

GEEKNEST Radio V5A

User Manual

Thank you for choosing GEEKNEST Radio V5A.

The GEEKNEST Radio V5A is capable of receiving FM, AM, SW (SSB and DSB), and Aviation Band signals. We strongly recommend that you thoroughly read this user manual and explore each feature after first tuning your new radio on. Enjoy the full range of functions at your fingertips!

This product offers two modes of output: digital and analog. Each mode supports a unique set of features to enhance your experience.

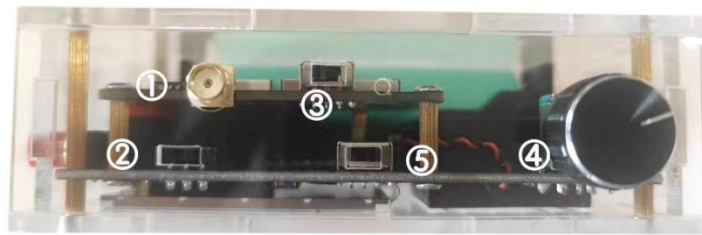
Digital Output Mode:

- Radio
 - FM: 64MHz-108MHz
 - AM: 520KHz-1710KHz
 - AM SW: 3.5MHz-30MHz
 - Aviation Band/Air Band: 118MHz-137MHz
- Bluetooth Speaker
- *Web Radio (Needs specific firmware to support this function)

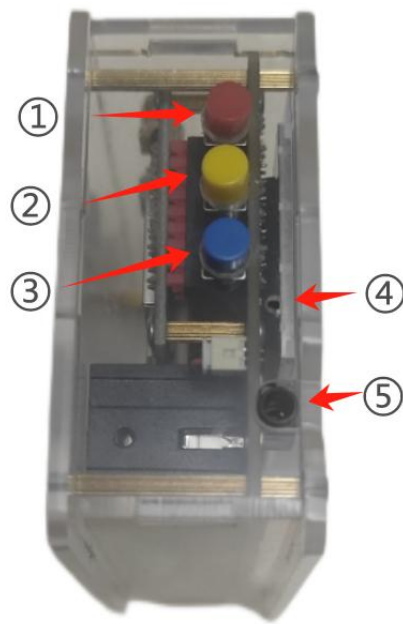
Analog Output Mode:

- Radio
 - FM: 64MHz-108MHz;
 - AM: 520KHz-1710KHz;
 - AM SW: 3.5MHz-30MHz;
 - AM SSB: 3.5MHz-30MHz (BFO -2000 to +2000Hz);
 - Aviation Band/Air Band: 118MHz-137MHz

Basic Structure Diagram



- ① **Antenna Interface:** Please use SMA external screw internal needle interface antenna
- ② **Digital/Analog Output Switch:** Switch digital and analog output to speaker.
- ③ **MW ferrite loop antenna switch:** For those with DIY skills, you can choose a ferrite rod coil with a value between $180\ \mu\text{H}$ and $450\ \mu\text{H}$ and solder it to the ferrite antenna interface on the receiver board. Afterwards, you can use the switch to toggle between receiving signals through the antenna interface only or with the ferrite rod coil.
- ④ **Rotary Encoder:** See operation instructions for details.
- ⑤ **Battery Power Switch:** Applicable to hardware version v1.0.12 or above. When viewed from the front, toggling the switch to the right turns on the power, while toggling it to the left turns off the power. The device can still be charged when the power switch is off. However, to initiate firmware flashing, you need to **turn the power switch on and keep pushing down the encoder**. (Note: After turning on the power switch, a long press on the encoder is required to power on the device.)



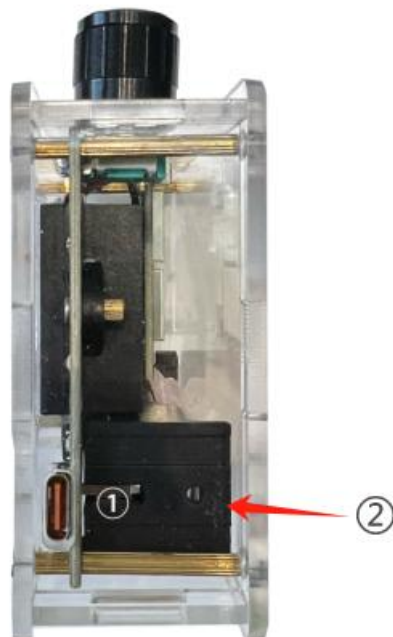
① **Button 1**

② **Button 2**

③ **Button 3**

④ **Reset button:** Used after firmware flashing or when the device hangs(For hardware versions after 12, hardware issues can be resolved by turning off the power switch).

