

mAT-50

HF-SSB Automatic Antenna Tuner

Instruction Manual Version V1.0

INTRODUCTION

mAT-50 is the latest long-wire antenna tuner we have designed. It uses a number of advanced control technology, is currently the highest level of control technology antenna tuner. It is specially designed to tune long-wire antennas.

mAT-50 consists of two parts: tuner and coupler. Tuner are outdoor parts for tuning antennas. The coupler is an indoor part which is used to connect the transceiver, provide power for the tuner and control the tuner for tuning. There is only one 50 ohm RF coaxial cable between the tuner and the coupler.

There are two versions of the coupler, the YAESU version and the ICOM&KENWOOD version, which are used to connect YAESU and ICOM&KENWOOD transceivers, respectively. In the future, we will also design a third version of the coupler - Universal coupler, which will be applicable to all brands of radio, not just the three brands of radio. The coupler is optional, you can choose the suitable coupler according to your transceiver. You can buy the coupler separately later.

mAT-50 uses “No-Control-Line” technology and “Power-Off-Hold” technology. No-Control-Line technology can transmit RF power signal, control signaling and DC power on coaxial cable. The tuner does not need to be connected to a control line alone, making the tuner easy to install and use. Power-Off-Hold technology is that the tuner is powered only in tuning, and the coupler interrupts the tuner's DC after tuning. Since the tuner uses a magnetic latching relay, it can still maintain its current state after power failure. This technology enables mAT-50 to have more stable performance and excellent anti-interference capability. At the end of tuning, the tuner is not powered, completely avoiding the stray radiation produced by the CPU oscillation circuit of the tuner affecting the receiving effect of the transceiver.

The tuner housing is produced by aluminum milling and oxidation surface technology, beautiful, delicate, compact and firm. It can work well in all kinds of harsh outdoor environments. The maximum size of the tuner is only 20 cm, which is the smallest outdoor antenna tuner now.

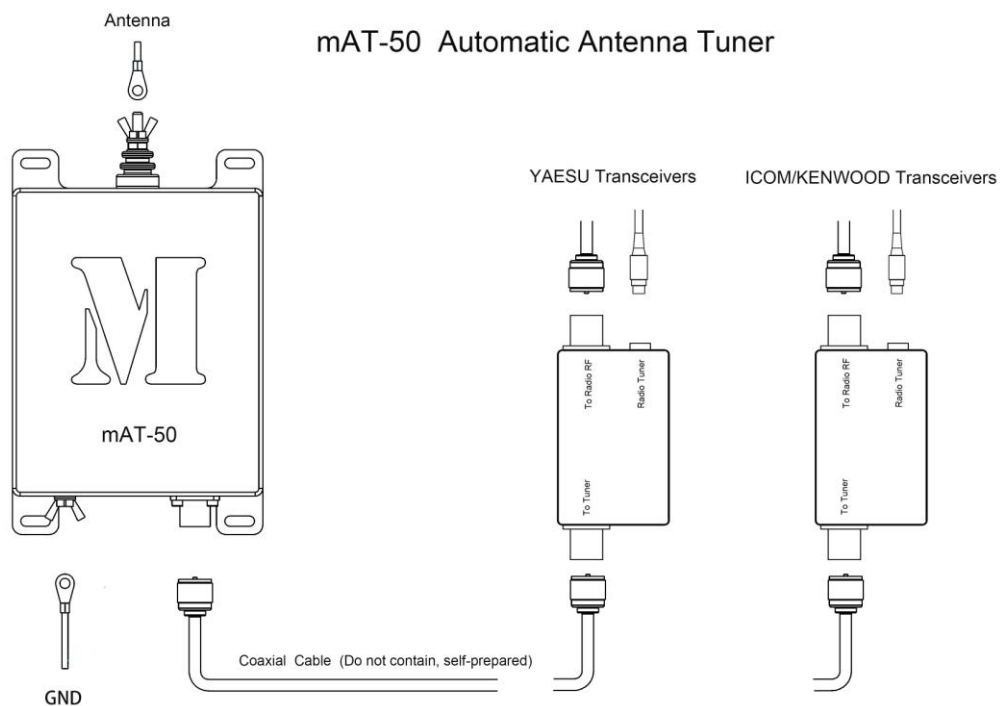
The mAT-50 also features advanced memory tuning, providing 16000 memory locations. When tuning near a previously used frequency it will recall the settings for nearly instant tuning. It learns your favorite frequencies and bands as you use it. You can also start a tuning cycle manually whenever necessary.



WARNING: do not open the shell, otherwise it will damage the sealing performance of the product, resulting in the failure to continue to use!

SPECIFICATIONS

- 0.1 to 120 watts SSB and CW peak power, 30 watts on PSK and digital modes, and 100 watts on 6 meters.
- 16,000 memories for instantaneous frequency and band changing.
- Can be used for YAESU, ICOM and KENWOOD brand transmitters. Powered from the radio.
- Tuning time: 0.1 to 5 seconds full tune, 0.1 seconds memory tune.
- 1.6 to 54.0 MHz coverage. Built-in frequency sensor.
- Tunes 5 to 1500 ohm loads.
- Tunable minimum antenna length: 2.5m.
- Dimensions(Tuner): 20cm x 13cm x 4.5cm (L x W x H).
- Weight: 1.0Kg.



INSTALL

IMPORTANT WARNING

There is a voltage of 13.8V on the coaxial cable connected between the tuner and the coupler. Don't short the shielding layer and core wire of the coaxial cable!

