjust value with **[VFO]**. Start with default values and monitor your own signal while adjusting.

o *Push* **{ECHO}** again to exit the menu.

PART-3:   DETAILED BUTTON OPERATION

[PRE]/[ATT]/[RFG]/{TX METR}:

IN RX MODE: Preamp/Attenuation/RF GAIN

Preamp/Attenuation: This button controls the level of RF signal applied to the front-end of the receiver, by selecting either 20dB of Preamplification, 12dB of attenuation, or neither (OFF).

Push [PRE] to step through the three options. Specifically, several sequential **Pushes** results in PRE/OFF/ATT/OFF/PRE/OFF/ATT/OFF, etc.

[RFG]: (RF GAIN); A Software-Controlled RF GAIN Control.

In addition, there is also a software-controlled RF GAIN control to further reduce the signal strength if necessary.

Sometimes some bands are overloaded, especially the low bands at night when using a large antenna. In such cases reducing the RF Gain cab be very helpful.

 A software RF Gain has the advantage that different settings can be stored for different modes – by band. The optimum setting for each mode (CW, SSB, DIGI, AM, FM) is memorized and may be different on different bands.

Adjusting RF GAIN: *Long-Push* [RFG] enters the adjustment menu.

The current level of the RF Gain is shown on the bottom line of the display. Maximum gain is 99, minimum is 0.

While listening to the receiver, adjust with **[VFO]** to the desired level.

- Note: when in RX mode, the level of RF Gain is always shown in the top line of the display, just left of center. Example: RF90

Push [RFG] to exit the adjustment menu.

{TX METR}: Enables selecting what to display during TX

IN TX MODE: Push PTT to enter TX mode, then...

- **Long-Push {TX METR}** to enter the selection menu
- **Rotate [VFO]** to choose function to be displayed during TX:
  - **MIC, ALC, PWR, SWR, *PWR Num, SWR Num***
    - ***BLUE = Numeric (digital) Display***

PART-3: DETAILED BUTTON OPERATION

OTHER IMPORTANT ADJUSTMENTS (Not Front Panel Adjustable)**:**

MIC/DIG GAIN (level) Control (Software Menu Item #10)

These are separately adjustable. While in Menu Item #10, toggle between MIC and DIG with Push **blue** [FDE].

- **MIC GAIN:** Adjustable from 1 to 100; default 24
- **DIG GAIN:** Adjustable from 1 to 100; default 18

VOX DELAY: (Software Menu Item #16)

There are two types (by Mode): CW and SSB.

Toggle between modes with *Push* yellow **[FDE]**

- In **CW:** **VOX Delay** defines how long the radio remains in TX mode after the last dit or dah has terminated. It also sets the hang delay of the PTT line keying an external amplifier's T/R relay. It is adjustable in increments of 100 mS, from 100 mS to 10 seconds.

  NOTE: VOX Delay must be enabled with at least 100 mS in order to transmit in CW mode. Enable/Disable in MENU Item #35, or after exiting MENU mode, *Long-Push* **[VOX].**

- In **SSB:** VOX Delay defines how long the transmitter remains in TX mode after you have ceased talking. It is adjustable in increments of 100 mS, from 100 mS to 10 seconds.

Reset to Factory DEFAULT

If your radio is not operating properly and you have no idea what you have adjusted wrong, you can return all parameters to their default values with a RESET.

RESET PROCEDURE FOR ALT-512:

- **SWITCH OFF THE RADIO**

- **PUSH AND HOLD [TUN] (6) Button**

- **SWITCH THE RADIO ON; RELEASE [TUN]**

After the software loads and the radio returns to normal operation, it will be in:

- RECEIVE; MODE: CW
- VFO: A; FREQUENCY: 10.100 MHz.
- RF GAIN: 90; AGC4; FILTER: FL-1

PART-4: OPERATION

ALT-512 OPERATION

(In preparation)

PART-5: MENU ITEMS (V.1.0c)

MENU ITEMS

READ ME FIRST

Note: Some menu items have only one adjustable parameter; other menu items have multiple adjustable sub-menus.

- When you enter MENU Mode, the current value of the selected menu or sub-menu item is shown on the bottom line of the display.

- Most menus use the **[VFO]** knob to change the value or selection.

- When there are additional sub-menus, the menu name is usually followed with **">"** (i.e., **AGC>**). Unless otherwise noted, tab through sub-menus by pushing the yellow **[FDE]** button.

- Some menus use the **blue [MOD]** button to change sub-menus.

#00   **Valcoder: (VFO Encoder Mode Selector)**

The valcoder specifies the mode of the VFO encoder. Select with **[VFO]**.

