

mAT-40

HF-SSB Automatic Antenna Tuner

Instruction Manual Version V1.0

INTRODUCTION

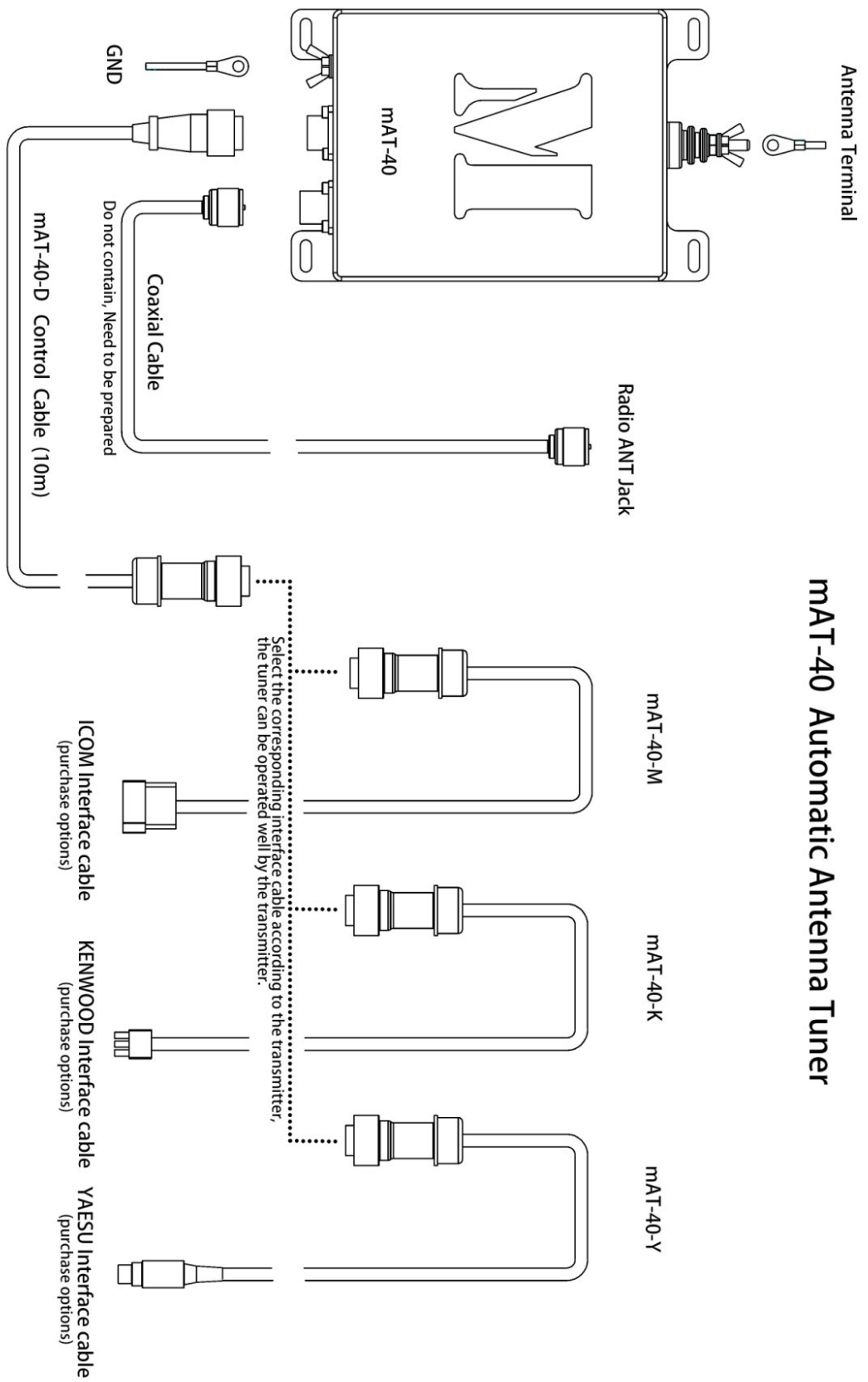
The mAT-40 HF-SSB Automatic Antenna Tuner, lets you rapidly tune any antenna automatically: unbalanced or single-wire. It can be operated by Icom, Kenwood, and Yaesu transceivers by selecting different interface cable adapters. The tuner housing for permanent outdoor use is produced by aluminum milling and oxidation surface technology, It can work well in all kinds of harsh outdoor environments.

The tuner consists of the mAT-40 host and control cable (mAT-40-D, 10 meters length). One interface cable adapter for YAESU (mAT-40-Y), ICOM (mAT-40-M), and KENWOOD (mAT-40-K) are required for connection between the control cable and the transceiver.

