

# mAT-K100

## Automatic Tuner For Kenwood & Icom Transceivers

*Instruction Manual Version V2.0*

### INTRODUCTION

mAT-K100 is a automatic antenna tuner designed specifically for KENWOOD and ICOM transceivers, when connecting different interface cables, it can work separately with KENWOOD or ICOM transceivers, just like using their own brand tuners. Interface cables are optional, the standard configuration of tuners comes with only one interface cable, KENWOOD or ICOM. When you purchase, you need to choose KENWOOD or ICOM, or both.

When the tuner starts, it can automatically identify whether the KENWOOD transceiver is currently connected or ICOM, and work with the corresponding software without any settings by the operator.

The mAT-K100 connects to the transceivers via its tuner jack to control the tuning cycle, the transceivers tune button controls the tuner. The tuner jack also powers the tuner, so it requires no external power supply. The tuner is connected to the KENWOOD transceiver, tuning is performed when the [AT] or [AT TUNE] button is pushed on the front of the transceiver and held for one second. For ICOM transceiver, this button is usually [TUNER].

Tuner can work within the range of 1.8MHz to 54MHz, at power levels up to 120 watts. It will tune dipoles, verticals, Yagis, or virtually any coax-fed antenna. It will match an amazing range of antennas and impedances, far greater than some other tuners you may have considered, including the built-in tuners on many radios.

The mAT-K100 has 16,000 frequency memories. When tuning on or near a previously tuned frequency, the mAT-K100 measures the frequency of incoming RF signals and uses "Memory Tune" to recall the previous tuning parameters in a fraction of a second. If no memorized settings are available, the tuner runs a full tuning cycle, storing the parameters for memory recall on subsequent tuning cycles on that frequency. In this manner, the mAT-K100 "learns" as it is used, adapting to the bands and frequencies as it goes. You can also start a tuning cycle manually whenever necessary.

Compatible KENWOOD Transceivers: TRC-80, TK-80, TS-2000, 50, 450, 480SAT (not HX), 570, 590, 850, 870, 990, and any radio that supports the KENWOOD AT-250 or AT-300 tuner.

Compatible ICOM Transceivers: IC-706, 703, 718, 7000, 7100, 7200, 7300, 7410, 746, 756, 7600, and any ICOM radio that supports the ICOM AT-120, AT-130 and AH-4 tuner.

### SPECIFICATIONS

- 0.1 to 120 watts SSB and CW peak power, 60 watts on PSK and digital modes.
- 16,000 memories for instantaneous frequency and band changing.
- 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.
- For dipoles, verticals, Vees, beams, long wire or any coax-fed antenna.

- Dimensions: 20cm x 13cm x 4cm (L x W x H).
- Weight: 0.8Kg.

### AN IMPORTANT WORD ABOUT POWER LEVELS

The mAT-K100 is rated at 120 watts maximum power input at most. Many ham transmitters and transceivers, and virtually all amplifiers, output well over 120 watts. Power levels that significantly exceed specifications will definitely damage or destroy your mAT-K100. If your tuner fails during overload, it could also damage your transmitter or transceiver. Be sure to observe the specified power limitations.

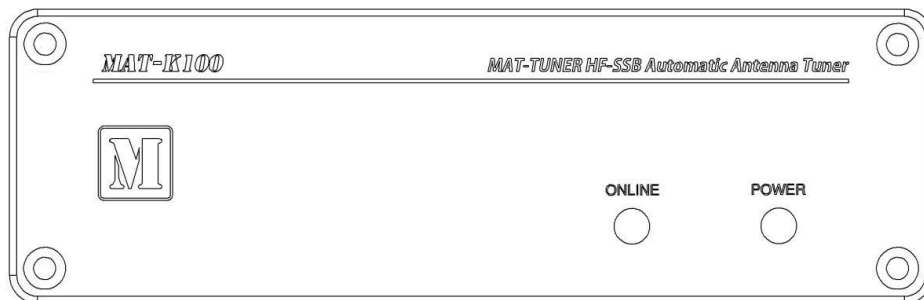
**Note for use with TS-480HX: KENWOOD** has programmed the 480HX so that if it detects an external tuner, it will limit the RF power to 100 watts. It is not modifiable as far as we know. While the mAT-K100 can be connected to the 480HX, the radio will never transmit more than 120 watts.

### FRONT PANEL

On the front panel there are two LED indicator lights.

