AT R -1000 HF Automatic Antenna Tuner Operation Manual

October 18 , 2025

www.antuner.com

To my dearest users

Dear Customer,

First of all, thank you for your support. I am dedicated to researching radio peripherals and developing products from the ground up, from the hardware and software level. This operating manual serves as an instruction manual for the Antenna series antenna tuners. Please read this manual carefully before operating the tuner to ensure proper operation and avoid malfunctions due to operational errors.

You are now reading the product manual of ATR-1000 antenna tuner.

BI3QWQ

October 18 , 2025

User Agreement

Please strictly abide by the laws and regulations of your country and region. Any illegal use is prohibited. Users will be responsible for all actions taken when purchasing and using the product. Please read this manual carefully before using the product. If you have any questions, please contact us and we will provide you with a satisfactory answer as soon as possible. Due to product upgrades and modifications, the functions described in this manual may change and may be modified without notice.

Operating regulations for micro-power short-range radio transmitting equipment

You may not arbitrarily change the usage scenario or conditions of this device, expand the transmission frequency range, increase the transmission power (including installing additional RF power amplifiers), or modify the transmitting antenna without authorization.

May not cause harmful interference to other legal radio stations, nor claim protection from harmful interference;

If harmful interference is caused to other legal radio stations, the use of the equipment should be stopped immediately and measures should be taken to eliminate the interference before it can be continued;

When using micropower devices on aircraft and in electromagnetic environment protection zones designated in accordance with laws, regulations, relevant national provisions and standards, such as radio astronomy stations,

meteorological radar stations, satellite earth stations (including measurement and control, ranging, receiving, and navigation stations), and airports, the regulations of the relevant industry authorities on electromagnetic environment protection and relevant industry authorities shall be complied with.

to use the micro-power transmission function of this device within an area with a radius of 5000 meters centered on the center of the airport runway .

Operator technical ability and healthy use

Personnel operating this device should be in good health. If you have health concerns or risky diseases such as heart disease, high blood pressure, or amnesia, please use this device with the assistance of someone who meets the technical requirements or refrain from using the device. This can prevent health risks from improper operation or physical abnormalities.

Possible risks of this device

When the radio is transmitting or stops transmitting, high voltage may be present in the equipment. Do not touch it immediately to avoid electric shock.

the power used exceeds 10W , the grounding post on the rear panel of the device must be grounded to ensure high voltage discharge.

the same 13.8V power supply as the radio or an independent power supply, the power line should be as short as possible to reduce interference.

When operating for the first time, moving the device, replacing the device, or

changing the frequency, you should start from the lowest power and increase it step by step (less than 2.5W intervals) and test the transmission for at least 5 minutes or longer. Make sure that each power level is stable before use. Do not directly transmit more than 10W of power.

The above agreements or precautions include but are not limited to this. Operators must have sufficient experience and safety awareness. If not, please stop using the product.

1. Product Introduction

1.1 Appearance

Front panel

The front panel mainly includes the power switch, USB database, 3.5 mm keypad interface / expansion port, screen, button A, button B, speaker, and large knob.

USB	Connect to computer upgrade interface	K EY/EXT	Connect double-paddle keypad/single-paddle keypad Extended radio communication port (reserved)
A	Return Function	B	Confirmation function
Knob	Used to select options, modify parameters, confirm button		

Rear panel

The back panel mainly includes power connection post, antenna RF socket, signal RF socket, DC quick -release power interface, DC 5.5 x 2.1 voltage interface, and WIFI antenna .

Grounding	Connecting to the Earth	WiFI /BLE	WIFI 2.4G antenna interface
A NTENNA	Connect the shortwave antenna interface	T X	Connecting a shortwave radio transmitter
D C	Connect the power interface, support 11-15V , it is recommended to use 12V power supply first , followed by 13.8V		

side

The product's dimensions are: 23 cm long (including protrusions), 15 cm wide , and 5 cm high.

1.2 Product Performance

Supported Radio: Any radio and amplifier

Frequency range: 1.8MHz-30MHz

Support power: 1. 8-30Mhz S SB/CW 1000W

1. 8-30MHz FM/AM/ FT8 300W

Tuning power: 1 - 20W (5-10W recommended)

Maximum matching: capacitor 1270PF , inductor 1 2.7UH

Dimensions: 23 cm x 15 cm x 5 cm

Product weight: 1.3KG

Working voltage: 11-15V , recommended 12V ,

standby current 0.2A , full power 1A

Main chip: ATR-MCU/240MHz / 8M/128M bit

WIFI : Support hotspot mode and station mode

Remote control: support hotspot, LAN control; support Internet control

(optional function)

Speaker: 3W subwoofer

Morse practice: supports single-scull and double-scull keys

ADC accuracy: 16-bit high precision

Display: 1.8 - inch TFT high-definition color display

Languages: Chinese, English

1.3 Factory accessories

Factory accessories list

1) Host x1

2) DC power cable x1

3) W IFI antenna x1

2. Precautions

2.1 Connection method

Radio-Amplifier-Tune-Antenna

Radio Station-Tune-Antenna

To connect the radio to the antenna tuner, please use a jumper with an M male connector on one end.

2.2 Precautions for using the antenna tuner for the first time

1) Antenna system

When using this antenna tuner, please test the antenna feed system to ensure it is properly grounded. Customer feedback indicates that good antenna feed grounding can greatly improve the tuning capability of this product, providing you with a pleasant communication experience.

2) Power supply instructions

This product supports 11-15V wide voltage input. **Please use 12V power supply first, and 13.8V secondarily . Keep the** power line as short as possible to reduce external noise interference.

3) ATU calibration

The power and SWR algorithm curve of the antenna tuner have been calibrated before leaving the factory. The 10W mode is calibrated using IC - 705, the 100W mode is calibrated using FT - 891 radio, and the 1000W mode is calibrated using a Nanosen power meter.

The SWR will have errors as the frequency increases. You can make fine adjustments in the calibration interface.

