

AT330 Intelligent Antenna Troubleshooting Guide

Official Technical Support & Diagnostic Manual

1. SWR Measurement & Abnormalities

Q: SWR readings do not change or appear abnormal during measurement. How should I troubleshoot?

Basic Symptom Diagnostics:

- **Antenna moves, but SWR remains unchanged:** This typically indicates a malfunction or poor connection in the **signal cable (coaxial cable)**.
- **Antenna does not move, but control box readings update:** This usually points to a fault in the **power/control drive cable** connecting the control box to the antenna.

Standard Inspection & Testing Steps:

1. **Antenna Continuity Check:** Use a multimeter to verify proper electrical continuity between the "center pin" of the antenna connector and the top M10 screw that secures the loading coil.
2. **Grounding Inspection:** Ensure the antenna is properly installed with a solid ground connection. Without an adequate ground plane, the SWR will be extremely high, causing certain meters or transceivers to fail to register accurate readings.
3. **Recommended Initial Test Configuration:** For diagnostic purposes, install the 2.2-meter telescopic whip first. Press Memory Key 8 (factory preset to a duration of 11 seconds, targeting 28.5MHz) to run the tuning process. On the 28MHz band, the system should theoretically tune and operate normally even without an extensive ground network.

2. Power & Motor Troubleshooting

Q: The control box fails to power on.

1. **Circuit Continuity Check:** Inspect and measure the polarity of the main power input source and the quick-disconnect connectors. Ensure proper voltage is present and that current passes through seamlessly.
2. **Fuse Inspection:** Check the inline fuse on the power cord to verify it is intact and has not blown due to an overcurrent or voltage spike.

Q: The motor can be heard running, but the antenna does not move.

Cross-Testing & Diagnostic Steps:

1. **Independent Power Test:** Disconnect the antenna from the control box and apply a 12V DC power source directly to the antenna body terminals. Observe whether the antenna can extend and retract smoothly on its own.
*** CRITICAL NOTE: After performing this independent direct-power test, you MUST manually reset the antenna back to its original base position (HOME) before reconnecting it to the control box. This ensures system calibration and internal tracking data align correctly.**
 2. **Diagnostic Conclusion:**
 - **If the antenna operates normally under direct power:** The antenna body and its internal motor can be entirely ruled out of any mechanical failure. The issue likely stems from the control box or the interconnecting cable.
 - **If the motor hums inside but the outer sleeve remains stationary:** The issue lies within the antenna's internal transmission mechanism. The unit must be returned to the factory for a physical teardown and inspection.
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3. Control Box Screen Reset (0.0000) & System Unlock

Symptom Description

All values on the control box display suddenly revert to **0.0000**. Pressing the **UP** or **DOWN** keys yields no response, and the antenna is completely locked in place.

Root Cause Analysis:

- **Sudden Power Loss Before Saving:** The control box does not feature an internal backup battery. Memory allocation and chip writing are only finalized when adhering to the standard workflow: configuring the frequency/name, and then pressing the **HOME** key to return and execute a save.
 - **Self-Protection Mechanism Triggered:** If the power is abruptly disconnected, cables are tugged, or voltage fluctuates while settings are actively being adjusted, the control box initiates an emergency self-protection sequence, wiping out all temporary registers and resetting values to zero.
 - **Drive Parameters Corrupted:** When the system's "Forward (Up)" and "Reverse (Down)" drive speed variables become **0**, the microcontroller cannot output any operational parameters to the motor, locking the antenna completely.
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Reconfiguration & Recovery Procedure

Follow these steps precisely to manually re-enter the default drive speed data to unlock the control box and restore full system functionality:

Step 1: Enter Engineering Mode

Press and hold the "HOME" key on the control box continuously for **10 seconds**.

Step 2: Correct the Drive Speed Parameters

Once the engineering menu appears, you will see the **UP/DN 000.0** parameters sitting at zero. Manually modify them to the following factory default standards:

- **UP SPD (Upward Speed):** Change the value to **Speed:085.0**
- **DN SPD (Downward Speed):** Change the value to **Speed:085.6**

Step 3: Save and Exit

After adjusting both parameters, press the **HOME** key once. The control box will execute its homing sequence and permanently save the parameters to the chip. Full tuning and movement operations will instantly be restored.

CRUCIAL OPERATIONAL NOTICE

During this system recovery procedure and all regular daily tuning operations, **it is absolutely mandatory to maintain a stable 12V DC power supply**. Never disconnect power, pull cords, or shut down the source midway through tuning, as this will re-trigger the self-protection mechanism and wipe the data registers back to zero.