MAT-TUNER®
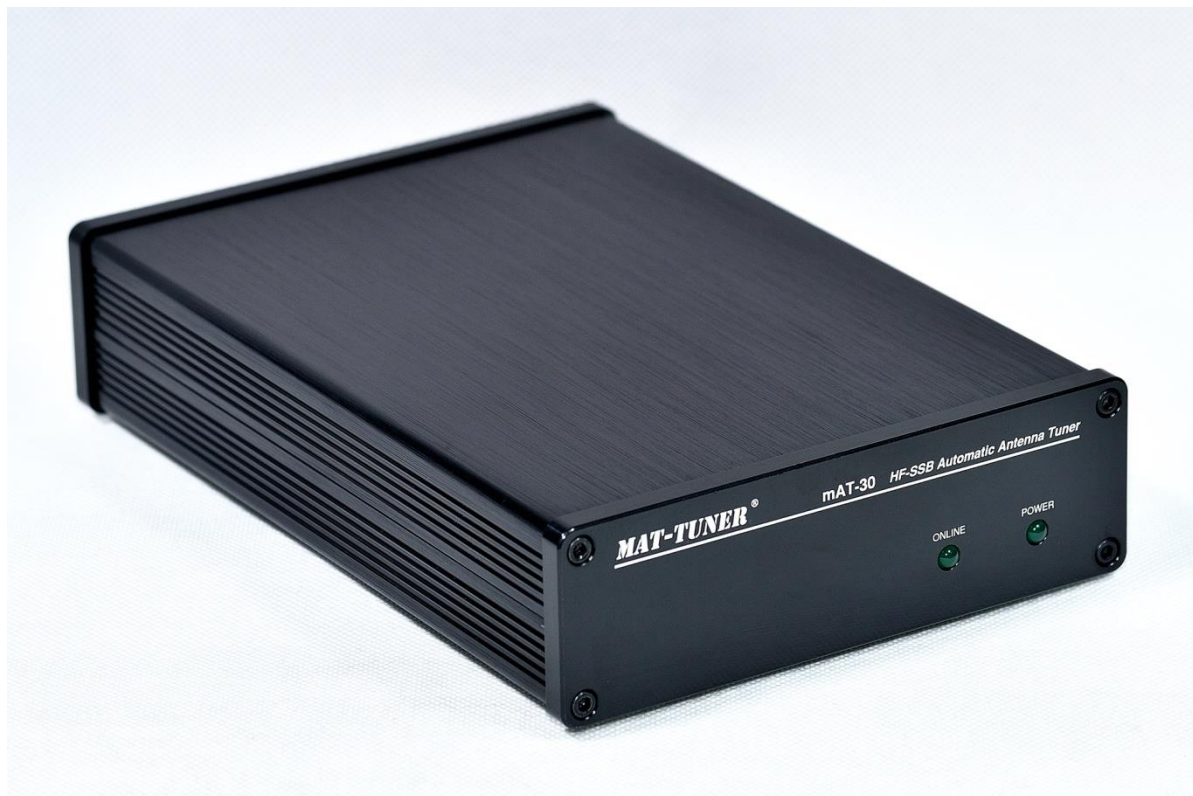
mAT-30

Automatic Antenna Tuner
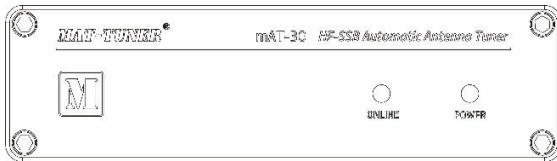## For the YAESU transceiver

INTRODUCTION

The mAT-30 is an automatic antenna tuner specially designed for modern YAESU transmitters, the operating is the same as the method of the YAESU tuner, which is simple and convenient. Transmitters that use FC-30, FC-40, and FC-50 tuners can use the mAT-30 well.

Tuner 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 transceivers.

mAT-30 tuner can only be used for YAESU transmitter. Some early transmitters, such as FT-80C, 757, can't use the mAT-30 tuner. The FT-817/818 transmitter also can't use the mAT-30 tuner. We have designed a dedicated mAT-10 tuner for FT-817/818, visit our website for relevant information. Web is http://www.mat-tuner.com.

The tuner uses a metal shell, and the panel is made of aluminum milling technology, which makes it strong and beautiful.
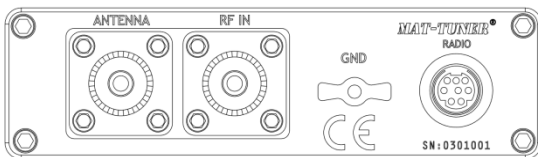
FRONT PANEL

The front panel of the tuner is very simple, it only has 2 indicator lights.

ONLINE: Tuner is Active or Bypass.
Lights up to indicate that the tuner is online, off indicates that the tuner is in bypass.
POWER: Power light.

REAR PANEL

The rear panel of the mAT-30 features four connectors.