After changing the operating environment, antenna feed, or radio, the actual output power may deviate from the power or SWR displayed by the antenna tuner. Refer to the subsequent instructions to calibrate the device.

If the power and SWRs displayed by the radio station are inconsistent with those displayed by this tuner, please refer to the radio station.

2.3 Tuning Preparation

To protect your radio from being damaged, please make sure to adjust the following two parameters before tuning.

1) Radio mode when tuning

Please change the radio's signal mode to FM mode. This mode ensures that the radio can transmit signals continuously instead of intermittently. The continuous transmission of signals helps the antenna tuner detect SWRs and automatically control relay tuning.

If there is no FM mode, you can use AM/CW /SSB modes in sequence.

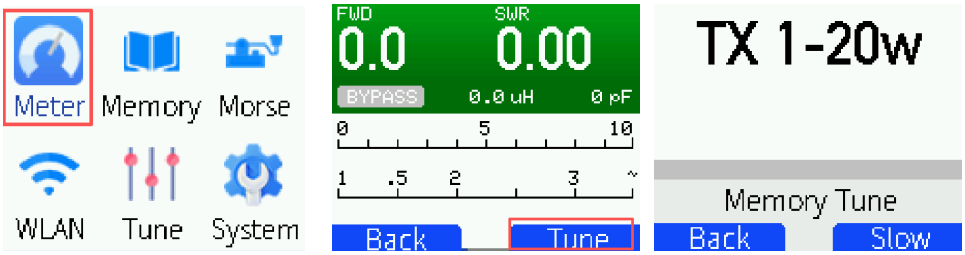
If using SSB mode, you need to keep speaking into the microphone without interruption, or use your phone to play the recording. Just keep the signal output. If you pause in speaking in SSB mode, the antenna tuner will not be able to detect the signal and the SWR cannot be tuned.

2) Transmitting power during tuning

Please adjust the radio power to 5W /10W to obtain a stable signal. If your radio cannot be set to 5W , it is recommended not to exceed 20W to avoid damaging your device.

Regarding setting the [Minimum Tuning Power] and [Maximum Tuning Power], you can find and configure the tuning power in the [Main Interface - Tuning] menu. It is recommended to set the [Minimum Tuning Power] to "1W " and the [Maximum Tuning Power] to "20W ". Use 5 W for tuning.

2.4 Start tuning



(1) First, select [Main Dial] in the main interface to enter the measurement interface.

In the measurement interface, if the title of the right button is displayed as "Tune", it means that the current antenna tuner is not tuned and is in signal pass-through mode; if it is displayed as "Reset", it means that the device has been tuned.

(2) Click the [Tune] button to enter the tuning interface. The current tuning mode is displayed by default. You can short press the [B] button to switch different modes.

(3) After a round of tuning is completed, the final VSWR value will be displayed. If the tuned VSWR is lower than the [Tune - Trigger SWR] value (default 1.80), "Success" will be displayed. If it exceeds this value, "Failure" will be displayed.

(4) " 1.00 " is finally displayed as shown in the figure above , it means that the tuning is successful. You can then return to the normal measurement interface and gradually increase the radio power for normal transmission.

If the SWR increases with increasing power, you can enter the "FineTune" mode and maintain appropriate transmission power, which means that the relay will operate at low speed to find the best combination centered on the current tuning state.

2. 5 Tuning Modes

There are 3 tuning modes to adapt to different working scenarios.

2.5.1 Memory Mode

By default, the system will prioritize this mode.

During tuning, the system will automatically perform tuning in the order of [Tune - Memory Priority] (default automatic storage), and automatically try relay combinations from memory for tuning.

If a combination lower than [Tuning-Trigger SWR] (default SWR 1.80) is found , it will automatically stop. If not found, it will enter the "Full Tune" mode.

2.5.2 Full Tune Mode

This mode will test the matching of capacitors and inductors in sequence according to a step-by-step rule to find the lowest SWR. This mode is time-consuming.

2.5.3 FineTune mode

The inductance and capacitance will be reduced and increased in sequence

with the current tuning result state as the center point. If the SWR increases, it will be stopped immediately.

It is generally used for tuning tests under high power conditions (the power needs to be increased step by step to avoid damage to the power amplifier equipment due to excessive SWR at extremely high power).

2.6 Solutions to tuning failure

If tuning fails during the tuning process, follow the steps below to troubleshoot.

2.6.1 Try again

You can try tuning again first, or try switching to "Full Tune" for tuning.

2.6.2 Modifying parameters

The main parameters that affect the tuning results are [Tune - Relay Speed] and [Tune - Sample Speed].

The recommended range for "Relay Speed" is 10-20 . If tuning fails , try increasing the relay speed to a higher value. A larger value will slow the relay response and provide more stability when detecting SWRs.

The default sampling rate is 128/s (128 times/second). The faster the rate, the lower the accuracy. You can lower the rate and test again.

2.6.3 Modulation Radio Mode and Power

Please make sure the radio mode is FM or other continuous carrier mode.

The radio's transmit power is between [Tune - Min PWR Trigger] (default 1 W) and [Tune - Max PWR Trigger] (default 20 W), and 5 W/10 W is recommended .

2.6.4 Troubleshooting feeder problems

If the device fails to tune at any frequency and you have checked the problem as described above, there is a 90 % chance that the cable is not making contact.

At this time, there may be poor contact between the cable between the [RADIO-ATU-ANTUENNA] you are using. Please replace it and check.

2.6.5 Antenna Issues

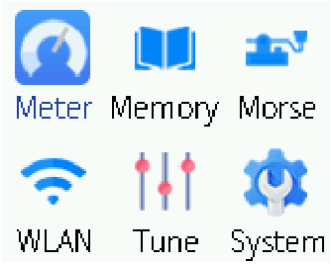
Please try to replace another antenna or test with a dummy load to check for problems with the antenna itself.