Do not connect any other equipment or components between the tuner and the coupler except coaxial cables. Do not connect Baron, SWR meter, power meter, lightning arrester and other equipment.

If you do this, it will seriously damage the coupler!

mAT-50 consists of two parts: tuner and coupler. By matching the coupler of different version, the automatic tuning can be accomplished with the instructions of the transmitters of the relevant brands, which makes the tuning operation simple and fast.

mAT-50 is a long-wire antenna tuner. The recommended length of the antenna is 12 meters, and

the antenna of this length has the best tuning performance and transceiver efficiency. The minimum length of the antenna supported by the tuner is 2.5 meters. If the length of the antenna is less than 2.5 meters, good tuning can't be guaranteed at low frequencies. Short antennas have low transmission efficiency, even if they can be tuned, but it will make communication difficult, especially the whip antenna, which is generally used in close-range communications.

When erecting an antenna, special attention should be paid to the safety of human body and equipment, and to keeping away from the commanding points of high-voltage wires and buildings, so as to avoid the danger of electric shock and lightning strike. Antennas should be placed in open areas, as far away as possible from buildings, trees and other facilities, especially other electronic equipment.

All long-wire antennas must be connected to the ground network or ground wire, otherwise tuning will become difficult, car and ship hull can be used as a good ground network. Do not use gas pipelines as ground wires, which are very dangerous.

mAT-50 is designed for outdoor use. It has strong mechanical properties and reliable waterproof. When installing, the plug connection of the radio frequency cable should be wrapped with waterproof tape to prevent rainwater from entering the plug. Later use to periodically check the plug connection waterproof, to ensure good sealing, if there is any damage to deal with in time.

The two oblong mounting holes of the bracket have a diameter of 6.6 mm. Tuners are mounted on walls or mast, through M6 bolts or U bolts. The bolts need to be supplied and not included in the accessories of the tuner. The spacing between the two bolts or the width of the U-bolt ranges from 25mm to 100mm, and the mast can be 1-4 inches in diameter. Ensure that the installation is reliable and try to keep the antenna away from nuts, bolts and mast. The bracket is made of stainless steel, which is corrosion-resistant and salt-alkali-resistant. It can be installed in fields and ships.

OPERATION

mAT-50 inherits all kinds of interface functions of mAT tuners in the past. Through a simple replacement of the coupler, you can achieve good support for different brands of radio, become its dedicated tuner, fully support its tuning protocol, through the simple operation of the radio panel can be good tuning. At present, there are two versions of the coupler, the YAESU version and the ICOM&KENWOOD version, which are used to connect YAESU and ICOM&KENWOOD transceivers, respectively.

IMPORTANT TIPS ON POWER

The maximum power of mAT-50 in long term operation under SSB mode is 120 watts, and it can withstand 150 watts in short time. Please do not exceed 30 watts when the digital mode of RTTY and FSK launches for a long time. Too high RF power may cause damage to tuner.

If manual tuning mode is used, the tuning power is recommended to be 5-10 watts and a minimum of 0.5 watts, so the tuner can be well supported for small power devices such as YAESU FT-817. The maximum tuning power should not exceed 20 watts, otherwise it will shorten the life of the tuner or even damage it. For some DIY devices, because there is no good protection function, at high SWR time, The tuning power should be reduced as far as possible so as not to cause damage to these devices.

RADIO SETING AND OPERATION

Because the mAT-50 tuner is fully compatible with the original brand tuners. After matching the corresponding interface cable, it can be used as the original tuner, and the setting and operation of the radio station are the same.

Different brands and models of radio, its function menu settings are different, please refer to their manual for necessary settings.

For ICOM brand radio, you can refer to AT-120, AT-130, AH-4 tuner settings and use methods, most of the ICOM brand radio does not need any settings, connect the data cable and radio frequency cable can be used.

For YAESU brand radio, you need to set up the tuner related options in the function menu. Please read the radio manual for specific settings. Refer to FC-30, FC-40, FC-50 and other original tuner settings.

For KENWOOD brand radio, please refer to their manual, AT-250, AT-300 and other original tuner settings and use methods.

In particular, for some radios with built-in tuners and multiple antenna sockets, their built-in tuners are fixed to a particular antenna pedestal, which can no longer be connected to an external tuner. For example, KENWOOD's TS-480SAT, TS-2000 and TS-590S/G models, because their built-in tunes are fixed to ANT2, can only be used when using external tunes, otherwise the tuner will not work.

RE-TUNING

If you are using ICOM or KENWOOD transmitter, when tuning for the first time after changing the transmitter's frequency, the tuner automatically transfers data from memory and configures tuner. The tuner will start a complete tuning cycle when tuning second times.

If you use the YAESU transmitter, when you change the transmitter's frequency, the tuner automatically follows the transmitter's frequency to query data from memory and configure the LC network. After you press the tuning button of the transmitter, the tuner will start a full tuning cycle and re-tune.

TECHNICAL SUPPORT

Visit the Support Center at: <http://www.mat-tuner.com>. The website provides links to product manuals, just in case you lose this one! When you are thinking about the purchase of other **MAT-TUNER** products our website also has complete product specifications and photographs you can use to help make your purchase decision. Don't forget the links to all of the quality **MAT-TUNER** Dealers also ready to help you make that purchase decision.

PRODUCT FEEDBACK

We encourage product feedback! Tell us what you really think of your **MAT-TUNER** product. In an email tell us how you used the product and how well it worked in your application. We like to share your comments with our staff, our dealers, and even other customers at the **MAT-TUNER** website.

Welcome to <http://www.mat-tuner.com/> for more information

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