# SATPRO FAQs

# FAQs SATPRO

## Symptoms and Solutions

### FAQs Antenna Tracker SATPRO:

Here you will find a list of possible faults and errors and their solutions, aimed at obtaining basic operation as explained in the quick guide or in an article in the manual.

If after performing the recommended tests, the problem has not been solved, it is possible that there is a fault.

Before sending any product for review, please consult with DMD technical service at support@dmd.es and send documentation of the problem with its description and the tests carried out. Add photos and videos as they tend to simplify the descriptions and give us additional information about the problem or evidence.

This page will grow over time, trying to provide solutions to the most common problems of the initial start-up of the SATPRO tracker antenna.

*Note: If you do not find your problem described here, please send an email to support@dmd.es with the description of the problem.*

## Symptoms or Questions


- What to do if SATPRO is not tracking the UAV correctly?
- What to do if SATPRO is not displaying GPS data or receiving Mavlink telemetry (With XLRS Radios)?
- Why does SATPRO move erratically indoors?
- What to do if SATPRO's "Y" axis is not adjusting correctly?
- Can I align SATPRO to the north without moving it

manually?
- How to improve the accuracy of tests?
- There isn’t Mavlink telemetry communication using SATPRO with a Data Link of another brand with the CTRCB and CURCB devices.

## What to do if SATPRO is not tracking the UAV correctly?

**Initial Step: Ensure you have completed the power-up and alignment sequence correctly.**

1. **Power on SATPRO:** Wait for it to complete the calibration of the X and Y axes.
2. **Position SATPRO facing north:**
    - Use a physical compass or download a digital compass app on your mobile phone to ensure proper orientation.
3. **Important Note:**
    - It is critical to power on SATPRO before aligning it to the north. If SATPRO is positioned facing north while it is powered off, it might misalign from true north after being powered on. This happens because SATPRO needs to center and zero its X and Y axes during calibration. Skipping this step may result in SATPRO not tracking correctly due to improper alignment.

**Verifying the HOME parameter configuration:**

1. **Check the HOME parameter:**
    - Ensure it is set to HOME = GPS or GPS FIX if you are using the internal GPS coordinates.
2. **Verify and adjust the HOME altitude:**
    - Check the altitude in the ALT parameter. If errors are found, manually adjust the altitude using tools like Google Earth or similar software to confirm the exact height.

- An incorrect altitude may result in inaccurate relative position calculations, affecting the precision of SATPRO's UAV tracking.

## What to do if SATPRO is not displaying GPS data or receiving Mavlink telemetry (With XLRS Radios)?

- **Verify Mavlink activation on SATPRO:**
  - Check using the **XLRS_SATPRO** software that the **MAVLINK** option is enabled on SATPRO.
- **Verify Mavlink telemetry from the autopilot:**
  - Ensure the autopilot is sending Mavlink telemetry packets (e.g., HOME_POSITION and GPS_RAW_INT) from the TELEM1 or TELEM2 port to the RXLRS receiver via the "MODEM" port set at **38400 baud**.
- **Check GPS configuration and status on the autopilot:**
  - Confirm that the autopilot's GPS is correctly configured and that it has acquired satellites and established a GPS fix.
  - Connect the autopilot via USB and check the GPS status using Mission Planner or similar software.
- **Verify Mavlink packets in XLRS_SATPRO:**
  - Open the **MAVLINK** tab in the XLRS_SATPRO software to confirm that Mavlink packets are being received by SATPRO.
- **Check the link between WMX481 and RXLRS:**
  - Ensure there is an active link between the WMX481 transmitter and the RXLRS receiver.
- **Verify WMX481 installation:**
  - Confirm that the WMX481 module is correctly installed and securely connected to SATPRO's internal RCBUS port.

## Why does SATPRO move erratically indoors?

This issue can occur due to inaccuracies in GPS data when operating indoors. GPS signals are often weak or unavailable in indoor environments, leading to inconsistent or incorrect

position updates.

**Solution:**

- Set the HOME = MANUAL parameter in SATPRO for a more controlled test. This prevents SATPRO from continuously recalculating its position based on inaccurate GPS data.

**Recommendation:**

- Perform tests outdoors whenever possible to ensure precise GPS data.

**Additional Consideration:**

- The accuracy of the GPS used in your autopilot significantly affects the results. If the autopilot's GPS is not highly precise and you are testing indoors, it may further complicate the test. In such cases, position updates received by SATPRO might fluctuate, causing erratic movements or an inability to conduct the test effectively.

**For the best results:**

- Use a high-precision GPS module in the autopilot.
- Whenever possible, conduct the test in an open outdoor area where the GPS can acquire a reliable signal.

## What to do if SATPRO's "Y" axis is not adjusting correctly?

**Issue Explanation:**
If the HOME altitude is incorrect, SATPRO will calculate an inaccurate relationship between its HOME altitude and the UAV's altitude. This error can affect the alignment of the "Y" axis, causing SATPRO to not track the UAV properly.