2.6.5 Hardware Failure

Please check whether the radio configuration is normal. You can use other power meters or measuring instruments to check whether the radio has signal output and the power is normal.

3. Interface Introduction

This chapter mainly introduces the system interface and related parameters. You can fully customize the various functional parameters of the antenna tuner to give full play to its performance.

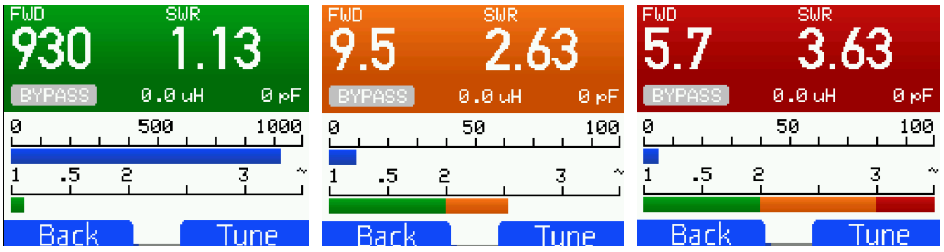


Main interface

After entering the main interface by default, the currently available menus will be displayed, including main dial, storage, Morse, remote control, tuning, and system.

3.1 Main dial

3.1.1 Bar Interface



This interface mainly displays the transmission status and tuning status information. Users can click the "Tune" button to enter the tuning interface.

When the SWR is less than 2.0 , the interface turns green; when it is greater than 2.0 and less than 3.0, it turns orange; when it is greater than 3.0 , a red

warning interface appears.

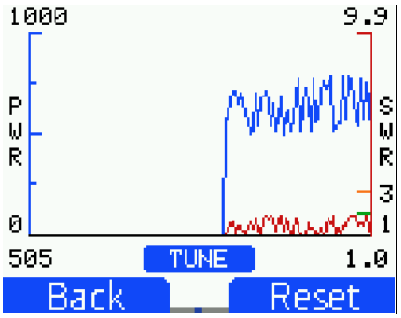
The power level is set in [Tune - PWR Level]. The default setting is "Auto". The levels are 10W /100W/200W/300W/600W/1000W/1200W/2000W . When in "Auto" mode, the system will detect the maximum transmit power and automatically adjust the level.

3.1.2 Memory Selection

This interface mainly displays the transmission status and tuning status information. At the same time, you can press the [B] key to enter the storage selection interface. You can select the user storage bit by rotating the large wave wheel button and quickly switch to the specified relay combination.

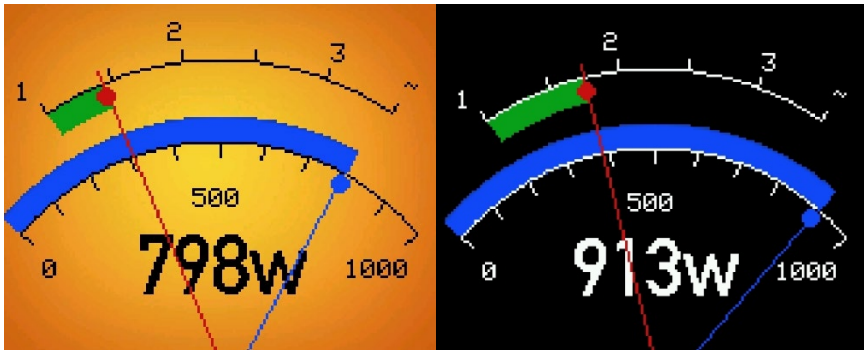
At the same time, after entering the selection mode, you can also select the storage bit and click [B] to save the current relay status.

3.1.3 Curve Graph



This interface mainly displays the power and SWR curve in real time. The "505" in the lower left corner is the current real-time power of 505 watts, and the " 1.00" in the lower right corner is the current real-time SWR of 1.80 .

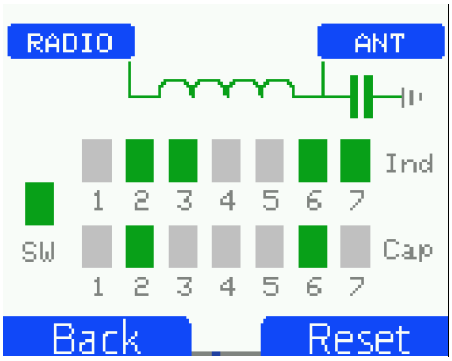
3.1.4 Pointer type



Light and dark mode interface

This interface mainly displays the power and SWR in real time, using a retro pointer interface. The "798 w" in the middle is the current real-time power of 7 98W .

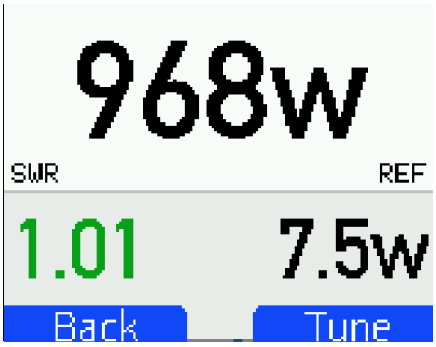
3.1.5 Relay status



This interface displays the current network structure (LC /CL) and relay engagement status in real time. The antenna tuner has both LC and CL networks , and these two different network structures produce different tuning results. The upper half of the interface displays the network schematic, while the lower half displays the relay status.

“SW” indicates LC or CL structure, “1-7” indicates relay position number, “Ind” indicates inductive relay, and “Cap” indicates capacitive relay.