- **Plain:** The speed of change in frequency when turning the **[VFO]** knob is linear. The 'step' is determined by the setting of **[STEP]** on the front panel, and is also mode-dependant. See table on page 3-10.

- **Intel:** (Intelligent) The speed of change in frequency varies with the speed at which you rotate the **[VFO]** knob.

#01   **Save Band: Specifies how VFO-A and VFO-B are used.**
Select with **[VFO]**.

- **VFO A&B: (Default)** Normal operating Mode. Must be in this mode to operate SPLIT on the same band.

- **VFO A:** Enables using **VFO-A** and **VFO-B** on different bands at the same time. The mode enables Cross-Band operation when using SPLIT; (i.e., TX on one band, RX on another band).

#02   **IF DSP: (Specifies the Mode of the Receiver)** Select with **[VFO]**.

- **ENABLE: (Default)** This is the normal operating mode, utilizing all DSP features of the radio. This mode uses a virtual **I**ntermediate **F**requency, which is offset from the operating frequency by a few kHz. This is similar to 'homodyne' technology.

- **DISABLE: (This Mode is normally never used!)** When IF is disabled, the radio operates in simple Direct Digital Conversion mode, and has highly reduced performance.

#03 CW Pitch: Defines TX 'Offset Frequency' for CW Mode

Adjustable with **[VFO]** from 400Hz to 1200Hz. (Default: 720Hz).

When working CW, the transmitter's frequency must be offset from the received frequency such that it is equal to the frequency of the tone at which the operator wishes to copy CW. This automatically zero-beats the TX signal with the QSO partner's received signal. Different operators prefer to listen to different tone frequencies.

CW Pitch enables the operators to set the offset to their preferred tone.

#04 CW Speed: Defines the speed of the built-in Auto-Keyer

Adjust the speed of the Auto-Keyer with **[VFO]**. The minimum speed is 10cpm (2wpm), maximum speed is 300cpm (60wpm). Default: 40cpm.

#05 CW Weight: Defines the Dot/Dash Ratio of the Auto-Keyer

Adjustable with **[VFO]** from 2:1 to 4.5:1. Default: 3:1.

#06 CW Key>: Type / Auto / Rev

Select sub-menu with **[FDE]**; Change values with **[VFO].**

- **Type:** 'Single' (Straight Key) or 'Auto' (Paddle)
- **Auto:** 'Iambic Mode B' (Default) or 'Iambic Mode A'
- **Rev:** 'Disable' (Default) or 'Enable'; When Enabled, the dit and dah Side of the paddle are reversed; Preferred by left-handed Ops.

#07 AGC>: CW / SSB / AM Defines the AGC Time Constant (slow~fast)

Select sub-menu with **[FDE]**; then adjust from 1 (slow) to 10 (fast) with **[VFO].** When in RX, the AGC Level is shown at the center of the top line of the display. See page 2.4 (DISPLAY).

During adjustment, it only shows changes to the AGC level in the top line of the display when adjusting the timing of the current mode the radio is in. It does not change while adjusting the AGC timing for other modes.

For other modes, monitor change in the bottom line of the display. Defaults: CW: 4 ¦ SSB: 1 ¦ AM: 1.

Adjust for personal preference, according to band conditions.

#08   RF>: RF GAIN   CW / SSB / DIG / AM / FM (Adjustable by Mode)

Select sub-menu with **[FDE]**; Change values with **[VFO].**
Adjustable from 0 to 99. Default: DIGI: 60 ¦ All other Modes: 90.

Adjust for personal preference, according to band conditions.

#09   Power: TX Power Adjustment   (Adjustable with [VFO])

Adjustable in percentage (%) of maximum TX power, from 10% to 100%.
Default: 100%.

#10   GAIN>: MIC / DIG TX Audio Gain (Level) Adjustment

For Voice and Digi Modes. Select sub-menu with **[FDE]**, adjust with
[VFO].

- **MIC:** Microphone Gain; adjustable from 1 to 100. (Default: 24)
- **DIG:** TX Audio Gain; adjustable from 1 to 100. (Default: 18)

#11   NR Level: Noise Reduction Level; (Adjust with [VFO])

Digital Signal Processing (DSP) feature for reducing noise on a noisy band.
NR is most effective on CW. It is also effective on SSB, but degrades the
fidelity of the received signal somewhat. Default: 10.

Adjust for most effective noise reduction.

#12   NB Level: Noise Blanker; (Adjust with [VFO])

The Noise Blanker is a DSP feature used for reducing certain types of
pulsed noise (i.e., lightning or automotive ignition noise). Adjustable from
40 to 100. Default: 50.

Adjust for best noise reduction.

#13   NOTCH FILT: (Automatic) Notch Filter (NF); (Adjust with [VFO])

NF only works on SSB and AM. It does not function on CW, DIGI or FM.

