Recon XT - Mobile Mount
## Instructional Guide
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This is a step-by-step guide on how to assemble and properly set up the Recon-XT for mobile applications.

1. The suction cup **base plate** comes pre-assembled with the RAM leg attachment hardware, the picatinny rail clamp, and the TB47 battery holder. The clamp is pre-calibrated for the proper tension point.
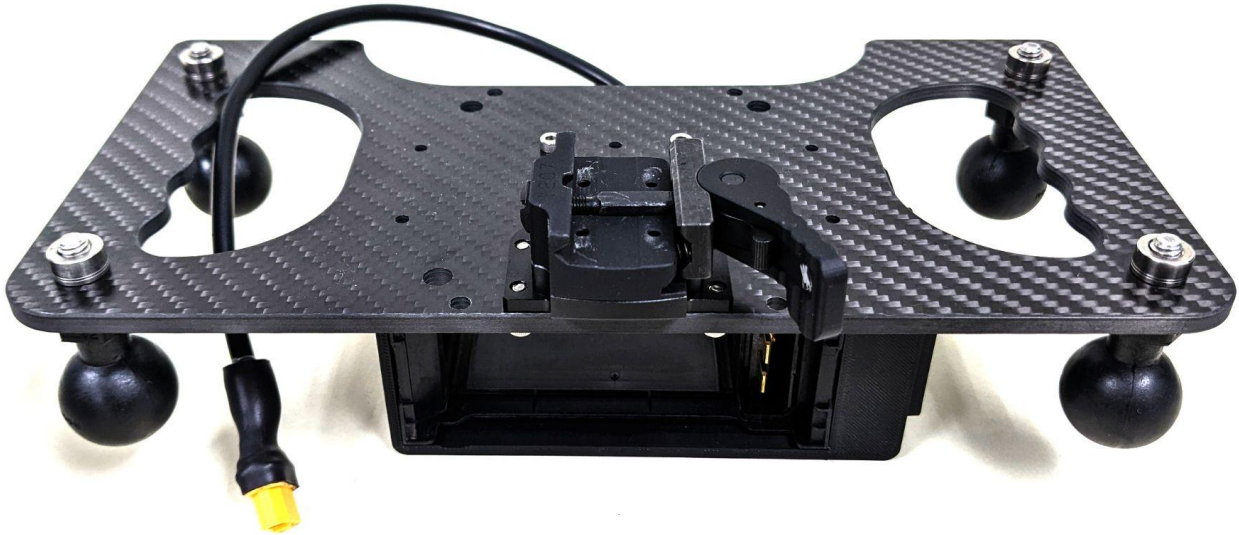
2. The **antenna bracket** comes pre-assembled with the Tallysman HC977 antenna, the skyport adapter, 2 bubble levels, and a 20cm SMA cable (with female to female SMA adapter)..
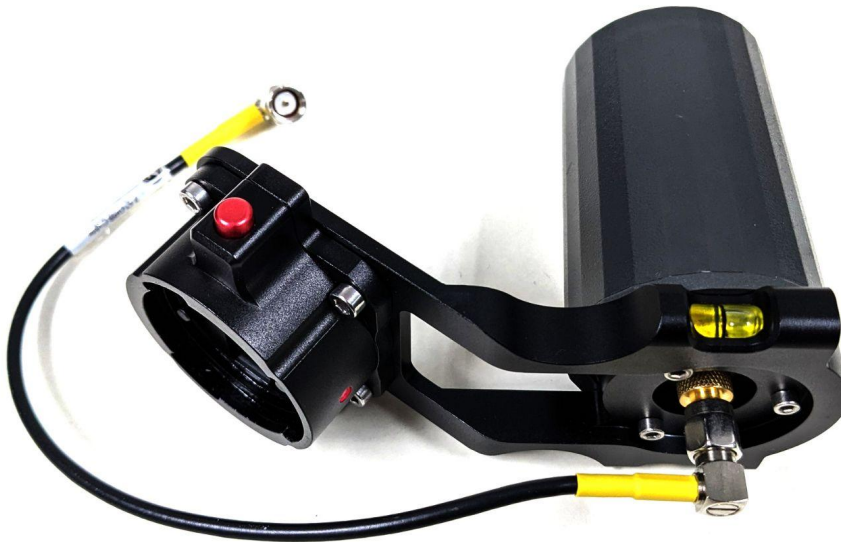
3. Attach the **suction cup legs** to the base plate as shown.
    Use the longer legs on the front of the mount if your vehicle's trunk is slanted and you want to bring the unit past the roof's edge.

4. Attach the RECON-XT unit to the suction cup mount via the picatinny clamp. Make sure the clamp lever has enough tension and fully locks.

