MAT-TUNER®

mAT-K100 Automatic Antenna Tuner

For ICOM & KENWOOD Transceivers

Quick Operation Guide

1. Product Overview

The mAT-K100 is a versatile and powerful automatic antenna tuner designed to seamlessly integrate with modern ICOM and KENWOOD HF transceivers. Operating from 1.8 to 54 MHz with a power handling capability of up to 120 watts, it dramatically expands your antenna system's flexibility.

mAT-K100 includes the **mAT-CK** cable for KENWOOD transceivers. For ICOM transceivers, use the **mAT-CI** cable (sold separately). The tuner automatically adapts to your transceiver based on which cable is connected — no manual setup required.

Key Features:

Wide Compatibility: Works with most ICOM (e.g., IC-7300, IC-718, IC-7100 series) and KENWOOD (e.g., TS-590, TS-480, TS-2000 series) transceivers via dedicated adapter cables.

If you're using the tuner with a Kenwood radio, use the mAT-CK cable that comes in the box. For ICOM radios, you'll need to separately purchase the mAT-CI cable.

Intelligent Tuning: Employs a fast two-stage tuning process—first checking its 16,000-position memory for a match, then performing a full search if needed—to achieve an SWR below 2:1 in 5 seconds or less.

Transparent Operation: Once connected and configured, it operates exactly like the manufacturer's original tuner (ICOM AH-4 or KENWOOD AT-300), using the same familiar button on your radio.

Robust Matching: Capable of matching a vast range of antennas (dipoles, verticals, Yagis) and impedances, often outperforming many built-in radio tuners.

Package Includes:

mAT-K100 Automatic Antenna Tuner unit.
mAT-CK Adapter Cable (for KENWOOD transceivers).

> **Note**: For ICOM transceivers, the mAT-CI adapter cable must be purchased separately.

2. Front panel

The front panel of the tuner has 2 indicator lights, as shown in the figure.

ONLINE light**:** Show tuner's status, Online or Bypass.
PWR light**:** Tuner's power light. It will be lit when the tuner is turned on.

3. Rear panel

The figure below is the rear panel of the mAT-K100 tuner.

GND: Connected to antenna system ground. Correct and good ground wire can ensure the safe operation of the tuner.

ANTENNA: SO-239 socket, connect antenna with 50ohm coaxial cable.

RF IN: SO-239 socket, connected to the transmitter's "ANT" socket, using coaxial cable.

RADIO: This 4-pin mini-DIN connector is connected to the tuner Adapter socket of the transceiver through a matching Adapter cable. The transmitter sends Adapter commands and supplies power to the tuner through this cable.

4. Connection & Installation

Safety Precautions: Always ensure your transceiver is powered OFF before

making or changing any cable connections. Use the tuner indoors or provide full protection from moisture outdoors. Ensure all connectors are secure.

Step-by-Step Setup:

1. Connect the **ANTENNA** RF socket on the transmitter to the “**RF IN**” socket on the tuner using a 50-ohm RF cable.

> **Important Note (for TS-480, TS-590, etc.):** Connect the external tuner to ANT1. The internal tuner is tied to ANT2, so selecting ANT2 will not activate the external tuner.

2. **Adapter cable**: Connect the adapter cable (mAT-CK for KENWOOD, mAT-CI for ICOM) between the "**RADIO**" socket on the tuner and the "**TUNER**" socket on the transceiver.

3. **Antenna Connection**: Connect the antenna feed line to the "**ANTENNA**" socket on the tuner.

4. **Grounding (Recommended)**: For optimal performance and lightning protection, ground the GND terminal and install a lightning arrestor on your feed line.

5. Transceiver Configuration

Most transceivers will automatically recognize the external tuner. If not, you may need to manually select the external tuner model in your transmitter's menu.

- ICOM: Set the external tuner type to "AH-4".
- KENWOOD: Set the external tuner type to "AT-300".
- Refer to your transceiver's manual.

6. Detailed Operation

A. Initiating a Tune Cycle

1. Press and hold the **TUNER** button on the transceiver (may be labeled [**TUNER**], [**AT**], [**TUNE**], or [**TUNER/CALL**]) for approximately 2 seconds.
2. The transceiver will automatically:
   - ✧ Switch to CW mode.
   - ✧ Reduce power to a low tuning level (0.5-15W).
   - ✧ Transmit a carrier signal.
3. The mAT-K100 will begin its tuning cycle. You will hear the relay clicking as it

searches for the best match.

4. Upon completion, the transceiver will automatically return to your previous mode and power setting.

B. Understanding the Status Indicators

Front-panel LEDs:

- **PWR:** Power Indicator.
- **ONLINE**:
  - ✧ **LIT**: Tuner active, compensating impedance.
  - ✧ **OFF**: Tuner inactive. RF input/output are directly connected.

C. Online/Bypass Toggle (Function Varies by Radio)

- On some transceivers, quickly press the [**TUNER**] button to toggle the mAT-K100 between **ONLINE** and **BYPASS** mode.
- Look for a "**TUNER**" icon on transceiver's display to confirm the tuner is active (ONLINE).

> **Note**: Some transceivers cannot bypass the tuner; it will remain ONLINE at all times.

D. Memory Function

The tuner stores successful match settings for specific frequencies in its 16,000-position memory. When you return to a previously-tuned frequency, it will recall the setting almost instantly (in ~0.1 seconds) without a full tuning cycle.

7. Technical Specifications

Item	Specification
Frequency Range	1.8 - 54 MHz
Maximum Input Power	120W (SSB), 30W (Digital Modes)
Required Tuning Power	0.5 - 15 W
Tuning Time	Max 5 sec, ~0.1 sec (Memory Recall)

Item	Specification
Power Supply	10 - 15 V, 0.5A(supplied via adapter cable)
Operating Temperature	-10°C to +60°C (14°F to 140°F)
Memory Capacity	16,000 positions
Dimensions (W x H x D)	170 x 130 x 35 mm (6.7 x 5.1 x 1.4 in)
Weight	800 g (28.2 oz)

8. Support & Resources

For the latest product information, manual downloads, or to find where to buy, please visit our website: http://www.mat-tuner.com/.