Satpro introduction

Smart Antenna Tracker

Introduction

SATPRO can be used for various uses:

1.-Tracker Antenna for UAVs, Drones and other vehicles:

The SATPRO antenna tracking system helps to have the best possible radio link at all times, sending and receiving Radio Control, Telemetry and video data. It is the most common way.

The operation of SATPRO consists of automatically pointing the high-gain terrestrial directional antennas to the drone or UAV automatically to obtain the best amount of signal and achieve the greatest possible range of the system.

The SATPRO calculates the angle where the remote vehicle is located by combining the data of the GPS position of SATPRO, the GPS position of the UAV or Drone, the amount of radio signal received in the antennas or Rssi, the speed and the distance of the vehicle.

To receive the GPS position of the UAV, SATPRO uses the Mavlink protocol through the XLRS receiver and transmitter.

In this mode it can be used in several ways:

- With GCS (Ground Stations) XLRS such as GCSD5. Data link WMX481 (250Km) with Full HD Video (150Km) or analog video (100km), or video systems from other brands.
- With XLRS Data Links such as DL1V2 or BTSD1V3 for long range systems (up to 250Km) without video.
- With Data Links from other brands. (you need to use the CURCB and CTRCB modules).

2.-Jammer of UAV, drones, other vehicles or systems:

You only have to install the Jammer in the SATPRO. There are several locations available such as where the video receiver is installed or on the arms. The interface is Ethernet by default. Consult at sales@dmd.es .

3.-For other uses.

PC connection with CURCB module and if necessary by serial TTL with CTRCB module. In versions 2.xx or higher also via Ethernet or Wi-F.

To communicate with systems (video cameras for example), which would be located in the SATPRO, it communicates via Ethernet.

Other features:

SATPRO is device independent:

SATPRO is independent of the Radio control system, Telemetry and the video system, which can be digital or analog.

In SATPRO, different XLRS devices can be used or other brands that are compatible.

Portable Installations:

SATPRO is portable, with several rugged cases and a robust SJJ32 tripod with transport bag. The tripod can be anchored to the ground using steel cable or slings along with stakes.

Fixed installations:
SATPRO can be used for fixed installations. Then it is necessary to use a dome to isolate it from inclement weather such as rain, etc. In fixed installations you can use a 15 to 24V power supply and not use the battery.
The default interface is Ethernet.

Video-cameras:
You can add video cameras or other sensors. So the default

interface is Ethernet and to reduce the bandwidth the video must be compressed H264 or H265 or another similar compressor.

Antenna center of gravity:

For SATPRO to support the weight of multiple antennas, the center of gravity must be balanced.

Antennas that do not need counterweights:

For the antennas supplied by default in long-range video and radio control systems, such as the 17dBi patch or the QB89, they do not need a counterweight.
If you are going to use the supplied 27dBi satellite dish for video, you can not use a counterweight, although the performance will be much better if you balance it with weights between approximately 1.5 and 2Kg.

Heavy antennas that do need counterweights:

If you are going to use other heavy antennas, you must balance them in weight with the center of gravity on the aluminum bar for up-down rotation.
It will be necessary to add a necessary counterweight of 1 to 4Kg or more, so that SATPRO can correctly move the antenna once it is in operation.
If counterweights are not used and the antennas weigh more than 3Kg (it depends a lot on the geometry of the antenna and its center of gravity) it is very likely that the mechanical protection will trip (no matter whether the SATPRO is running or stopped) and it will not be able to move the antennas.
It may also be necessary to center the position of the antennas on the arms so that the weight is distributed and is as close as possible to the center of gravity in the center of the arms.

Note: Please make sure the antennas have the correct polarization. By default vertical.

Battery

SATPRO is designed to work with the built-in LiOn battery which is interchangeable and of an approximate duration of 8 to 10 hours (only SATPRO consumption).

In case of need or exhausted battery you can connect a battery or external power supply from 14.8 to 24V.

SATPRO is very energy efficient, it consumes little, about 8W with active motors (up to 12 times less than others) what allows to have a small battery of long duration and light weight.

Thermal control:

Is thermally insulated, has ventilation and heating to stabilize the interior temperature.

XLRS Connectivity

SATPRO can connect by cable or wireless.

By cable it has RCBUS and Ethernet.

By wireless it has Wifi and depending on the video system, a 60Ghz transmitter without delay for Full HD digital video and a 5.8Ghz repeater in real time for analog video.

Depending on the needs and models, these systems can be combined.

Initial message “No GCS”

It is very likely that you will not read the entire manual before starting the SATPRO. If you do so and you have not yet completed all the connections, it is very likely that this message will appear. Here is the explanation and please read the manual before using the SATPRO.

If you start SATPRO and see a “No GCS” message with an acoustic warning, you must connect a GCS (Ground control

System) such as GCSD4, GCSD5 or GCSDual and start it.
On the GCS PC you can now activate Mission Planner
If you have a SATPRO without GCS, you probably have a CURCB module (USB to RCBus Converter). You must connect this module and start it up so that the SATPRO detects that it has a GCS.
Connect the CurCB USB to a PC and you can activate Mission Planner.

In versions 1.x SATPRO connects through RCBus to the GCS or the CURCB module.Compatibility

SATPRO works optimally with XLRS systems, but is also capable of working with systems from other brands or for any application that requires aiming or tracking a target or vehicle.

For best performance, SATPRO connects with ground control stations (GCSD4V2+, GCSD5 , GCS Dual). Exceptionally it can also be connected to the XPAD1, XPAD2V3 and XPAD3V2 remote controllers.

SATPRO can be connected and directly control its position with commands via USB without the need to use XLRS radio control systems. (ethernet and WIFI In preparation).

You can also send position data via RCBus, Ethernet or Wifi using the Mavlink protocol.

This is useful when the end customer cannot use XLRS radio modems and must use other radio modems according to their specifications.

Interfaces:

It has RCBus, Ethernet and Wifi.
For third-party devices we have USB and Serial TTL adapters.
In versions 1.xx Ethernet is only available for HD video and

other devices, not for commands or access to the SATPRO position.
Wifi for SATPRO command access: firmware in preparation.

USB: You can connect a PC to directly control the position of the SATPRO using commands or use Mission Planner, QGround Control or similar to 115.200b. You will need the CURCB converter.
Serial TTL: You can connect your telemetry transmitter and receiver to a CTRCB a 38400b module.

Mavlink Telemetry

The XLRS system is compatible with any autopilot that works with the Mavlink protocol: Pixhawk, Pixhawk Cube, APM, Mini Pix, etc.

It is also compatible with any route software with mavlink protocol such as: Mission Planner, QGround Control, etc.

The RLXRS, RXLRSV2 or XVTR receivers connects directly to the autopilot through the MODEM port.

Transport Suicases

The SATPRO together with the different XLRS systems, the antennas and accessories are placed in their respective robust cases to be able to easily and safely transport each part of the SATPRO.

The tripod is placed in a carry bag that has internal foam to prevent damage during travel.

This manual will guide you through setup and configuration process.