In order to remove the payload again, press the release latch on the lever and flip the lever to the unlock position.
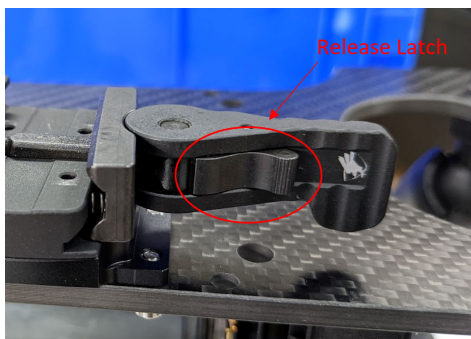
5. When mounting the unit make sure the bubble level is centered. This assures the correct angle.

6. Make sure the vehicle surface is clean and damp. The suction cups must be placed on a flat surface and make sure that the suction level mark (red line) is not visible. Insert a TB47 battery (sold separately) to the battery holder and connect the XT30 connector to the RECON-XT unit. Alternatively, you can use an extension power cable to power the payload and use a LiPo battery that you can position inside the vehicle.
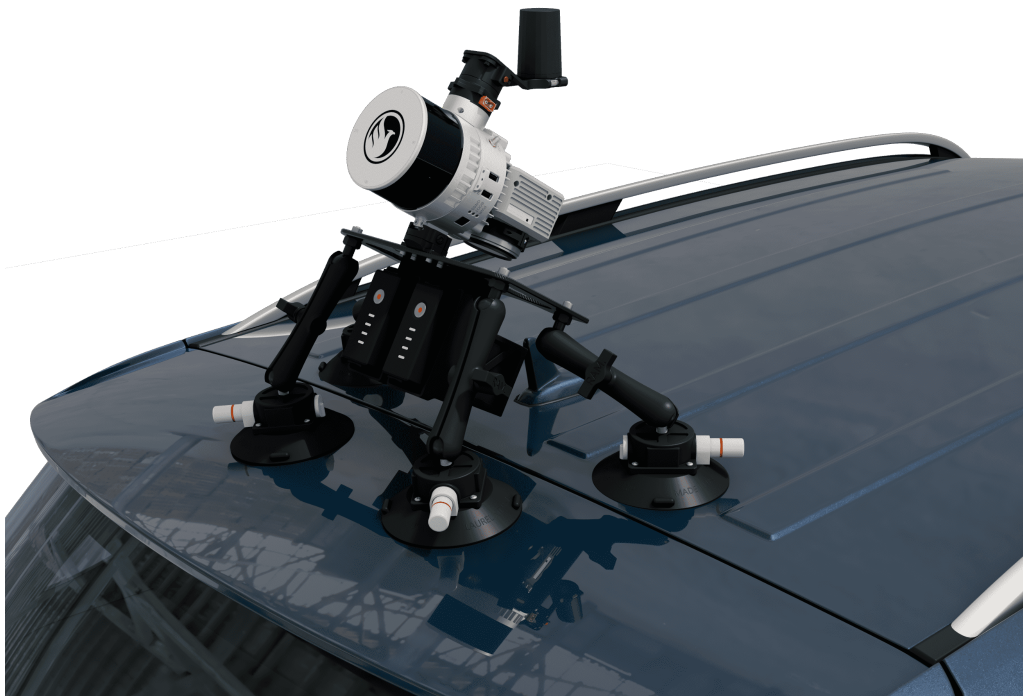
Mobile 30° Profile.

Once the Unit is mounted and connected to a power supply, we must modify the lever arms offset and IMU orientation.

Power on the TB47 (Click, then Click Hold the button on the battery) and then power the Recon-XT by pushing the power button. Now connect your device to the rover. Search for your wifi setting and look for Recon wifi network.
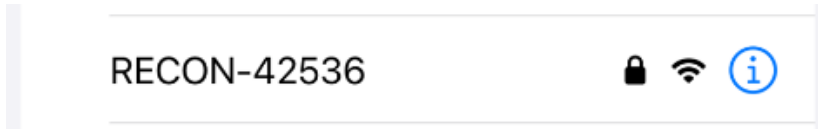
Connect to the Recon using the password: **LidarAndINS**