3.1.5 Large Font



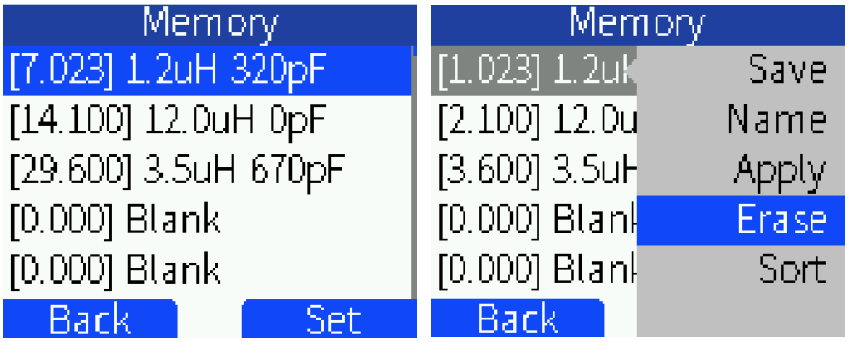
This interface mainly displays forward power, reverse power, and SWR. The font size is large and clear, making it easy to intuitively obtain the current status.

3.1.6 Fine-tuning the interface

This interface is very practical. It mainly performs manual fine-tuning functions. You can press the [B] key to enter this interface and scroll the wheel to select the parameter to be modified. Press [B] again to modify the corresponding parameter value.

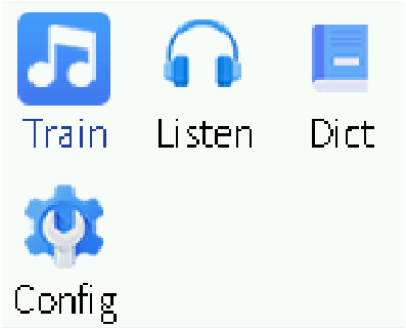
By default, this interface mainly displays the current storage bit number, network structure, inductance value, and capacitance value.

3.2 Storage



This interface is the storage management interface, which can save, erase, rename and apply the relay status stored by the user.

3.3 Morse



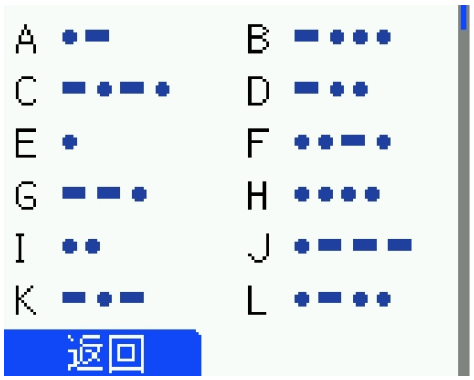
By default, this interface is the selection interface, which can be used for mole training, listening practice and dictionary search.

It supports an external 3.5mm headphone cable to implement single-paddle and double- paddle, and can also implement custom bit rate, key type, tone, letter or phrase practice.

3.3.1 Training and listening interface

WPM range is 10-60 ; Type is the key type, which are Ele -A (double-paddle keyer - forward), Ele -B (double-paddle keyer - reverse), Single -A (single-paddle keyer - left channel), Single -B (single-paddle keyer - right channel), Single -C (single-paddle keyer - left and right channel mixed); Tone is the audio frequency: 200 to 2000Hz ; Mode is the practice mode Letter, Word is CQ phrase .

3.3.2 Dictionary



Dictionary mode is mainly used to quickly look up the Morse code of letters or symbols.

3.4 Wireless remote control

Remote control allows mobile phones or computers to control this device. In this mode, the WiFI transmission power complies with the exemption approval power of the "Regulations on the Management of Micro-power Short-range Radio Transmitter Equipment".

When using the Wi-Fi function, be sure to connect the Wi-Fi antenna first, otherwise the chip will be damaged.

The device will automatically start the network function when it is turned on.

In wireless remote control mode, you can control common device functions through the web page, such as obtaining real-time power, SWR, tuning status, tuning capacitance and inductance values, and storing records. You can also control the device, such as setting capacitance and inductance values, tuning status, network configuration, parameter configuration, data backup, and remote online firmware upgrades. For more details, refer to 3.4.4 Function Introduction .

3.4.1 Hotspot Mode

When entering the [Remote] interface, you can click the [ON] button. The hotspot name is "ATR-1000 " and the password is "12345678 ". Users can use mobile phones or computers to search for the Wi-Fi hotspot and connect.

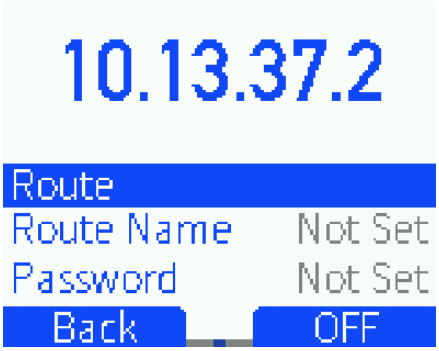
IP address link displayed on the device interface through the system browser , such " http://10.13.37.2 " in the figure above (please refer to the IP address displayed on your device , the default may be " 10.0.0.1 "), and then you can wirelessly control the device.

the web interface above . Especially when the radio transmitter is transmitting at high power, you cannot directly touch the device casing to avoid the risk of electric shock. Therefore, this function can avoid the risks caused by directly operating the device itself.

When you access the website using different terminal devices such as mobile phones, tablets, and computers, the page can adapt to the screen size, giving you a good operating experience.

Regarding web page operation control, you can learn about the detailed functions in 3.4.4 .

3.4.2 LAN Mode



If you want to connect your device to a router, you can do the following: To

connect to the router, you need to enable the hotspot function first .

First, use the knob to select the [Route] tab in the [Remote] interface. As shown in the figure above, both "Router Name" and "Password" are displayed as "Not Set".

Therefore, I need to enter the web management interface to configure the router information.

You can first connect to the device's hotspot name " ATR-1000 " through your mobile phone and access the " http://10.13.37.2 (subject to the IP address displayed on your device) to the control interface.

And select the [Network Configuration] function, configure the correct "Router Name" and "Password" in [Connect Router Configuration], save and

restart the network to take effect.

After restarting the network, you can see two addresses on the default homepage of the [Remote] interface, namely the LAN address and the hotspot address.

You can connect to the device hotspot via your mobile phone or access control within the local area network.

3.4.3 Internet Mode (Optional Function)

This feature is optional. You need to contact official customer service or after-sales technical support to purchase this feature.