The ALT-512 has two types of Notch Filter: Type-1 and Type-2. The Notch
Filter is used for removing interfering carriers from the received frequency.

Choose the type which best removes the disturbing signal.

#14   SQL>: Two types of Squelch: 'SSB/AM' / 'FM'

These are independently adjustable. Select sub-menu with **[FDE]**.
'SSB/AM' also works DIGI modes.

Adjust threshold from 0 to 100 with **[VFO]**. On a clear (unoccupied) frequency, adjust threshold level until the audio just barely shuts off and `SQL` in the menu on the right of the screen lights up.

#15   VOX Gain: VOX Sensitivity Adjustment

Adjust with **[VFO]** from 1 to 100. Default is 100.

#16   VOX>: (VOX Delay);   CW / MIC

Select sub-menu with **[FDE]**; Change values with **[VFO].**
Adjustable from 100ms to 10 seconds in 100ms steps.

Note: In CW mode, **[VOX]** must be switched on in order to transmit.

Setting CW VOX Delay to a higher value (i.e., 400ms) reduces the relay clicking noise. Setting to 100ms enables *Fast Semi-Break-in*.

#17   AM/FM: Enable/Disable AM & FM Modes

Must be set by band; change with **[VFO]**).

- Many operators do not use AM or FM Mode below 29 MHz, especially in Region One where IARU recommendations discourage use of these modes below 29 MHz.

- When operating hf contests, these modes are not used. Disabling these modes enables changing modes without stepping through AM & FM.

#18   CMR Level: Speech Compressor Level (SSB Mode-Only)

Adjust Compression Level with **[VFO]** from 1 to 100. Default: 25.

Normally 40 should be maximum compression level used.

#19   ECH: Level / Delay / Depth; Echo (Reverberation) settings.

Select sub-menu with **blue [MOD]**, adjust value with **[VFO]**.

- **Delay:** Adjustable from 20 to 120; Default: 50
- **Depth**: Adjustable from 1 to 50; Default: 7
- **Level:** Adjustable from 1 to 50; Default: 50

#20 EQL>: RX / TX; There are separate 3-Band Equalizers for RX and TX.

- Select RX or TX using **[FDE]**
- Select Band (**H**igh **F**req. / **L**ow **F**req. / **M**id **F**req.) with **blue [MOD]**
  - Adjust Equalization Level from 1 to 100; Default: 100.
  - Set to personal preference.
  - You may use the built-in monitor for adjusting TX parameters, but it is better to enlist the help of a local ham who is familiar with your natural voice.

#21 WTR Gamma: Choose Type of Waterfall (Type 1 or Type 2).

Rotate **[VFO]** to select type.

#22 RX Graph: RX Mode; select **Panorama / Waterfall** with **[VFO]**.

Same function as pushing **[PAN]** on the front panel.

#23 RPAN Set: Toggles between '**sin**gle **band'** and **'all band'.**

This function enables you to specify whether you wish to adjust the parameters of the bandscope (Scale/Shift/AVG) for all bands at once, or if you want to define these parameters for each band separately. Select with **[VFO].** Default: **sin**gle **band**.

#24 RWTR: Set: Toggles between '**sin**gle **band'** and **'all band'.**

This function enables you to specify whether you wish to adjust the parameters of the waterfall (Scale/Shift/Speed) for all bands at once, or if you want to define these parameters for each band separately. Select with **[VFO].** Default: **sin**gle **band**.

#25 RWTR: RX Waterfall Settings: Scale / Shift / Speed;

Select sub-menu with **blue [MOD].** Adjust value with **[VFO].**

- **Scale:** Adjustable from 0.1 to 5.0; **Default: 3.0**
- **Shift:** Adjustable from -100 to +100; **Default: 65**
- **Speed:** Adjustable from 0 to 4; **Default: 4**

#26 RPAN: RX Panadapter Settings: AVG / Scale / Shift;

Select sub-menu with **blue [MOD].** Adjust value with **[VFO].**

- **AVG:** Adjustable from 1 to 100; **Default: 100**
- **Scale:** Adjustable from 0.1 to 5.0; **Default: 3.0**
- **Shift:** Adjustable from -100 to +100; **Default: 65**

#27 TX Graph: TX Mode; select **Panorama/Waterfall** with **[VFO]**.

Same function as pushing **[PAN]** on the front panel while transmitting.

#28 TWTR: TX Waterfall Settings: Scale/Shift/Speed;

Select sub-menu with **blue [MOD]**. Adjust values with **[VFO]**.