⑤ **3.5mm Stereo Headphone Jack.**



① **USB Type-C Interface:** Can be used for charging (please use charging devices produced by regular manufacturers for charging) and firmware upgrading.

• **Other Operations: Battery Replacement.**

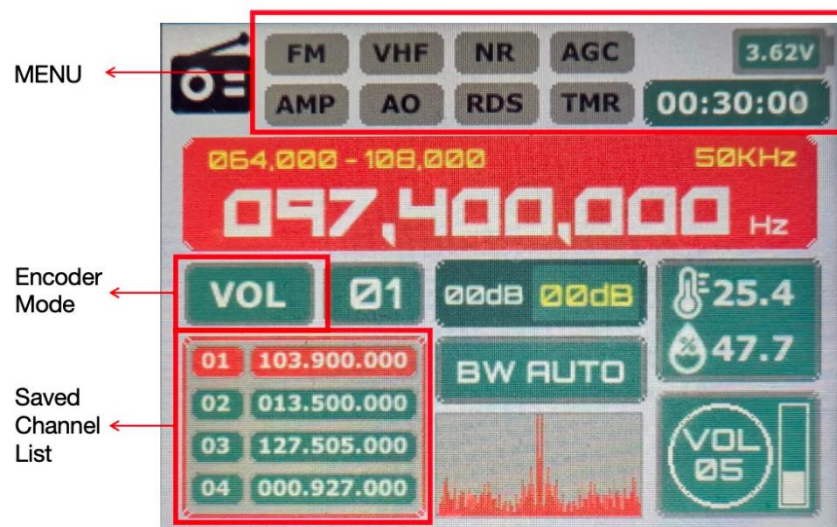
② **Please use 18650 lithium battery ;**

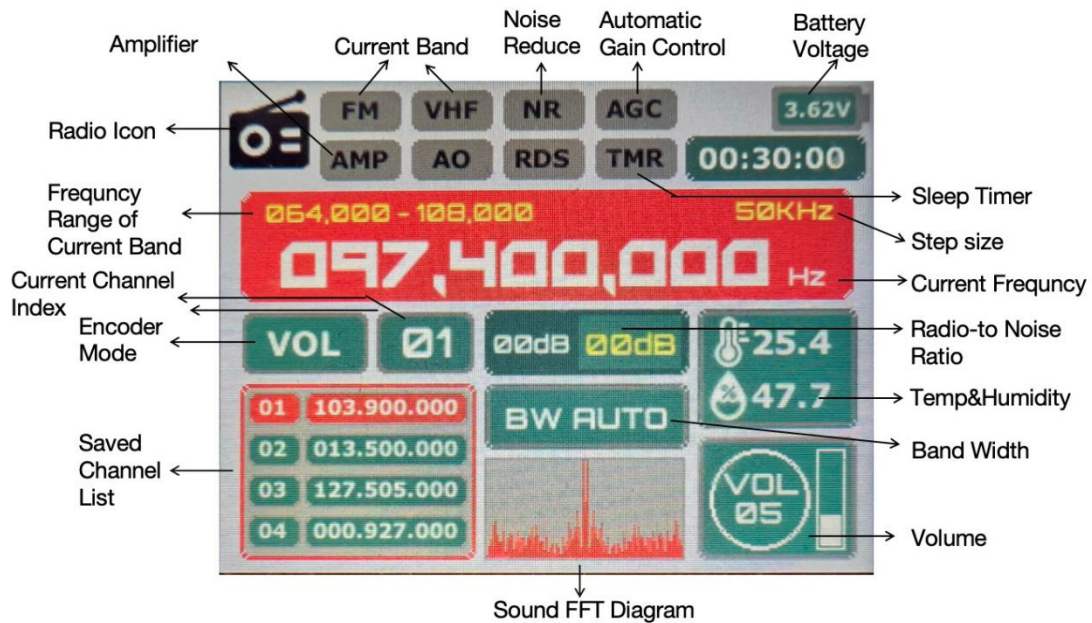
Please use 18650 flat-top lithium battery produced by a reputable manufacturer. Forcing in a pointed-top lithium battery may cause issues such as MCU deformation.

Battery Installation: When installing the battery, please follow the assembly instructions. The left side of the back (the side with the TYPE-C port) is the positive terminal of the battery, and the right side (the side with the headphone jack and buttons) is the negative terminal.