Go to web browser and search the following web UI : 192.168.12.1
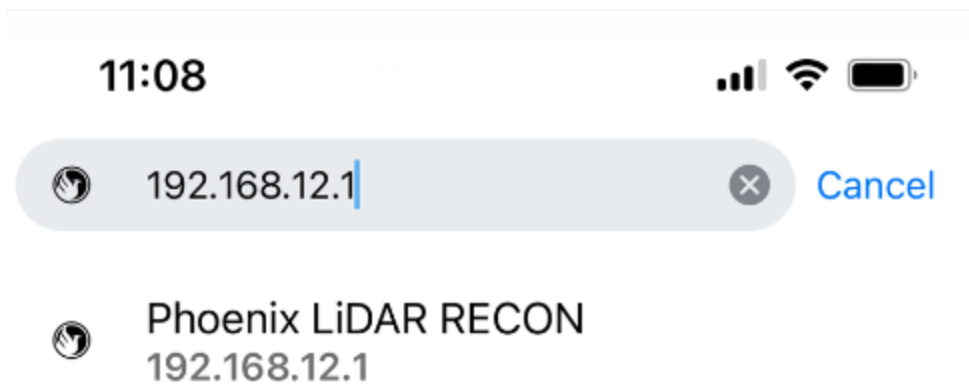
Click top Right menu drop down

Select Settings

Select Geometry and Make sure the proper offsets are modified as follows. Save each individual field as you go.

IMU to Antenna Offset

Right	0	m
Forward	0.1044	m
Up	0.0923	m

Save Reset

IMU to Second Antenna Offset

Right	0	m
Forward	0	m
Up	0	m

Save Reset

Vehicle to IMU Rotation

Yaw	180	deg
Pitch	30	deg
Roll	0	deg

Save Reset

Alignment

Static Time	5	s
Kinematic Time	4	s
Kinematic Velocity	4	m/s

Save Reset

Camera Trigger

Period	2	s

Save Reset

Field of View

Maximum FOV	0	deg
Minimum FOV	360	deg

Save Reset

The values will be permanently saved. To return the M300 profile please use the following values:

IMU to Antenna Offset

Right	0	m
Forward	-0.0679	m
Up	0.3087	m

Save   Reset

IMU to Second Antenna Offset

Right	0	m
Forward	0	m
Up	0	m

Save   Reset

Vehicle to IMU Rotation

Yaw	180	deg
Pitch	-6	deg
Roll	0	deg

Save   Reset

Alignment

Static Time	5	s
Kinematic Time	4	s
Kinematic Velocity	4	m/s

Save   Reset

Camera Trigger

Period	2	s

Save   Reset

Field of View

Maximum FOV	0	deg
Minimum FOV	360	deg

Save   Reset

Mobile Acquisition Procedures

Mobile acquisition procedure.

1. Static Time: power on the system and wait approx. 1 minute to allow system to get GNSS reception
2. Kinematic alignment: drive in a straight line at 10 to 15 mph
3. Drive a figure 8
4. Drive your planned acquisition
5. Drive a figure 8
6. Kinematic alignment: drive in a straight line at 10 to 15 mph
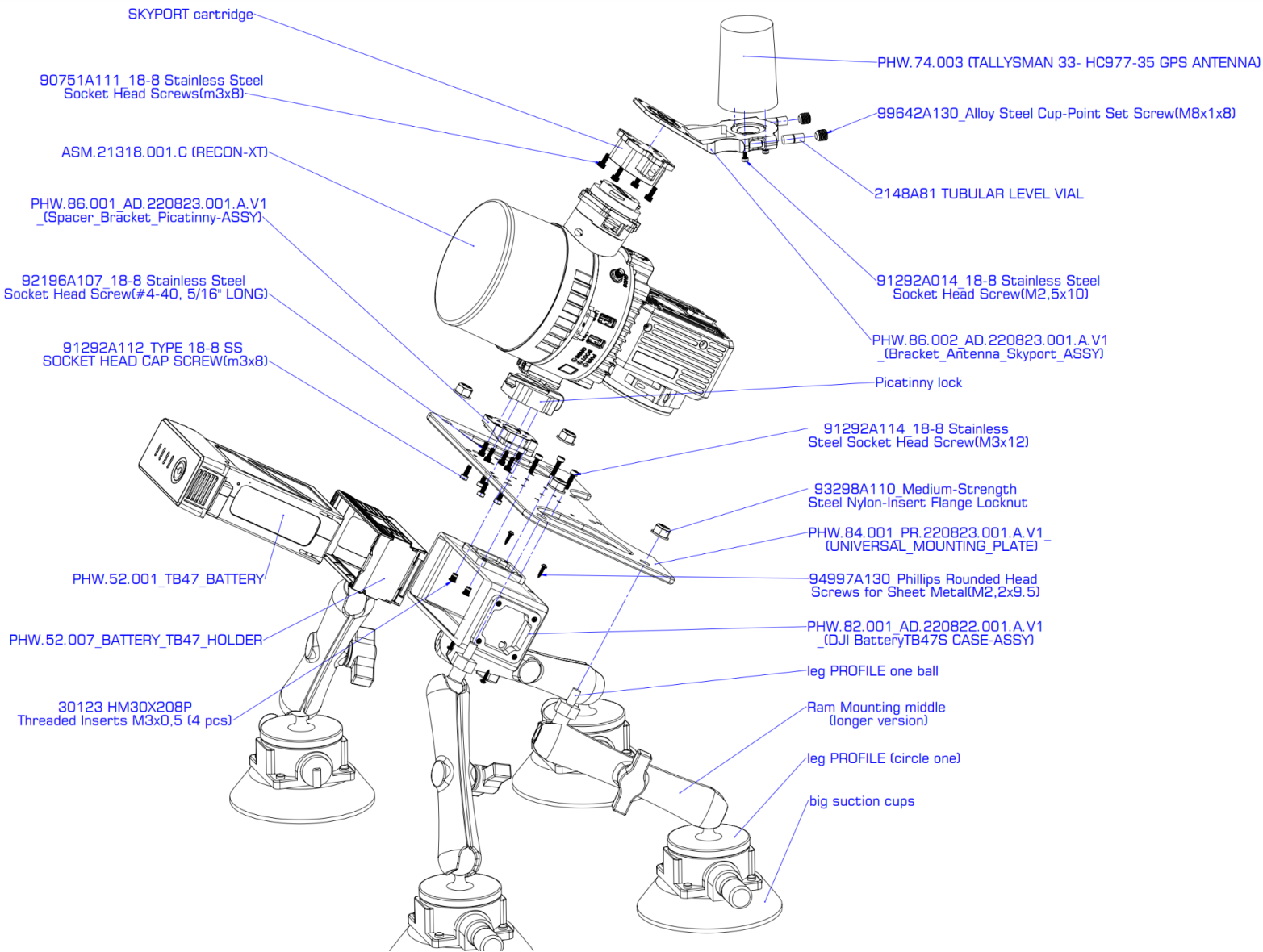7. Static Time: Wait 45 seconds before powering off the system

