

mAT-180H Operation Manual

Automatic Antenna Tuner

Thank you for purchasing a MAT-TUNER series product. Please read this manual carefully and completely before using the product.

■ Notice

This product is compatible with a number of existing ICOM and KENWOOD transceivers. Compatibility with future models cannot be guaranteed.

■ Introduction

The mAT-180H is a fully automatic antenna tuner compatible with a wide range of ICOM and KENWOOD transceivers. It can use two data cables, mAT-CI and mAT-CK, for connection to ICOM and KENWOOD transceivers, respectively. The mAT-CI cable is included as a standard accessory, while the mAT-CK cable is available as an optional accessory.

The mAT-CI cable uses an interface and control protocol compatible with certain original ICOM automatic antenna tuners.

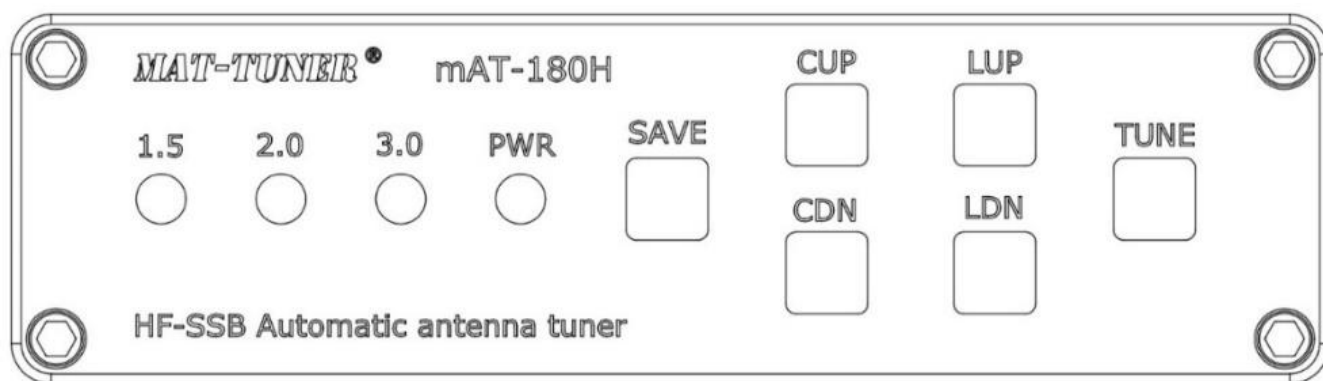
Similarly, the mAT-CK cable uses an interface and control protocol compatible with certain original KENWOOD automatic antenna tuners.

Note: The mAT-180H does not support the ICOM IC-705. IC-705 users should use the mAT-705 antenna tuner specifically designed for this transceiver.

The unit features a metal enclosure and a machined aluminum front panel, providing a sturdy, sleek, and durable design.

■ Front Panel

The front panel has four indicators and six buttons.



1.5, 2.0, 3.0 indicators: Indicate the current standing wave ratio (SWR).

PWR indicator: Power indicator.

SAVE button: Saves the current LC configuration to memory.

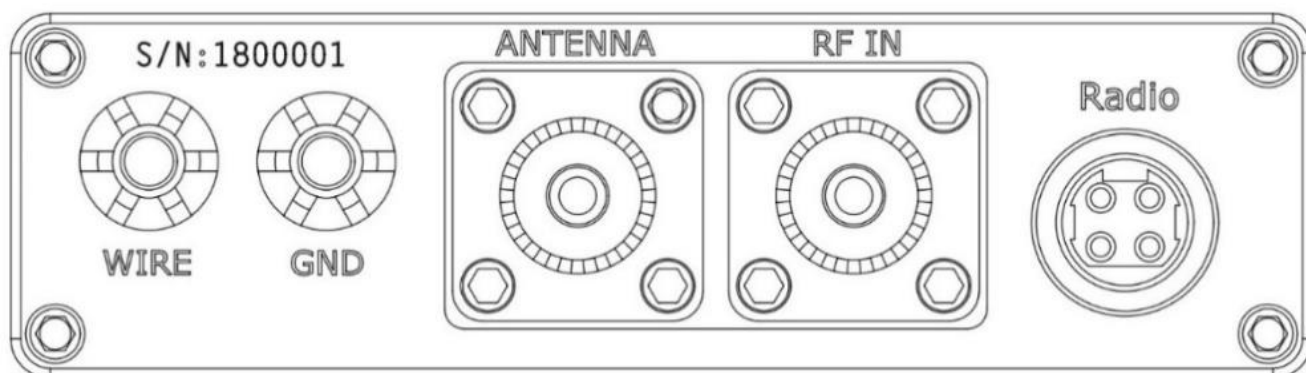
CUP, CDN buttons: Increase or decrease the capacitance of the tuner LC circuit.

LUP, LDN buttons: Increase or decrease the inductance of the tuner LC circuit.

TUNE button: Manually starts tuning. See the Operation section below for details.

■ Rear Panel

The rear panel provides five connections.



WIRE: Wire antenna connection terminal.

GND: Antenna system ground terminal.

ANTENNA: SO-239 socket for connecting an antenna using 50 Ω coaxial cable.

RF IN: SO-239 socket for connecting to the transceiver's "ANT" socket using 50 Ω coaxial cable.

RADIO: Used to connect the transceiver's tuner interface via a **mAT-CI** or **mAT-CK** data cable.

■ mAT-CI Data Cable

This 1-meter cable is included as a standard accessory and is used with ICOM transceivers. The transceiver supplies power to the tuner through this cable while also transmitting data and control commands.

■ mAT-CK Data Cable

This 1-meter cable is used with KENWOOD transceivers. The transceiver supplies power to the tuner through this cable while also transmitting data and control commands.