- **Scale:** Adjustable from 0.1 to 5.0;   **Default: 3.0**
- **Shift:**   Adjustable from -100 to +100; **Default: 15**
- **Speed:** Adjustable from 0 to 4;   **Default: 4**

#29 TPAN: TX Panadapter Settings: AVG/Scale/Shift;

Select sub-menu with **blue [MOD]**). Adjust value with **[VFO]**.

- **AVG:** Adjustable from 1 to 100;   **Default: 100**
- **Scale:**   Adjustable from 0.1 to 5.0;   **Default: 3.0**
- **Shift:** Adjustable from -100 to +100; **Default: 15**

#30 PAN CL>: Bandscope RGB Color Settings: CL>1. / Cl>2.

- **CL>1.** defines the color of the lines of received signal. Select with **[FDE]**; select R/G/B with **blue [MOD].** Change color value with **[VFO]**.
- **CL>2.** defines the color of the vertical bar (near the center of the display) representing the passband of the selected DSP filter. Select with **[FDE]**, then select R/G/B with **blue [MOD].** Change color value with **[VFO]**.

Set for user's preference:

DEFAULTS	RED	GREEN	BLUE
CL>1.	R30	G60	B60
CL>2.	R31	G20	B31

#31 TIME>: Set Clock Time; Hour / Min

Select sub-menu with **[FDE]**; Change values with **[VFO].**

#32 Corr TIME: Clock Accuracy Adjustment

You can speed up or slow down the clock with this adjustment. Adjustable with **[VFO]** from -63 to +126. Default: 0.

#33 TX Metr: SWR Num* / PWR Num* / SWR / PWR / ALC / MIC

Selection defines what parameter (during TX Mode) to be displayed and the choice of display method. Normal display method is bar graph.
*Num = Numeric display.

#34 Type Tone: Defines type of signal transmitted during TUNE Mode.

Choose tone type with **[VFO].**

- **Single tone (DSB) = Carrier** (for tuning antenna matchbox)
- **Two tone (SSB) = 2 Tones** (for testing SSB IMD)

#35 VOX>: CW / MIC Enable/Disable VOX for CW or Voice Modes.

Select Mode with **[FDE]** and Enable/Disable with **[VFO]**

#36 Shift VFO: Shifts the display frequency to read the correct MHz value when used with a transverter on 2m or 70cm.

Adjustable from **-**1000 to **+**1000 with **[VFO]**. (Default: 0).

#37 Contest: ENABLE/DISABLE with [VFO]

This feature works in conjunction with contest logging software (i.e., N1MM, WinTest, etc.). When enabled, the canned voice messages from the software can be initiated from the keyboard and transmitted in SSB.

#38 Shift dB:

ENABLE/DISABLE with [VFO]

This feature is associated with the sensitivity/level of the Bandscope and waterfall. It compensates for changes in sensitivity when using the Pre-Amplifier or Attenuator.

When Shift dB is enabled:

- **And** the Pre-Amplifier is switched on, Shift dB reduces the level of the display by the same amount (dB) that the amplifier amplifies.
- **Or** the Attenuator is switched on, Shift dB increases the level of the display by the same amount (dB) that the ATT attenuates.

#39 CWdt>: Lvl / RX / TX   CW decoder; decodes up to 30wpm.

Select sub-menu with **[FDE]**, Adjust value or Enable/Disable with **[VFO]**. The current value/selection is shown in the bottom line of the display.

- **Lvl:** Level, adjustable with **[VFO]** from 1 to 100. Default: 5
- **RX:** ENABLE/DISABLE the CW Encoder on RX Mode
- **TX:** ENABLE/DISABLE the CW Encoder on TX Mode

Alt-512 SOFTWARE MENU QUICK GUIDE

00	Valcoder	14	SQL	28	TWTR
01	Save Band	15	VOX Gain	29	TPAN
02	IF DSP	16	VOX Delay	30	PAN
03	CW Pitch	17	AM/FM	31	TIME
04	CW Speed	18	CMR (compr.)	32	Corr TIME
05	CW Weight	19	ECH	33	TX METR
06	CW Key	20	EQL	34	Type Tone
07	AGC	21	WTR Gamma T.	35	VOX> CW/MIC
08	RF GAIN	22	RX Graph	36	Shift VFO
09	Power	23	R PAN Set	37	Contest(SSB)
10	GAIN (MIC/DIG)	24	RWTR Set	38	Shift dB
11	NR Level	25	RWTR .	39	CW decoder
12	NB Level	26	RPAN .	40	(reserved)
13	Notch Fil	27	TX Graph	41	(reserved)

ALWAYS 'ENABLE'	Commonly Accessed	Currently Not Used

**The ALT-512 Concept and Design
were created by LZ2TU, RA9YTJ, & LZ1JY**