To use this function, you must connect the device to a router that has Internet connectivity. Refer to the previous section for configuration. Also, configure the "Internet Remote Control" function in the [Network Config] interface.

"Management Platform" is the server address. You can access this URL through the Internet to control your device. For example , http://atr.antuner.com displayed on the interface is the Internet management address of this device.

"Service Enable" is in enabled state, you need to "enable" this function. If you want to stop the Internet connection control, set it to "disable".

"Status" is the current device's Internet status. The statuses are "Not Enabled" means the function is not enabled; "Not Networked" means the function is enabled but not connected to the Internet server; "Unregistered" means the device is connected to the Internet server but is not registered and authorized; "Online" means the device has been successfully connected to the Internet and

registered, and can be remotely controlled.

“User Name” is the user name you customize for logging into the Internet control platform. It is recommended to be a call sign.

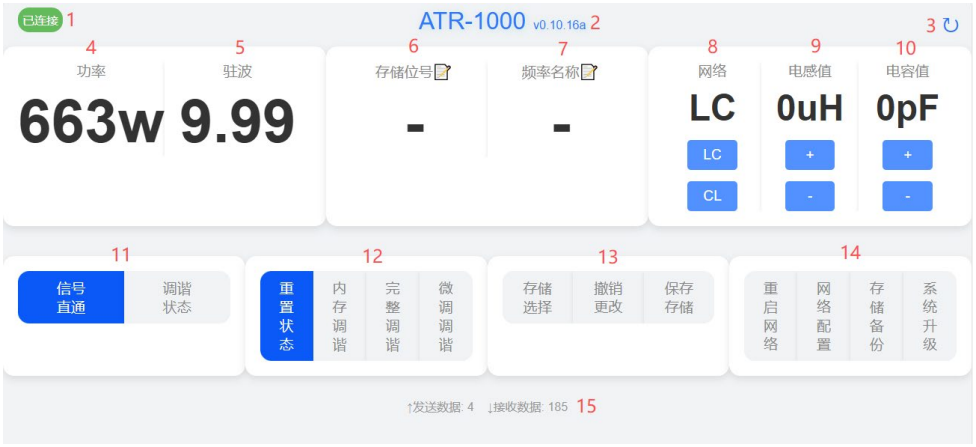
“Password” 6-10 characters in length for password.

"http://atr.antuner.com" in the default status interface of the device's [Remote] interface (please refer to the domain name address displayed on your device, atr.antuner.cn for China and atr.antuner.com for the international network), indicating that the registration to the Internet is successful.

"http://atr.antuner.com" through your computer browser or mobile browser (please refer to the domain name address displayed on your device, atr.antuner.cn in China and atr.antuner.com internationally). Enter your customized user name and password to remotely control the device over the Internet.

For detailed operation control, refer to the next section.

3.4.4 Web control platform



Web page control is implemented using advanced HTML5+ Websocket communication technology, which is adaptive to browser terminals. No matter where you are, you can easily control the device through the browser.

For an introduction to the interface, refer to the numbers in the figure above.

"1" indicates the status of the currently connected device, which has two states: "connected" and "offline".

"2" is the device system version.

"3" forces synchronization of information.

"4" real-time power, update interval 0.5 seconds .

"5" real-time SWR, update interval 0.5 seconds .

"6" stores the bit number, indicating the currently selected relay combination. You can click this area to select the relay combination.

“ 7 ” frequency name indicates the frequency name that matches the relay combination stored in the current device. You can click the “Frequency Name” title to modify it.

"8" is the currently used tuning network structure, which is "LC " or "CL " . If the tuning effect is not good, you can manually switch the network structure and adjust the capacitance or inductance value. You can click "+" or "-" to fine-tune the relay status.

"9" Current inductance value and control. You can click "+" or "-" to fine-tune the relay status.

"10" Current the capacitance value of the current relay combination.. You can click "+" or "-" to fine-tune the relay status.

"11" is the current tuning state. You can click the button to switch to "Signal pass-through", which means the device directly transmits the radio signal to the

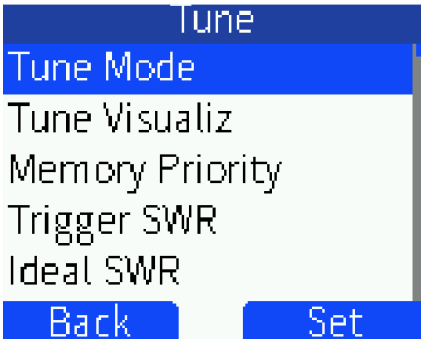
antenna without any processing; "Tuning state" means the device transmits the radio signal through the capacitor or inductor relay to the antenna short and matches the signal.

"12 " tuning control allows you to control the antenna tuning state by clicking four buttons. "Reset" means the device will not participate in any tuning and will maintain the default relay state. "Memory Tune" means the device will enter the memory tuning state, waiting for the radio to transmit a signal and begin tuning. "Full Tune" means the device will enter the full tuning state, waiting for the radio to transmit a signal and begin tuning. "Fine Tune" means the device will enter the fine tuning state and begin tuning. For more information about the different tuning modes, please refer to Chapter 2.

"13 " memory control, "Memory Select" is to select the relay combination record; "Memory Reset" is to undo the modification if the capacitance or inductance value is adjusted "+" or "-" after selecting a relay combination; "Memroy Save" will save the current relay status to the chip memory.

"14 " system control, "Restart Network" is used to modify the network configuration and restart to take effect; "Network Config" can configure the hotspot password, router information, and Internet control function; "Memory Backup" can export or restore the current relay combination; "System Update" can realize online OTA system upgrade, and can also upload firmware files for upgrade.

3.5 Tuning Configuration



In the tuning configuration interface, you can customize the tuning parameters of the antenna tuner to achieve the optimal setting.

3.5.1 Tune Mode

The tuning mode has two modes: manual and automatic. The manual trigger mode is recommended to ensure stable tuning.