ANTENNA: SO-239 socket, connect antenna with 50 ohm coaxial cable.
RF IN: SO-239 socket, connected to the transmitter's "ANT" socket, using 50 ohm coaxial cable.
RADIO: This socket is connected to the transmitter's "tuner" socket via a mini DIN 8-pin cable mAT-CY. This cable comes with the tuner.
GND: Connected to antenna system ground.

CONTROL CABLE mAT-CY

The control cable mAT-CY transmits control commands between the transmitter and the tuner, through which the transmitter also supplies power to the tuner. As the figure shows, the cable have two mini-DIN 8-pin plugs. It comes with the tuner, and users don't need to buy it. The length of this cable is usually one meter.

INSTALLATION

The mAT-30 is designed for YAESU 100W transceivers supporting YAESU FC-30, FC-40 and FC-50 antenna tuners, and its usage is the same as those of these tuners. It needs to be connected between transmitter and antenna. The method is as follows. **Before operation, please make sure that the transmitter is turned off**.

1) Connect the "**ANT**" jack on the transceiver to the "**RF IN**" jack on mAT-30, using a 50 ohm coax cable rated 120 watts or greater.
2) Connect the control cable mAT-CY to the mini-DIN 8-pin jack on mAT-30, marked "**Radio**".
3) Connect the other end of this mAT-CY cable to the "**TUNER**" or "**CAT/LINEAR**" or "**TUN/LIN**" jack on the transceiver.
4) Connect the coaxial cable of the antenna to the "**ANTENNA**" socket of mAT-30 tuner.

5) Grounding the mAT-30 tuner will enhance its performance and safety. We recommend that you connect your tuner to a suitable ground; a common ground rod connected to buried radials is preferred, but a single ground rod, or a cold water pipe can suffice. We strongly recommends the use of a properly installed, high quality lightning arrestor on all antenna cables.

TRANSCEIVERS SETTING

Each type of transceiver has a unique setting menu for external tuners. It is necessary to set these menus correctly before you can use external tuner. To set these menus, please read the operation manual of these transceivers and refer to the setting of FC-30, FC-40 or FC-50 tuner. You need to use the mAT-30 tuner as FC-30, 40 or 50 tuner to set the transmitter menu. They are used in the same way.

Following is an example of FT-857D/897D to illustrate the settings of these menus, the following contents are extracted from FT-897 / 857F operation manual.:

1. Press and hold in the **[F]**（**[FUNC]**）key for one second to activate the Menu mode.
2. Rotate the **[MEM/VFO CH]** (**FT-857D: [SELECT])** knob to recall Menu Mode**No-001 [EXT MENU],** then rotate the **DIAL** to change the setting to "**ON**" to enable the extended Menu Mode.
3. Rotate the [**MEM/VFO CH]** knob to recall Menu ModeNo-020 **[CAT/LIN/TUN]**. Rotate the **DIAL** to

change the setting to "**TUNER**".
4. Press and hold in the **[F]**（**[FUNC]**）key for one second to save the new setting and exit, then turn the transceiver off.
5. Set up the mAT-30 and FT-897 per the illustration, the turn on the transceiver's power again. Do not set up the mAT-30 and FT-897 before changing the Menu Mode, item No-020 **[CAT/LIN/TUN]**.
6. Press and hold in the **[F]**（**[FUNC]**）key for one second to activate the Menu mode.
7. Rotate the **[MEM/VFO CH]** (FT-857D: **[SELECT]**) knob to recall Menu Mode No-085 **[TUNER/ATAS]**. The default setting for this Menu is "OFF". Rotate the **DIAL** to change the setting to "**TUNER**".
8. Press and hold in the **[F]**（**[FUNC]**）key for one second to save the new setting and exit.
9. Press the **[F]**（**[FUNC]**）key, as needed, to recall Multi Function Row "k"**[TUNE, DOWN, UP]**.

For other YAESU transmitter's external tuner menu settings, please read the transmitter's operation manual. At this time, the mAT-30 tuner and FC-30, FC-40, FC-50 need the same settings.

OPERATION FROM THE TRANSCEIVER

1. Press the **[F]**（**[FUNC]**）key, as needed, to recall Multi Function Row "k" **[TUNE, DOWN, UP]**.

2. Press the **[A]([TUNE])** key to turn the mAT-30 on. The "**TUNE**" will appear on the LCD.

3. Press and hold in the **[A]([TUNE])** key to initiate automatic tuning. The FT-857 transmitter will be activated

a carrier signal will be sent out, and the coils and capacitors in the mAT-30 will be selected/adjusted for optimum SWR. When tuning is complete, the transmission will cease, and you will be ready for operation on this frequency. Tuning data will be stored in the mAT-30's memory, this data will be called when the transmitter returns to this frequency again.

SPECIFICATIONS

RF power: 120 watts SSB and CW peak power, 30 watts on PSK and digital modes, and 100 watts on 6 meters.
Frequency Range: 1.8 ~ 54 MHz
Impedance Range: 5 ~1500 Ω
Tune Time: 5 seconds or less
Memories channel: 16000 channels
Antenna type: Dipoles, verticals, Vees, beams, wire or any coax-fed antenna.