**Solution:**

1. **Verify the HOME altitude:**
    - Check that the HOME altitude is accurate. If it is not, set the parameter to HOME = MANUAL and adjust the ALT value to the correct altitude for the HOME location. Use tools like Google Earth or similar software to validate the altitude.
2. **Verify the UAV's GPS altitude:**
    - Ensure the altitude being provided by the UAV's GPS is correct.
    - You can view this information in the **XLRS_SATPRO** software under the **"VEHICLE"** section, specifically in the ALT field.

**Recommendation:**

- Always verify both the HOME altitude and the UAV's GPS altitude to ensure proper calculations. Inaccurate altitude data from either source can lead to incorrect adjustments in SATPRO's "Y" axis.

## How to improve the accuracy of tests?

1. **Perform tests outdoors whenever possible:**
    - Conduct tests in open outdoor areas to ensure precise GPS data. Indoor environments often lead to weak or inaccurate GPS signals, which can impact the reliability of the tests.
2. **Ensure SATPRO is fully calibrated:**
    - Before starting any test, make sure SATPRO has completed the calibration of its X and Y axes. Proper calibration ensures that SATPRO is aligned correctly and operates as expected.
3. **Verify GPS data for HOME and VEHICLE:**
    - Check that the GPS data for both the HOME position and the UAV (VEHICLE) are accurate.
    - Confirm the altitude values for both the HOME and the UAV using the **XLRS_SATPRO** software:
        - In the **"ORG."** section for HOME.

- In the **“VEHICLE”** section for UAV.

4. **Double-check the HOME altitude:**
    - Incorrect HOME altitude values can lead to inaccurate calculations of the UAV’s relative position, affecting SATPRO’s tracking performance. Adjust the altitude manually if necessary using tools like Google Earth.

**Recommendation:**

- Always review all GPS-related data before starting tests to minimize errors and improve overall accuracy.

## Can I align SATPRO to the north without moving it manually?

**Yes, this is possible by using the offsetX parameter:**

1. **Determine the direction of true north:**
    - Use a compass or a digital compass app to identify the location of true north relative to SATPRO’s current position.
2. **Adjust the offsetX parameter:**
    - Calculate the angular difference between SATPRO’s current orientation and true north.
    - Enter this value as an adjustment in the offsetX parameter to virtually align SATPRO with north.
    - After setting the offsetX press enter, then click on the **DX** text box and press enter. This will move SATPRO to the “0” point, aligning it with the calculated true north.
3. **Perform your mission:**
    - SATPRO will now operate as if it is aligned to true north without physically moving it.
4. **Reset the offsetX parameter after the mission:**
    - Once the mission is complete, it’s essential to reset the offsetX parameter to its original calibration value.

- This ensures that SATPRO retains its accurate baseline calibration for future use.

**Note:**

- Adjusting the offsetX parameter is a temporary solution and should be used with care. Always document the changes you make so you can revert to the original settings once the mission is completed.

## There isn’t Mavlink telemetry communication using SATPRO with a Data Link of another brand with the CTRCB and CURCB devices

**Previous checks:**

- Check that the telemetry ports of each data link are configured by default at 38400 Baud.
- Verify that your autopilot has the telemetry port operating at 38400 baud.
- Check the Mavlink telemetry parameters of your autopilot and check that it is sending Mavlink GPS packets (Mavlink 1 Protocol).
- Check the wiring between the data link telemetry port (TX) to the CTRCB device (https://dmd2.es/cTrcb/).
- Verify that the CTRCB device is correctly connected through the adapter cable to the SATPRO and powered.
- Verify that the data links (TX and RX) are linked and their operation is correct.
- Verify that SATPRO has the battery charged and the voltage is not below 12.4V (Battery. Charging and use).
- Verify that the data links and the autopilot are correctly powered.
- Check that you are connecting to the correct COM port and with the CURC device to the software (Mission Planner, QGroundControl or similar) at 115200bauds.

**If you have done all these checks then follow the following steps:**

Now with all the devices working correctly and turned on, check that your autopilot is receiving GPS, once it receives GPS it should send the Mavlink GPS packets through telemetry to its data link (RX) and it will send them to its Data Link (TX) and in turn the packets will go through the CTRCB device (If so, you should see communication through the LEDs), then these packets will be received by the SATPRO through the adapter cable and if everything is fine and it is receiving the home and data GPS will automatically show them on the display, then the mavlink packets will follow through the CURCB device and convert them via USB for communication with the software (Mission Planner, QGround Control or Similar).

If, even after carrying out all the checks and retesting the operation of all the systems, the SATPRO still doesn’t receive Mavlink GPS packets and doesn’t move, then you will need to perform the following tests and send them to our technicians by email:

- 1- With the same configuration, make a link with your data links without using SATPRO and communicate with the Mission Planner, QGroundControl or similar software.
- 2- On your Data Link (TX) make a connection through the telemetry port with a TTL / USB serial module to Mission Planner, this time to 38400b.
- 3- Without using the Data Link devices, connect the telemetry port of your autopilot (38400b) directly to the CTRCB device, this way your autopilot should be sending Mavlink GPS telemetry packets directly to SATPRO without the need for Data Links and verify that it is sending the packets properly so that SATPRO can read them.

If the latest tests don’t work, it is possible that there is a bad connection in SATPRO.