■ Installation

⚠ WARNING: Do not connect antennas to both the **WIRE** and **ANTENNA** ports at the same time. When using one port, the other port must remain disconnected.

⚠ Before connecting or disconnecting any cables, always turn off the transceiver.

For ICOM transceivers:

1. Connect one end of the **mAT-CI** data cable to the "**RADIO**" data connector on the tuner.
2. Connect the other end of the data cable to the four-pin "**TUNER**" connector on the ICOM transceiver.
3. Use a 50 Ω coaxial cable to connect the transceiver's **ANT** socket to the tuner's "**RF IN**" socket.
4. For a coaxially fed antenna, connect the antenna's coaxial cable to the tuner's "**ANTENNA**" socket and connect the ground wire to the tuner's "**GND**" terminal.
5. For a wire antenna, connect the antenna to the tuner's "**WIRE**" terminal and connect the ground/radial system to the tuner's "**GND**" terminal.

For KENWOOD transceivers:

1. Connect one end of the **mAT-CK** data cable to the “**RADIO**” data connector on the tuner.
2. Connect the other end of the data cable to the six-pin “**AT**” connector on the KENWOOD transceiver.
3. Use a 50 Ω coaxial cable to connect the transceiver's ANT socket to the tuner's “**RF IN**” socket.
4. For a coaxially fed antenna, connect the antenna's coaxial cable to the tuner's “**ANTENNA**” socket and connect the ground wire to the tuner's “**GND**” terminal.
5. For a wire antenna, connect the antenna to the tuner's “**WIRE**” terminal and connect the ground/radial system to the tuner's “**GND**” terminal.

■ Transceiver Setup

Most transceivers require no additional menu settings to use an external antenna tuner. Some models require configuration. For ICOM transceivers, use the menu settings for the AH-4 tuner. For KENWOOD transceivers, use the settings for the AT-300 tuner.

If you are unsure, refer to the section on external antenna tuners in the transceiver's user manual.

The following is an example of the settings for the ICOM IC-718:

1. Press and hold the [**PWR**] button for 1 second to turn the transceiver off.
2. While holding the [**SET**] button, press [**PWR**] to turn the transceiver on.
3. Press [**UP**] or [**DN**] to select [**TUNER**].
4. Turn the main dial to select “**4**” (AH-4 TUNER).
5. Press and hold the [**PWR**] button for 1 second to turn the transceiver off.
6. Press [**PWR**] to turn the transceiver on.

For other ICOM or KENWOOD transceivers, refer to their respective operation manuals. The mAT-180H requires the same menu settings as the corresponding factory external antenna tuner.

■ Operating the Tuner

Automatic Tuning

Press and hold the [**AT**] or [**TUNER**] button on the transceiver for more than 1 second to start automatic tuning. After tuning is completed, the **1.5**, **2.0**, and **3.0** indicators on the front panel display the current SWR.

Manual Tuning

Set the transceiver to transmit a stable carrier of approximately **10 W** using FM, FSK, RTTY, or a similar mode, then press and hold the [**TUNE**] button for over 1 second to start tuning.

Manual Fine-Tuning

After automatic or manual tuning, the SWR can be fine-tuned by pressing the [**CUP**], [**CDN**], [**LUP**], or [**LDN**] buttons. During this process, the transceiver should output a stable 10 W carrier so that changes in SWR can be observed. After achieving the minimum SWR, press [**SAVE**] to save the current LC settings. The **3.0** indicator flashes once to indicate that the LC settings have been saved.

CAUTION: Do not exceed 15 W during manual tuning or fine-tuning operations.

■ Specifications

- **Maximum RF Power:** 120 W (SSB/CW); 30 W continuous (FM, RTTY, FT8, etc.).
- **Frequency Range:** 1.8–54 MHz.
- **Matching Impedance Range:** 5–1500 Ω (typical).
- **Tuning Time:** ≤ 5 s (full tuning), 0.1 s (memory tuning).
- **Memory Capacity:** 16,000 memories.
- **Supported Antennas:** 50 Ω coax-fed antennas and various wire antennas.
- **Operating Temperature:** -10°C to $+50^{\circ}\text{C}$.
- **Dimensions (L $\times$ W $\times$ H):** 200 mm $\times$ 130 mm $\times$ 35 mm.
- **Weight:** 0.8 kg net; 1.0 kg gross.

■ Standard Accessories

1. mAT-CI ICOM Data Cable $\times 1$
2. Operation Manual $\times 1$

■ Optional Accessory

mAT-CK KENWOOD Data Cable

■ Additional Information

1. For some KENWOOD transceivers with a built-in antenna tuner, the external antenna tuner should be connected to the designated ANT connector. For example, some models require connection to ANT1, while ANT2 is connected to the built-in antenna tuner. Refer to the transceiver's operation manual for the correct connector selection.
2. The tuner interface on some ICOM transceivers, such as the IC-M710 and IC-F7000, may differ from the standard ICOM tuner interface. Do not connect the mAT-180H until the interface pinout has been verified, as an incorrect connection may damage the equipment. Any interface modification should be performed by a qualified technician. The same precaution applies to certain KENWOOD models.
3. Enabling the “**PTT TUNE**” function on an ICOM transceiver can greatly simplify operation. Most ICOM transceivers support this function. It is recommended to enable it through the transceiver menu. Refer to the transceiver's operation manual for specific setup and operating instructions.

■ Technical Support

For more product information, please visit our official website: <https://www.mat-tuner.com>. The website provides product specifications and images for the complete product range.

To ensure quality after-sales service, we recommend purchasing our products through a local authorized dealer.

MAT-TUNER

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