1) Manual

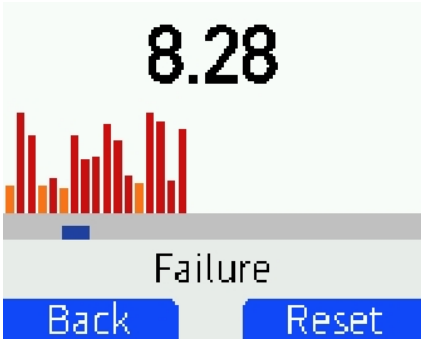
   In manual mode, no matter what the SWR is when the radio is transmitting, the tuning operation will not be performed until the user triggers [Tune] and enters the tuning interface. Otherwise, only information such as power and SWR are displayed in real time.

   This mode is recommended.

2) Automatic

   when the radio is transmitted, and the power exceeds the [Min PWR Trigger] and is lower than the [Max Pwr Trigger], it will automatically enter the [Tune] interface and perform tuning operations.

3.5.2 Tune Visualiz



When [Tune Visualiz] is set to [On], a SWR bar will be displayed in real time when tuning is triggered, as shown in the figure above. When this is enabled, the tuning speed will be slower due to the UI drawing . When disabled, only the last tuning SWR is displayed.

3.5.3 Memory Priority

This function mainly determines whether to prioritize the relay status stored in [Automatic] or [User] when triggering [Tune].

If [User] is set, all relay combinations in the [User] storage position will be traversed first during automatic tuning. When the tested SWR is lower than the [Trigger SWR], the system will automatically stop. If the SWR exceeds the [Ideal SWR], the system will start traversing the relay data in the [Auto] storage position. If the SWR still exceeds the [Trigger SWR] after the test, the system will enter the full tuning algorithm for tuning.

1） User

User storage mainly contains the relay status after user fine-tuning, and the relay

status data is saved in the storage bit.

2) Automatic

If the user does not manually store the data, the system will automatically store it in the [Automatic] storage space.

3.5.4 Trigger SWR

When [Tune Mode] is set to [Auto], when the radio signal is transmitted, if the SWR exceeds the [Trigger SWR], it will automatically enter the [Tune] interface and wait for the user to set the transmission power for tuning.

3.5.5 Trigger SWR

The target SWR is in the process of tuning. It will not stop until the tuned SWR is less than or equal to the [Ideal SWR], and the relay combination will be automatically stored in the [Auto] storage position.

3.5.6 Relay Speed

Relay speed is the time the MCU waits for the relay to respond after sending "open" and "close" action commands to the relay during the tuning process . The smaller the value, the shorter the waiting time for the relay and the faster the tuning speed, but the relay may not complete the energization action. The larger the value, the longer the waiting time for the relay and the more stable the detected SWR, but the longer the time.

When the tuning effect is not good, you can try this parameter first to

increase the relay sleep speed to obtain a more accurate SWR.

3.5.7 Min PWR Trigger

When entering the [Tune] screen, tuning will only occur when the transmitted signal exceeds this value. A setting of 1W is generally recommended . However, please note that some radios will automatically reduce transmit power if the SWR (SWR) is high during transmission. In this case, the 1W power may not be sufficient. In this case, even if the user keeps the radio transmitting, the antenna tuner will not function.

It is recommended to set the [Min PWR Trigger] to "1W " and maintain a 5W power output on the radio to obtain a stable tuning signal and achieve the best tuning results.

If you are using a QRP device, it is recommended to set the [Min PWR Tune] to "1W " and set the radio to 3W power output. If the radio does not transmit in the [Tune] interface, but the relay is inexplicably energized, it means that the value is too low and you need to increase the [Min PWR Trigger].

3.5.8 Max PWR Trigger

In the [Tune] screen, tuning will stop if the radio's transmit power exceeds this value to prevent damage to the radio or antenna tuning equipment. Excessive tuning power can cause the relay contacts to spark. The recommended setting is between 1 and 20W , with a recommended tuning power setting of 5W /10W .

You can customize the transmission power for tuning to a higher value, but this may result in unexpected issues, such as relay or display errors. In these cases, restarting the device will restore the function. Using excessively high power for tuning is not recommended.

3.5.9 PWR Level

The gear position is mainly reflected in the maximum power bar, pointer, curve chart and other interfaces in the [Main Dial] interface.

The default position is "Automatic". When in "Auto", it will automatically change according to the maximum power transmitted by the radio station.

The optional gear levels are 10W/100W/200W/300W/600W/1000W/1200W/2000W .

3.5.10 PWR Curve

The device defaults to three tuning algorithm curves when it leaves the factory: 10W (IC -705 reference calibration), 100W (FT -891 reference calibration), and 1000W (Nason 2kW power meter reference calibration).

However, in practice, the detected power value may fluctuate due to component errors.

The algorithm can be calibrated for 10W , 100W , and 1000W separately .

During the calibration process, data from 10 power points needs to be collected . For example, for 100W calibration, it is necessary to set the radio's

power to 10 % , 20 %,...100% , etc. for transmission sampling and complete automatic calibration.

3.5.11 Sample Speed

The sampling rate is the update rate of the interface, which is 8 times/second, 16 times /second, 32 times /second, 64 times/second, 128 times/second, and 250 times/second. 64 times/second or 128 times /second is recommended .

When the tuning effect is not good, you can adjust the sampling speed.

3.5.12 Sample Noise

The main purpose of sampling calibration is to obtain the average value of the forward and reverse signal voltages of the antenna tuner in standby mode. If the voltage is lower than the average value, it is considered to be noise interference and will not actively trigger the power calculation and SWR calculation.

The power and SWR will be displayed on the interface only when the average value is exceeded, thus preventing the antenna tuner interface from displaying power and SWR abnormally.

1) OFF

When turned off, the sampling average will not be calculated, and the noise level will be controlled using the [Sampling Noise] parameter as the limit value.