Power Supply: The power supply is provided by the transmitter through the control cable mAT-CY, and the maximum current is 0.5A
Operating Temperature: -10°C ~ +50°C
Case Size: 200mm x 130mm x 35mm (L x W x H).
Net Weight: 0.8Kg,
Gross weight: 1.0Kg

ATTACHMENTS PROVIDED

Control cable(mAT-CY)   1pc
Operation manual   1pc

HENGSHUI MAT-TUNER LLC
www.mat-tuner.com
No.28 Ronghuabei ST, Hengshui,053000, Hebei, CHINA

FT-450D Operating external tuner

Setting:

1) Press and hold the **[F]** button for one second to enter the Menu Mode. The "**MENU**" icon will appear in the display.
2) Rotate the **[DSP/SEL]** knob to select the Menu Item "**TUNER**".
3) Press the **[DSP/SEL]** knob enable this selected Menu Item.
4) Rotate the **[DSP/SEL]** knob to change the setting to "**EXT ATU** ".
5) Press and hold the **[F]** button for one second to return to normal operation.

Operation:

1) Press the **[TUNE]** button briefly to active the Automatic Antenna Tuner. the "**TUNER**" icon will appear in the display. If the transceiver frequency is out of the amateur band, the "**TUNER**" icon will not appear.
2) Press and hold the **[TUNE]** button for one second to begin automatic tuning. The transmitter will be engaged, and the "**TUNER**" icon will blink while tuning is in progress.
3) Tuning will stop automatically when a low SWR is achieved. You may Press and hold the **[TUNE]** button for one second while tuning is in progress, to cannel the automatic tuning.
4) To disable the Antenna Tuner, press the **[TUNE]** button briefly again.

FT-891 Operating external tuner

Setting:

1) Press and hold the **[F]** key for one second to activate the Menu mode.
2) Rotate the **[MULTI]** function knob to select Menu Mode "**16-15 [TUNER SELECT]**".
3) Press the **[MULTI]** function knob, and the rotate it to set this Menu item to "**EXTERNAL**".
4) Press the **[MULTI]** function knob to save the new setting.
5) Press the **[F]** key to exit the Menu mode and resume normal operation.

Operation:

1) Press the **[F]** key repeatedly to find the "**FUNCTION-1**" list screen.
2) Rotate the **[MULTI]** function knob to select "**TNR**".
3) Press the **[MULTI]** function knob to set tuner "**ON**" or "**OFF**".
4) Press and hold the **[MULTI]** function knob for one second to begin automatic tuning. The transmitter will be engaged, and the "**WAIT**" will blink while tuning is in progress.
5) Tuning will stop automatically when a low SWR is achieved. You may press the **[MULTI]** function knob while tuning is in progress, to cancel the automatic tuning.

FT-991A Operating external tuner

Setting:

1) Press the **MENU(SETUP)** button to enter the Menu mode.
2) Rotate the **[MULTI]** knob to select the Menu Item "141 TUNER SELECT".
3) Touch **[SELECT]** on the LCD, then rotate the **MULTI** knob to select "EXTERNAL".
4) Touch **[ENTER]** on the LCD to save the new setting.
5) Press the **MENU(SETUP)** button or touch **[BACK]** on the LCD to exit to normal operation.

Operation:

1) Press the **[TUNE]** button briefly to activate the Antenna Tuner.
2) The "**TUNER**" icon will appear in the display.
3) Press and hold the **[TUNE]** button for one second to begin automatic tuning. The transmitter will be engaged, and the "**TUNER**" icon will blink while tuning is in progress.
4) Tuning will stop automatically when a low SWR is achieved. You may Press the **[TUNE]** button while tuning is in progress, to cancel the automatic tuning.
5) To disable the Antenna Tuner, press the **[TUNE]** button briefly again.

FT-950 Operating external tuner

Setting:

1) Press the **[MENU]** button momentarily, to engage the Menu mode.
2) Rotate the **[SELECT]** knob to select the Menu Item "**110 TGEN EXT TUN**".
3) Rotate the **[CLAR/VFO-B]** knob to select "**Etu**".
4) Press and hold in the **[MENU]** button for one second to save the new setting and exit to normal operation.

Operation:

1) Press the **[TUNE]** button briefly to activate the Antenna Tuner.
2) The "**TUNER**" icon will appear in the display.
3) If the transceiver frequency is out of the amateur band, the "**TUNER** " icon will not appear.
4) Press and hold the **[TUNE]** button for one second to begin automatic tuning. The transmitter will be engaged, and the "**TUNER** " icon will blink while tuning is in progress.
5) Tuning will stop automatically when a low SWR is achieved. You may Press and hold the **[TUNE]** button for one second while tuning is in progress, to cancel the automatic tuning.
6) To disable the Antenna Tuner, press the **[TUNE]** button briefly again.

For the operation of external tuner in other transmitters, please read the transmitter operation manual.