Once the final static time is complete, shutdown the system through the Web UI.

Best practices:

- Start sensors before the initial kinematic alignment.

- Keep in mind the traffic will shadow some part of the collection, use the lane closest to your target to prevent that.

- When attaching the suction cup mount to the vehicle, prepare the surface of the vehicle by cleaning it with water and leave the surface slightly wet for a better bond.

- All alignments must be done with good GNSS coverage. If possible avoid driving the kinematic alignment and figure 8's near large buildings, trees, or other obstructions that might be present.

- The A6K lite camera won't be able to colorize the pointcloud

For more tips on mobile lidar visit:
https://docs.phoenixlidar.com/rover/theory-and-workflow/mobile-acquisition-best-practices

SKYPORT cartridge

90751A111_18-8 Stainless Steel Socket Head Screws(m3x8)

ASM.21318.001.C (RECON-XT)

PHW.86.001_AD.220823.001.A.V1 _(Spacer_Bracket_Picatinny-ASSY)

92196A107_18-8 Stainless Steel Socket Head Screw(#4-40, 5/16" LONG)

91292A112_TYPE 18-8 SS SOCKET HEAD CAP SCREW(m3x8)

PHW.52.001_TB47_BATTERY

PHW.52.007_BATTERY_TB47_HOLDER

30123 HM30X208P Threaded Inserts M3x0,5 (4 pcs)

PHW.74.003 (TALLYSMAN 33- HC977-35 GPS ANTENNA)

99642A130_Alloy Steel Cup-Point Set Screw(M8x1x8)

2148A81 TUBULAR LEVEL VIAL

91292A014_18-8 Stainless Steel Socket Head Screw(M2,5x10)

PHW.86.002_AD.220823.001.A.V1 _(Bracket_Antenna_Skyport_ASSY)

Picatinny lock

91292A114_18-8 Stainless Steel Socket Head Screw(M3x12)

93298A110_Medium-Strength Steel Nylon-Insert Flange Locknut

PHW.84.001_PR.220823.001.A.V1 _(UNIVERSAL_MOUNTING_PLATE)

94997A130_Phillips Rounded Head Screws for Sheet Metal(M2,2x9.5)

PHW.82.001_AD.220822.001.A.V1 _(DJI BatteryTB47S CASE-ASSY)

leg PROFILE one ball

Ram Mounting middle (longer version)

leg PROFILE (circle one)

big suction cups

This content is subject to change.

If you have any questions about this document, please contact Phoenix LiDAR Systems by sending a message to support@phoenixlidar.com.