Note: Do not install the battery backwards, as this may cause permanent damage to the radio.

User Interface and Operation Instructions





(1) Screen Display and Operation

The main controls of the radio are operated through the menu area, encoder mode, and channel list selection. The screen display definitions and areas are illustrated in the diagram above.

Operations mainly include:

Short Press: Press the button or encoder for approximately 0.5 seconds.

Double Click: Press the button for 0.5 seconds, wait approximately 0.3 seconds, then press again for 0.5 seconds.

Long Press: Press the button or encoder for about 2-3 seconds.

Rotating the Encoder: Turn the encoder knob clockwise or counterclockwise.

■ Encoder Mode Description and Operation

■ VOL Mode (Default Mode)

After power on, the radio will enter the default mode, with the encoder mode displaying "VOL". The basic operations in this mode are as follows:

Short Press Button 1: Switch to the top menu.

Short Press Button 2: Switch to the previous channel for playing.

Short Press Button 3: Switch to the next channel for playing.

Double Click Button 1: Switch to Bluetooth speaker mode (Note: Exiting Bluetooth speaker mode will restart the system; this is by design).

Double Click Button 2: Turn off the screen display (Press any key or rotate the encoder to turn the display back on).

Long Press Button 1: Toggle the automatic Noise reduce (NR).

Long Press Button 2: Toggle the automatic gain control (AGC).

Long Press Button 3: Toggle the reception amplifier (AMP).

Short Press Encoder: Switch encoder mode.

Long Press Encoder: Power off the device.

Rotate Encoder Clockwise: Increase volume.

Rotate Encoder Counterclockwise: Decrease volume.

■ CHAN Mode (Channel Selection Mode)

Short Press Button 1: Switch to the currently selected channel for playing.

Short Press Button 2: Switch to the previous channel for playing.

Short Press Button 3: Switch to the next channel for playing.

Double Click Button 1: Switch to Bluetooth speaker mode (Note: Exiting Bluetooth speaker mode will restart the system; this is by design).

Double Click Button 2: Turn off the screen display (Press any key or rotate the encoder to turn the display back on).

Long Press Button 1: Toggle the automatic mute switch (NR).

Long Press Button 2: Toggle the automatic gain control switch (AGC).

Long Press Button 3: Toggle the reception amplifier (AMP).

Short Press Encoder: Switch encoder mode.

Long Press Encoder: Power off the device.

Rotate Encoder Clockwise: Select the next channel (but do not play).

Rotate Encoder Counterclockwise: Select the previous channel (but do not play).

■ FREQ Mode (Manual Frequency Search Mode)

Short Press Button 1: Switch frequency adjustment step size.

Short Press Button 2: Switch to the previous channel.

Short Press Button 3: Switch to the next channel.

Double Click Button 1: Switch to Bluetooth speaker mode (Note: Exiting Bluetooth speaker mode will restart the system; this is by design).

Double Click Button 2: Turn off the screen display (Press any key or rotate the encoder to turn the display back on).

Long Press Button 1: Delete the currently selected channel.

Long Press Button 2: Save the current frequency and band to the currently selected channel.

Long Press Button 3: Save the current frequency and band to a new channel.

Short Press Encoder: Switch encoder mode.

Long Press Encoder: Power off the device.

Rotate Encoder Clockwise: Increase frequency.

Rotate Encoder Counterclockwise: Decrease frequency.

■ SEEK Mode (Auto-Frequency Search Mode)

Currently, AIR/LSB/USB does not support auto-frequency search. During frequency search, the built-in step size is used instead of the displayed manual adjustment step size.

Short Press Button 1: Automatic frequency save switch; when frequency auto-save is enabled, "SEEK+" will be displayed.

Short Press Button 2: Switch to the previous channel.

Short Press Button 3: Switch to the next channel.

Double Click Button 1: Switch to Bluetooth speaker mode (Note: Exiting Bluetooth speaker mode will restart the system; this is by design).

Double Click Button 2: Turn off the screen display (Press any key or rotate the encoder to turn the display back on).

Long Press Button 1: Delete the currently selected channel.

Long Press Button 2: Save the current frequency and band to the currently selected channel.

Long Press Button 3: Save the current frequency and band to a new channel.

Short Press Encoder: Stop searching if in search mode; switch encoder mode if not in search mode.

Long Press Encoder: Power off the device.

Rotate Encoder Clockwise: Search forward (frequency increases).

Rotate Encoder Counterclockwise: Search backward (frequency decreases).