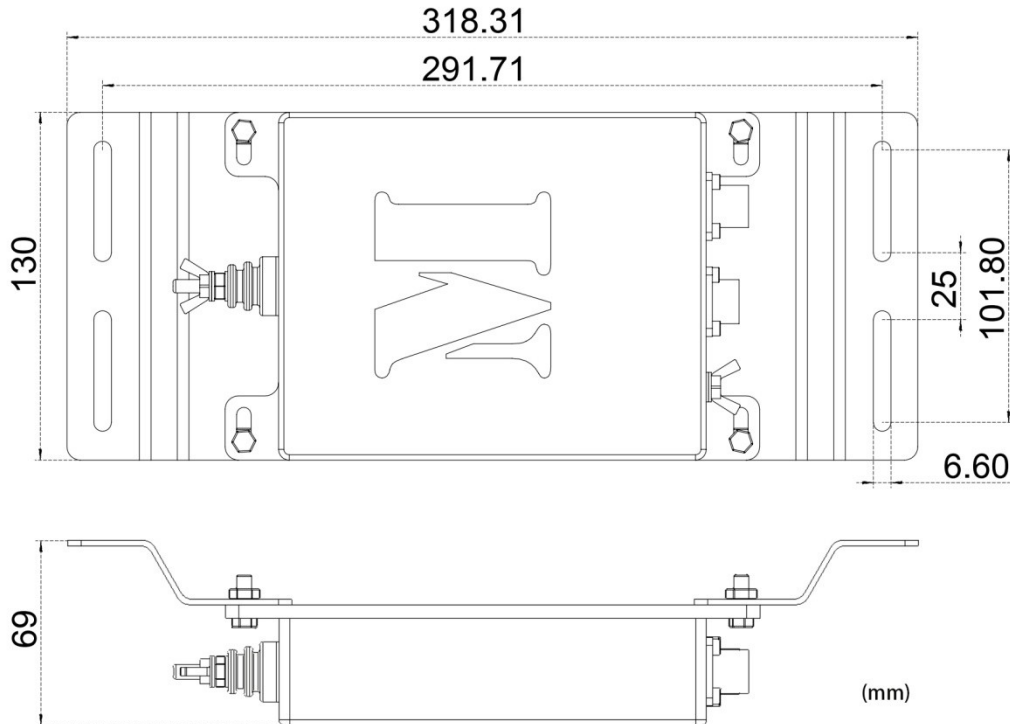
The mAT-40 has 16,000 frequency memories. When tuning on or near a previously tuned frequency, the mAT-40 uses "Memory Tune" to recall the previous tuning parameters in a fraction of a second. If no memorized settings are available, the tuner runs a full tuning cycle, storing the parameters for memory recall on subsequent tuning cycles on that frequency. In this manner, the mAT-40 "learns" as it is used, adapting to the bands and frequencies as it goes.

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.
- Includes control cable, 10 meters.
- Dimensions: 20cm x 13cm x 4.5cm (L x W x H).
- Weight: 1.0 kg.



Installation dimensions of tuner



Installation dimensions of tuners after mounting brackets

INSTALL

mAT-40 consists of three parts: tuner, control cable and interface cable adapter.

mAT-40 is a long-wire antenna tuner. A recommended length of the antenna is 12 meters. An antenna of this length has good 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. Not all lengths of wire can necessarily be tuned on any given frequency the mAT-40 is capable of operating on. A good rule, as usual, is more wire is easier to tune and has a greater chance of successful tuning than shorter wires will.

Keep antenna wire away from high-voltage wires and buildings, so as to avoid the danger of electric shock or lightning strike. You can be killed if an antenna wire touches a live power line. Antennas should be placed in open areas, as far away as possible from buildings, trees and other facilities.

Long-wire or vertical wire antennas perform best when connected to a ground network or ground wire, or a type of ground counterpoise is used. The easiest way to accomplish this is to lay a minimum of a single wire of comparable length to the antenna radiator wire along the ground. A counterpoise wire functions effectively as a low resistance ground connection. Connect your counterpoise wire to the GND wingnut on the tuner.

mAT-40 is designed for outdoor use. The oxidized aluminum case has strong mechanical properties and is water and rain proof. However, when installing the coaxial cable and the control cable to the tuner they should be wrapped with waterproof tape or otherwise sealed to prevent rainwater from entering the plug.

The two oblong mounting holes of the bracket have a diameter of 6.6 mm. The bracket is made of stainless steel, which is corrosion-resistant and salt-alkali-resistant. Tuners can be mounted on walls or masts with M6 bolts or U bolts. 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 metal mechanical hardware like nuts, bolts or a mast if conductive.

RADIO SETTINGS AND OPERATION

The mAT-40 tuner, used with the appropriate cable adapter, is fully compatible with the original brand tuner interfaces.

For ICOM refer to AT-120, AT-130, AH-3, AH-4 tuner settings. Some Icom transceivers do not need any additional settings. Connect the control cable and adapter. Refer to transceiver operation manual for menu settings or other detail required to operate.

For YAESU transceivers, 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 refer to transceiver manual for connection via AT-300 protocol.

For some radios with built-in tuners and multiple antenna sockets, their built-in tuners are fixed to a particular antenna output jack. The internal tuner may or may not be bypassed when controlling an automatic tuner – it is important to refer to the transceiver operation manual to understand how the antenna connectors on your transceiver are used depending on whether or not an internal tuner is in use, and is automatically bypassed or not. For example, the Kenwood TS-2000 uses ANT 1 for the internal automatic antenna tuner. When an external automatic antenna tuner cable is connected to the rear panel accessory jack, the radio will bypass the internal tuner automatically and use ANT 1 for the external tuner. Your transceiver may perform this function differently. Consult the operation manual.

RE-TUNING

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

For YAESU transceivers, when changing the transmitter frequency, the tuner automatically follows the transmitter 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>.

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.

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