2) Automatic

When automatic is turned on, the system will automatically calibrate the sample

when it is turned on and display the calibration results.

3.5.13 Sample Min Noise

The sampling noise is the minimum monitored forward and reverse voltage that controls the antenna tuner in standby mode. When the voltage converted by the low radio transmission power is lower than this value, the antenna tuner will not take any action. When the transmission power exceeds this value, the power and SWR will be displayed in real time.

3.5.14 Auto Memory

After the complete tuning is completed, if the SWR is lower than the [Start-up SWR], the value will be automatically saved to the memory. And the next time you do a quick tuning, this combination will be searched from the memory first, thus improving the tuning efficiency.

This value is the number of automatic storages. It is generally recommended to be within 10. Too large a number will result in a long time spent on automatic tuning.

3.5.15 User Memory

The relay status after manual fine-tuning or automatic tuning is saved to the user storage bit. The recommended number is the number actually used, and it is recommended not to exceed 5.

During quick tuning, the system will prioritize finding the best relay

combination with the best SWR lower than the [Start-up Power] from [User Memory] and [Auto Memory]. If all of them exceed the SWR, the system will enter auto tuning.

3.5.16 StartUp Tune

This value is the default state of the relay at power-up.

1) Not Tune

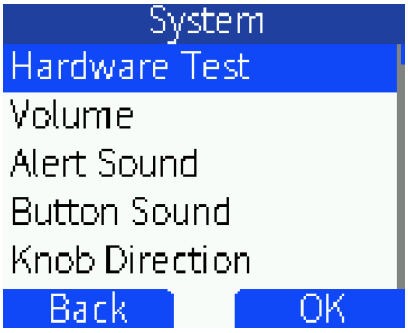
After power on, all relays will be reset to their default state.

2) Last Tune

After powering on, the last relay state before powering off will be restored.

3.6 System Configuration

System configuration mainly configures the basic parameters of the software system.



3.6.1 Hardware Test

It is mainly used to perform functional tests on hardware and software systems, to troubleshoot faults, and to implement online OTA upgrades and other functions.

1) Sampling

This function mainly displays the detected forward voltage and reverse voltage in real time, as well as the calculated power and SWR, and standby noise voltage.

2) Relay

This function will automatically cycle each relay to perform the energizing and resetting action to troubleshoot relay failures.

3) Button

Test the pressing of buttons [A] and [B], and the rotation and pressing of the large wave wheel [←] [→].

4) Speaker

Test the speaker's pronunciation.

5) Simulate

Warning: This function will randomly simulate forward and reverse voltages. The power and SWR detected by the system will be randomly generated numbers by the system, not real data, and are used to test the automatic tuning function. If you turned off this feature, restart your device.

3.6.2 Volume

Used to set the volume of the device. The recommended default is 10. The device uses a 3W speaker with 15 dB gain. To avoid a bad experience caused by excessively loud sounds, please set a lower volume.

3.6.3 Alert Sound

When [Turn ON], when the radio is transmitting, the speaker will automatically emit a "beep-beep-beep" alarm tone when the SWR exceeds the [Trigger SWR].

3.6.4 Key Sound

When [Turn ON], the speaker will make sounds when pressing buttons and rotating the knob wheel.

3.6.5 Knob Direction

Used to set the menu selection direction in the menu list, clockwise or counterclockwise when rotating the large wave wheel.

3.6.6 Theme

The system has two theme colors: [Light] and [Dark]. If you use it outdoors, it is recommended to set it to [Light], and if you use it indoors, it is recommended to set it to [Dark].

3.6.7 Main Interface

The default interface is the default interface option after the device is turned on. The default is [Home], and you can also customize the home page, Meter、Memory、Morse and Remote.

If you are remotely controlling the device for a long time, it is recommended

to set up the [Remote] interface.

3.6.8 Factory Reset

Restore related configuration parameters to factory default values.

"All" will initialize all system parameters.

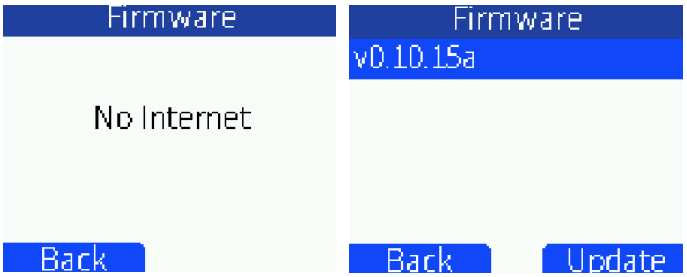
"Configuration" only initializes the menu configuration parameters, such as all parameters in the tuning menu and system menu.

"Memory" only initializes the relay combinations that are automatically saved and user saved.

“Calibrate” initializes the 10W , 100W , and 1000W calibration parameters in "Tune – PWR Curve" .

“Remote” initializes the AP hotspot, router and other information configured in "Remote" .

3.6.9 Firmware



This function is an OTA online upgrade. To use this function , you need to ensure that the device is connected to the Internet. Otherwise, it will prompt "No Internet". For details, refer to Section 3.4.2 to connect to the router.

After the connection is successful, re-operate this function to see the latest

firmware version, and you can click to upgrade.

3.6.10 Version

You can view the current system version, hardware version, and release date.

3.6.11 Contact

You can check the current official website and after-sales contact information.

3.6.12 Language

Chinese, English.

4. Other functions

4.1 System Upgrade

The system supports three upgrade methods, as follows.

4.1.1 USB data cable upgrade

Preparation: prepare a Type C- USB data cable to connect to the s; and download the Download the ATR-1000 Upgrade Tool from http://www.antuner.cn or update.antuner.cn , unzip and install the driver file first, or manually download the driver (http://www.wch.cn/downloads/CH341SER_EXE.html) and install it.

(1) Turn off the device and connect it to the computer using a USB cable .