■ BFO Mode (SSB BFO Adjustment Mode)

This mode can only be selected when the audio output mode is AO and the current band is LSB/USB.

Double Click Button 1: Switch to Bluetooth speaker mode (Note: Exiting Bluetooth speaker mode will restart the system; this is by design).

Double Click Button 2: Turn off the screen display (Press any key or rotate the encoder to turn the display back on).

Short Press Encoder: Switch encoder mode.

Long Press Encoder: Power off the device.

Rotate Encoder Clockwise: Increase BFO frequency.

Rotate Encoder Counterclockwise: Decrease BFO frequency.

■ MENU Mode (Menu Mode)

Short Press Button 1: In the reception mode options, switch the current reception bandwidth. In the timer shutdown option, switch the shutdown time.

Short Press Button 2: Switch the current option to the next value or toggle the current option.

Short Press Button 3: Switch the current option to the next value or toggle the current option.

Double Click Button 1: Switch to Bluetooth speaker mode (Note: Exiting Bluetooth speaker mode will restart the system; this is by design).

Double Click Button 2: Turn off the screen display (Press any key or rotate the encoder to turn the display back on).

Long Press Button 1: Toggle the automatic noise reduce (NR).

Long Press Button 2: Toggle the automatic gain control switch (AGC).

Long Press Button 3: Toggle the reception amplifier (AMP).

Short Press Encoder: Switch to default play mode.

Long Press Encoder: Power off the device.

Rotate Encoder Clockwise: Select the next menu item.

Rotate Encoder Counterclockwise: Select the previous menu item.

(2) List of MENU Mode

Item	Value	Def.	Remarks
Reception Mode	FM	FM	Only the VHF band can be selected.
Reception Mode	AM	AM	You can select medium wave, short wave, and others in the current band menu.
Reception Mode	AIR	Airplane Band Mode	You can select VHF (range 107.97 MHz - 137 MHz) and ALL (test function, range 2.7 MHz - 180 MHz) in this band menu.
Reception Mode	USB	Upper Side Band Mode	You can select medium wave, short wave, and others in the current band menu. Can only be selected when the audio output mode is AO; it cannot switch to this mode if the audio output mode is DO).
Reception Mode	LSB	Lower Side Band Mode	
Current Band	VHF/MW/SW	Band Selection in the Current Reception Mode.	In FM reception mode, only VHF can be selected. In AM/LSB/USB modes, you

			can choose shortwave frequencies covering the SW range of 2.3 MHz - 30 MHz, as well as frequency ranges for various wavelengths (such as the 80-meter band, 3.5 MHz - 4 MHz) for quicker adjustments and searches.
Noise Reduce	NR	Enable the mute function when the current signal is below a certain signal-to-noise ratio and signal strength.	The squelch thresholds manual adjustment is currently not supported.
Automatic Gain Control	AGC	Enable or disable the automatic gain function	
Amplifier (LNA inside)	AMP	Enable or disable the built-in low-noise amplifier (LNA). It is recommended to turn off this function when using an external amplifier.	
Audio Output Mode	AO	In analog audio output mode, you can switch to upper or lower side band reception mode.	You need to switch the top audio output switch to the left AO mode; otherwise, the speaker will not produce sound.
Audio Output Mode	DO	Digital Audio Output Mode (I2S Output Mode)	You need to switch the top audio output switch to the right DO mode; otherwise, the speaker will not produce sound.

BFO	BFO	In single side band mode, the audio output mode menu will display BFO. You can select BFO mode through the encoder to adjust the beat frequency.	Refer to the BFO section in the previous encoder mode chapter.
RDS	RDS	This is only effective in FM mode.	When the RDS switch is enabled and the radio successfully receives and demodulates the RDS signal, the RDS information bar will be displayed (the timer shutdown switch will be hidden while the RDS information bar is displayed).
Sleep Timer	TMR	After selecting this option, pressing button 1 will switch shutdown time between 15min/30min/45min/1h/1h30min/2h. Pressing button 2 or 3 will enable or disable this function.	When timer is enabled and there are no operation for 1 minute, the screen will automatically turn off.

(3) Screen Display Control

Simultaneously press button 1 and 3 can switch the screen display theme. While holding button 1 and 3, rotating the encoder clockwise will increase the screen brightness, and rotating it counterclockwise will decrease the screen brightness.

(4) Restore Default Settings

After long pressing the encoder to power off, hold button 2 and long press the encoder to power on. The radio will be reset to the default settings, and the channel list will also be reset.

