AT-330T(C) Motorized HF Mobile Antenna

Operation, Factory Settings & Troubleshooting Guide

Purpose. This guide consolidates control-box operation, factory memory settings, memory programming, and field troubleshooting procedures for the AT-330T(C) intelligent antenna system.

1. Control Box Button Functions

HOME Button:

The HOME button is context-sensitive. Depending on the current operating state, it may stop antenna movement, return/home the antenna, confirm and save settings, or enter Engineering Mode. In the original control-box instructions, HOME is also described as resetting the antenna position to zero when stationary and returning to the previous stored position.

UP Button:

Single press: fine upward adjustment. Press and hold: continuous raise. Double click: automatic raise.

DOWN Button:

Single press: fine downward adjustment. Press and hold: continuous lower. Double click: automatic lower.

2. Factory Default Memory Channels

The controller stores antenna positions according to motor running time. The values below are factory reference settings; actual resonant frequency may vary with installation, grounding, and whip length.

Channel	Frequency (MHz)	Position Time (s)	Remarks
SEL-1	3.50	132.5	
SEL-2	7.10	76.0	
SEL-3	10.12	61.0	
SEL-4	14.12	32.5	
SEL-5	18.10	22.0	
SEL-6	21.20	17.5	
SEL-7	24.90	15.5	
SEL-8	28.50	11.0	Recommended reference for initial 28 MHz diagnostic testing.
SEL-9	50.15	0.0	**The upper telescopic whip length must be adjusted for this band. The required whip length varies by user and installation.**
SEL-10	0.00	0.0	Reserved for user-defined frequency band.

Technical note: Different installations may produce slightly different resonant frequencies. Periodic verification with an antenna analyzer is recommended. Reprogram the memory channels whenever the installation location, grounding conditions, or effective whip length changes.

3. Memory Programming Procedure

1. Adjust the antenna until the desired operating frequency is reached.
2. Press and hold the desired memory key (SEL-1 to SEL-10).
3. The display will show the current frequency and antenna position time.
4. Use UP or DOWN to fine-tune the frequency: single press for fine adjustment, press and hold for continuous adjustment, and double click for automatic adjustment.
5. Press HOME once to confirm and save the setting.

4. SWR Measurement & Abnormalities

Symptom A - Antenna moves, but SWR remains unchanged: This typically indicates a malfunction or poor connection in the RF signal cable (coaxial cable).

Symptom B - Antenna does not move, but control-box readings update: This usually points to a fault in the power/control drive cable between the control box and antenna.

Standard Inspection & Testing

Antenna continuity check: Use a multimeter to verify continuity between the center pin of the antenna connector and the top M10 screw that secures the loading coil.

Grounding inspection: Ensure the antenna is installed with a solid RF ground connection. Without an adequate ground plane, SWR may become extremely high and some meters or transceivers may fail to register accurate readings.

Recommended initial test configuration: Install the 2.2-meter telescopic whip and select SEL-8. The factory reference is 28.50 MHz with a position time of 11.0 seconds. This provides a practical starting point for 28 MHz diagnostic testing.

5. Power & Motor Troubleshooting

Control Box Fails to Power On

Inspect the polarity and continuity of the main 12 V DC input and quick-disconnect connectors. Confirm that proper voltage is present. Then check the inline fuse on the power cord for an open circuit caused by overcurrent or a voltage spike.

Motor Can Be Heard, but the Antenna Does Not Move

Disconnect the antenna from the control box and apply a 12 V DC power source directly to the antenna body terminals. Observe whether the antenna can extend and retract smoothly on its own.

> **CRITICAL:** After a direct-power test, manually return the antenna to its original base position (HOME) before reconnecting it to the control box. This keeps the controller calibration and actual mechanical position aligned.

If the antenna operates normally under direct power: the antenna body and internal motor can generally be ruled out as the primary mechanical fault. Inspect the control box and interconnecting cable.

If the internal motor hums but the outer sleeve remains stationary: the fault is likely within the internal transmission mechanism. Return the unit to the factory for physical inspection.

6. Control Box Display Reset to 0.0000 / System Locked

If all display values suddenly revert to 0.0000, UP and DOWN no longer respond, and the antenna is locked, the condition may be associated with sudden power loss, a cable being pulled, or voltage fluctuation while settings are being adjusted. The control box does not contain an internal backup battery, and temporary register data may be lost before the save process is completed. If the UP/DN drive-speed parameters become 0, the microcontroller cannot output valid motor-drive parameters.

Recovery Procedure

1. Press and hold HOME continuously for approximately 10 seconds to enter Engineering Mode.
2. Locate the drive-speed parameters and set UP SPD to 085.0 and DN SPD to 085.6.
3. Press HOME once. The control box will execute the homing sequence and save the parameters to the chip. Normal tuning and movement should then be restored.
4. After completing the settings above, manually enter the CH01 through CH10 values one by one according to the Factory Default Memory Channels table in Section 2, and save each channel to memory.

7. Power & Operating Precautions

Maintain a stable 12 V DC power supply during recovery procedures, antenna movement, tuning, and parameter writing. Do not disconnect power, pull cables, or shut down the supply in the middle of tuning or saving. Doing so may cause temporary data or drive parameters to reset and may require the recovery procedure above.

Positioning Accuracy and Manual Fine-Tuning

Stored positions are based on motor running time and cannot be 100% exact. Supply-voltage stability is the main factor. A slowdown of only 0.001 second per second accumulates to 0.1 second after 100 seconds; this may shift the resonant point by approximately 0.1-0.5 MHz, with greater variation generally occurring on lower-frequency bands. For example, SWR may change from 1.1 at 14.1 MHz to 1.8 at 14.2 MHz.

After changing the installation location, grounding, whip length, or supply voltage, use the stored time as a reference and manually fine-tune for the lowest SWR.

8. Antenna Stalls at the Lowest Position

Symptom

The motor continues to run, but the antenna does not extend or retract after reaching the lowest position.

Adjustment

Turn off the power. Slightly tighten the white set screw at the bottom of the antenna, then restore power and test the movement again.

The screw tension affects the antenna's extension and retraction speed. Make only small adjustments and do not overtighten the screw, as excessive tension may slow the antenna or increase the load on the motor.



White set screw location