(2) Start the software and the system will automatically detect "Please select the device port to be upgraded". For example, the above picture shows "COM3 ", which means the device is recognized. COM3 only represents the port number recognized by the demonstration computer. The port number recognized by your computer may not be COM3 . Please refer to your own computer for details.

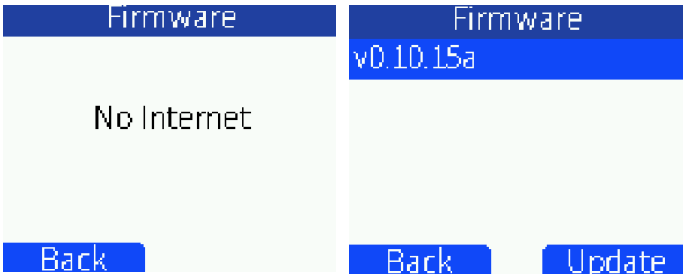
If there is no device connected to the port, please make sure you have installed the driver and used a normal USB data cable, or try changing the computer USB port.

If multiple computers are recognized, try unplugging and plugging the USB cable to eliminate the problem.

(3) After correctly identifying the device port, you can select an online firmware file from the drop-down list or select the firmware file downloaded locally by clicking "Select Local Firmware".

（4） Click [Start Upgrade] and the system will start upgrading. The interface will display the upgrade progress. There will be an error message if the upgrade succeeds or fails.

4.1.2 Device Online Upgrade



You need to connect the device to the Internet first. For details, refer to section 3.4.2 on how to connect to a router.

After the connection is successful, you can re-enter this interface and the firmware will be automatically downloaded and updated. After the download is successful, it will automatically restart. If the upgrade fails, a prompt will be given.

4.1.3 Remote Internet Upgrade

If you are upgrading the device through remote control over the Internet, please first refer to 3.3.3 and 3.3.4 to complete the Internet configuration and access the management domain name .

"Online Firmware" can automatically download the firmware to upgrade the device remotely, and the web page will display the upgrade progress in real time.

"Local Firmware" means the firmware file downloaded by the user can be uploaded to the device for upgrade by local selection. This function only supports operation under web control within the local area network and does not support uploading firmware under remote Internet state.

4.2 System Error Prompt

If a fatal error occurs during system startup or operation, a mandatory error message will be displayed. You can try restoring the factory settings or downgrading the system version to repair it.

If the error persists, you can contact us by email to fix it.

4.3 Special Mode

4.3.1 System formatting mode

Keep the device turned off first, press the [A] and [B] buttons at the same time, turn on the power, and it will automatically enter the formatting mode.

If an error occurs after formatting, refer to the previous section for solutions.

4.3.2 Sampling test mode

Keep the device turned off first, press the [B] button, turn on the power, and it will automatically enter the sampling mode.

4.3.3 Factory Test Mode

Keep the device turned off first, press [A] at the same time, turn on the power,

and it will automatically enter the factory function test mode, which will test the operation buttons, relays, and sampling.

5. Questions and Answers

5.1 What is the maximum power handling capacity?

The device's maximum rated power is 1000W in SSB mode and 300W in FT8/FM mode. However, this power may vary depending on the frequency and antenna scenario, potentially reducing the supported power. Certain frequencies or antenna conditions may interfere with normal device operation, such as screen or relay anomalies. Restarting the device and reducing the power may resolve this issue.

It is not recommended to use it beyond the rated power, otherwise unpredictable risks may occur.

1500W SSB circuit , from signal input to output, using braided copper mesh, 1.8 mm , 1.6 mm , and 1.2 mm diameter copper wires.

7Mhz in non-tuning mode 1500SSB , 500W FT8/FM intermittent transmission and reception test, the temperature of the core components of the equipment is good.

It is recommended that users first use a small signal to successfully tune, then gradually increase the power level and constantly monitor the SWR patterns of the radio and antenna tuner. If any abnormal behavior occurs, stop transmitting and

quickly reduce the power level.

5.2 long-wire antennas be used?

This device recommends using a balanced antenna, such as a Yagi, straight V, inverted V, or other antenna containing a 1:1 balun. When the power exceeds 100W , if the antenna is very balanced, the SWR may gradually increase with the increase in power.

If it is a balanced antenna, manual fine-tuning can be performed to adjust the SWR well, but if the ground network of an unbalanced antenna is not good, the SWR band may be larger.

5.3 Power supply method?

The device does not have a battery component inside and only supports external DC power supply.

The interfaces are DC 5.5-2.1 and KF2EDGRC 5.08 quick - connect terminals .

It is recommended to use a 12V power supply first, followed by the same 13.8V power supply as the radio . The power cord should be as short as possible. Too long a cord will cause noise interference.

5.4 Are QRP , Yaesu, ICOM radio stations supported?

The antenna tuner is a universal antenna tuner and can be used as long as the radio station can achieve continuous signal output, such as FM /AM/CW/SSB/FT8 .

If you want to use a control line with Yaesu, ICOM and other brand radios to

realize the linkage between two devices, you need to use an additional conversion module.

5.5 How accurate is the power and SWR displayed?

A directional coupler is used inside the antenna tuner to detect power and SWRs. Factors that affect accuracy include installation method and calibration algorithm.

Since antenna tuners have a certain range of errors during mass production, the accuracy of power and SWR detection will be affected. Furthermore, the power calculation algorithm will also affect the accuracy of power or SWR detection.

-891 before leaving the factory . If the user encounters inaccuracies during use, they can calibrate it themselves. Calibration can be achieved in [Tune - Power Curve].

5.6 Does it support remote control over the Internet?

The device comes with an Internet communication protocol. You only need to connect the device to a router and turn on the Internet control function, then you can control it through a browser anytime and anywhere.

5.7 Will the relay status remain when the power is turned off ?

Won't.

The relay used in the device is a non-magnetic latching relay and can only work normally when it is turned on. After it is turned off, the signal will pass

directly to the device.

6. After-sales support

Official websites: www.antuner.com

Contact email:bi3qwq@gmail.com

WeChat support: bi3qwq