Quick Operation Guide

A) Power On/Off: Press and hold the encoder down for 1.5 to 3 seconds to turn the

radio on or off.

B) Main Interface (VOL Mode): Upon powering on, the radio will automatically enter the default VOL mode.

C) Adjust Volume: After turning on the radio, it will automatically play the first stored station or the last channel played. You may adjust the volume by rotating the encoder left and right.

D) Adjust Screen Brightness: Press and hold buttons 1 and 3 simultaneously, then rotate the encoder left or right to adjust the screen brightness.

E) Top Menu Configuration (MENU Mode): In the main interface, press button 1 or press the encoder down three times to switch from VOL mode to MENU mode. The an outer ring will high light on the function button, indicating that the current menu is selected. Press button 1 again or press the encoder down to switch back to VOL mode.

F) Adjust the Current Frequency Band: In MENU mode, rotate the encoder left and right to select the FM + VHF (current frequency band) menu. Press buttons 2 or 3 to switch the frequency band to AM, AIR, or other bands.

G) Adjust Bandwidth: In MENU mode, when the FM + VHF (current frequency band) menu is selected, press button 1 to switch the bandwidth.

H) Turn On/Off Noise Reduction Mode: In MENU mode, continue rotating the encoder until you select the NR (Noise Reduction) menu. Press buttons 2 or 3 to enable or disable the NR function. When enabled, if the station's signal-to-noise ratio is too high, the function will automatically mute to reduce noise.

I) Turn On/Off Automatic Gain Control: In MENU mode, continue rotating the encoder until you select the AGC (Automatic Gain Control) switch. Press buttons 2 or 3 to enable or disable the AGC function.

J) Turn On/Off Built-in Amplifier: In MENU mode, continue rotating the encoder until you select the AMP (built-in LNA amplifier) switch. Press buttons 2 or 3 to enable or

disable the AMP function.

K) Switch Digital/Analog Output Mode: In MENU mode, continue rotating the encoder until you select the Digital/Analog output mode menu. Press buttons 2 or 3 to choose AO (analog output) or DO (digital output). This operation must be completed in conjunction with the physical switch. When the physical switch is set to the left and the output mode is set to DO, digital output mode is enabled. When the physical switch is set to the right and the output mode is set to AO, analog output mode is enabled.

L) Change Channels:

Option 1: In the main interface VOL mode, press buttons 2 or 3 to switch forward or backward through the station list and play the stored stations.

Option 2: In the main interface VOL mode, press the encoder down to switch from VOL mode to CHAN mode. In CHAN mode, rotate the encoder left and right to quickly select a saved radio station. Then, press button 1 to confirm your selection, and the radio will automatically play the selected station.

M) Manual Channel Search (FREQ Mode): In the main interface VOL mode, press the encoder down to switch from VOL mode to FREQ mode. Rotate the encoder left or right to manually search for stations according to the set step size. You can first adjust the current frequency band (see function G for details) and then enter FREQ mode for station searching.

N) Adjust Frequency Step Size: In manual station search (FREQ mode), press button 1 to switch the frequency adjustment step size.

O) Save New Channel: In manual station search (FREQ) and automatic station search (SEEK) modes, after finding a new station, press and hold button 3 to save it to the station list. The station number will automatically increase.

P) Delete Stored Channel: If the number of stored stations in the station list exceeds 5, you can delete stations. In manual station search (FREQ) and automatic station search (SEEK) modes, press buttons 2 or 3 to select the station you want to delete from the list. After selecting the station, press and hold button 1 to delete it.

Q) Automatic Channel Search (SEEK Mode): In the main interface VOL mode, press the encoder down to switch from VOL mode to SEEK mode. Rotate the encoder left or right to automatically search for stations according to the set step size, which is fixed at 2 kHz. In SEEK mode, after finding a new station, press and hold button 3 to save it to the station list. Press buttons 2 or 3 to select stations for deletion in the station list. After selecting a station, press and hold button 1 to delete it. *This mode is not applicable in Aviation Band and SSB mode.

R) Turn On Bluetooth Speaker: In the main interface VOL mode, double-click button 1 to enable Bluetooth speaker mode. After finding the radio (GNRadioPro) on your smart device and connecting for pairing, you can play music from your device through the radio. Adjust the playback volume on the smart device. Double-click button 1 again to shut down and restart the radio, exiting Bluetooth mode.

S) Turn Off the Screen: To save power, double-click button 2 to turn off the screen. Press any button to turn the screen back on.