**ONLINE:** tuner's status, online or bypass.

**POWER:** the tuner's power light.



### REAR PANEL

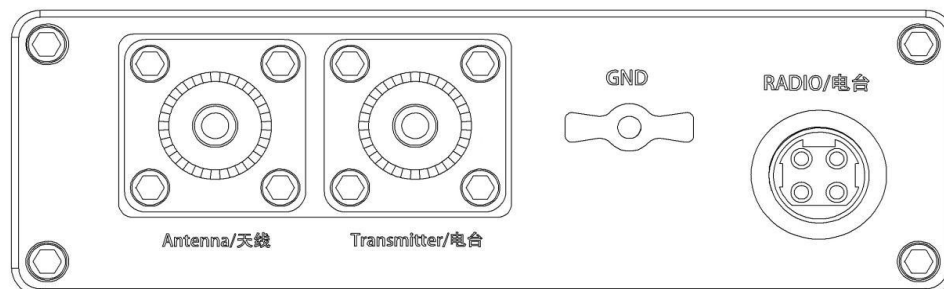
The rear panel of the mAT-K100 features five connectors.

**Antenna:** SO-239 connector for coax cable from antenna.

**Transmitter:** Connect a 50 ohm coax jumper cable from this standard SO-239 connector to the ANT jack on the back of the transceiver.

**Radio:** This 4-pin mini-DIN connector connects to the supplied radio interface cable, which connects to the tuner port on the KENWOOD or ICOM transceiver. DC power is also supplied over this jack.

**GND:** Connect to antenna system ground.



**TRANSCEIVER INTERFACE CABLE**

There are two kinds of interface cables for mAT-K100: KENWOOD and ICOM. The interface cable provides control signals between transceivers and tuner, and power supply for tuner. When the tuner starts, it can automatically identify whether the KENWOOD transceiver is currently connected or ICOM, and work with the corresponding software without any settings by the operator.

The supplied radio interface cable is 50 centimeters long. If it is desired that the mAT-K100 is positioned farther from the transceiver than this cable length allows, a custom cable will need to be constructed. This can be accomplished in two ways: Cut the supplied cable and solder a jumper wire between all the connections, or purchase new connectors and cable to construct a custom-length interface cable from scratch.

**INSTALLATION**

The mAT-K100 tuner is designed for indoor operation only, it is not water resistant. If you use it outdoors (Field Day, for example), you must protect it from the rain.

Always turn your radio off before plugging or unplugging anything. The radio may be damaged if cables are connected or disconnected while the power is on.

**Installation**

Connect the HF antenna jack on the transceiver to the Transmitter jack on the back of the mAT-K100, using a 50 ohm coax cable rated 120 watts or greater. On the KENWOOD TS-480, TS-2000 and TS-590(S/SG) radios, the mAT-K100 must be connected to the ANT 1 jack of the transceiver. The KENWOOD TS-480, TS-2000 and TS-590 will not initiate an external tuning cycle if ANT 2 is selected. The internal tuner will be used, instead, on those models equipped with an internal tuner, such as the KENWOOD TS-480, TS-2000 and TS-590.

Connect the supplied radio interface cable to the DIN 4-pin jack on the rear of the mAT-K100, marked "RADIO". Connect the other end of this cable to the six-pin(four-pin for ICOM) interface port on the rear of the transceiver, marked "TUNER". The tuner can automatically identify the type of connected transceiver.

Grounding the mAT-K100 tuner will enhance its performance and safety. mAT recommends that you connect your tuner to a suitable ground; a common ground rod connected to buried radials is preferred, but a single ground rod, a cold water pipe, or the screw that holds the outlet can provide a serviceable ground.

**Operation From the KENWOOD Transceiver**

To initiate a tuning sequence from the KENWOOD transceiver, press and hold the [AT] or [AT TUNE] button on the radio for one second. The radio will switch to CW mode, reduce power, and begin to transmit a carrier. The mAT-K100 will begin a memory tuning sequence as described above. If an acceptable SWR match is found in the memory tuning cycle, the tuning cycle ends. Otherwise, the mAT-K100 automatically begins a full tuning cycle in an attempt to find a good match. If the full tuning cycle is then successful, the match is stored in a memory associated with the selected frequency. When the tuning cycle is complete, an indicator on the display of the transceiver will show that the tuner is active. This indicator varies by model; consult the transceiver owner's manual for details on operation with an external automatic tuner. To bypass the tuner via the KENWOOD transceiver front panel, press the AT button momentarily.

**Operation From the ICOM Transceiver**

The tuner is operated by an ICOM transceiver in the same way as KENWOOD, except that the tune button is usually labeled "TUNER"

**LEDS**

There are two indicator LEDs on the front panel of mAT-K100. The POWER LED is the power light, it is lit, indicating that the tuner has been turned on. The ONLINE light, means the tuner is status, active or bypass.

**TECHNICAL SUPPORT**

Visit the Support Center at: <http://www.mat-tuner.com/en/>.

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/en/> for more information

**MAT-TUNER**

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