QUICK ANTENNALIGN ALIGNMENT TOOL (AAT) OPERATING INSTRUCTION

Scan for training

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INTRODUCTION

This document is an overview of how to use the AAT. It is important that a user view the free video training series on the Sunsight Instruments website (www.sunsight.com/training). In addition to free video training, Sunsight Instruments also offers an online certification program, which may be required by some customers. Upon successful completion of an online exam, a certificate is issued that is valid for one year.

Please check the Sunsight Instruments website periodically for new products and updates (www.sunsight.com).

Attention New Users!!!

PLEASE REVIEW THE TRAINING VIDEOS AT WWW.SUNSIGHT.COM UNDER THE TRAINING TAB. IT WILL SAVE TIME.

Please take time to:

1) Learn to mount the AAT properly
2) Learn the tips and tricks for obtaining GPS based azimuth.
You should not be waiting more than 5-10 minutes for azimuth. Refer to the training videos.

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SAFETY

The AAT should be handled using the following considerations:


All internal repairs must be performed by Sunsight Instruments.


Use only the Sunsight supplied smart charger to recharge the LiFePO4 battery pack. Use of a non-approved battery charger will void the battery warranty and can damage the battery pack.


Never attempt to recharge the batteries outdoors in inclement conditions.


Never short the battery terminals and never attempt to disassemble the battery pack or dispose of the pack in a fire.
Any exhausted battery packs should be disposed of properly. CONTACT SUNSIGHT INSTRUMENTS IF YOU ARE UNSURE OF HOW TO PROPERLY DISPOSE OF THE BATTERY.


The AAT is water resistant, but not waterproof. Do not submerge.


Avoid impacting, dropping or rough handling of the AAT. AAT contains sensitive electronic components.
Rough handling may result in AAT internal component damage.


Care should be taken to avoid impact to the black GPS antennas on the top of the AAT.

If you suspect the AAT is operating incorrectly, contact Sunsight Instruments (www.sunsight.com) or an authorized Sunsight Instruments distributor for support.

BASIC DESCRIPTION AND OPERATION

The AAT is a self-contained measurement device that can be used to measure azimuth, tilt, roll, latitude, longitude, and height of the device it is attached to. The primary use of the AAT is to provide the necessary measurements to allow a user to align devices (example: cellular panel antennas).

The AAT can capture measurement results and generate PDF reports and CSV files of the measurements.

The AAT is controlled by a WiFi connected device (Handheld Controller). This device can be a smart phone, tablet or laptop. Sunsight Instruments offers a Smart Phone option for this purpose or the customer may choose to supply their own. If using a customer supplied device, a one-time setup is required. Instructions are available at www.sunsight.com.
There is NO special software required on the Handheld Controller for operating the AAT. A standard WiFi connection and a web browser are all that are needed to control the AAT.

The AAT's WiFi is 802.11b,g,n compliant.

The AAT appears as a WiFi wireless hotspot with the wireless network name of "AAT 90xxxxx", where the x's represent the serial number of the AAT.

No more than one WiFi user should be connected to the AAT at a time. Multiple users connected at the same time may cause operational issues for the AAT.

When the user is connected to the AAT via WiFi they typically will NOT have internet access. WiFi connection will be dedicated to the AAT.

Target alignment data (Profiles) can be entered using the Handheld Controller prior to climbing. Up to 256 sets of target data can be entered.

The AAT can be used in Quick Capture mode to make an instant record of the real-time measurements.

AAT reports can be generated on the Handheld Controller in PDF or CSV format. Reports can be emailed from the handheld device via WiFi or cellular data. The user also has the option to copy the file from the Handheld Controller to a laptop or PC using Bluetooth or a USB cable.

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ORDER OF OPERATIONS

Preparation before you climb

1. Charge AAT and Handheld Controller;
2. Create profiles for antennas to be aligned;
3. Run the AAT on the ground at the job site and achieve azimuth (blue LED solid);
4. Power off before climbing. This will save time on the tower.

Taking measurements on the antenna

Always use safety tethers to secure equipment!

1. Securely attach mount to the antenna;
2. Attach AAT to mount;
3. Turn AAT on;
4. Connect Handheld controller to AAT via WiFi;
5. Check that azimuth has been achieved (blue LED solid);
6. Select Site and Antenna Profile;
7. Set Orientation;
8. Adjust antenna;
9. Capture alignment results for reporting.

After all measurement work is complete (off the tower)

1. Turn on AAT and connect via WiFi to the AAT Profile page;
2. Create PDF reports on Handheld Controller by clicking the PDF Report button;
3. Power off the AAT.

Once the user has created the reports on the Handheld Controller, they have the ability to email the reports from the Handheld Controller via WiFi or cellular data (data charges may apply).

The user also has the ability to copy the file from the Handheld Controller to a laptop or PC utilizing Bluetooth or a USB cable.

QUICK ANTENNALIGN ALIGNMENT TOOL (AAT) OPERATING INSTRUCTION

AAT FRONT PANEL

There are five LEDs and a power button on the front panel of the AAT.

The power button turns the AAT on and off. To turn the AAT on, press the power button momentarily. To turn the AAT off, press nd hold the power button for 3 seconds.

The three BATTERY LEDs indicate the state of the battery charge.

The green LINK LED indicates whether the Handheld Controller is connected to the AAT via WiFi. A solid green LINK LED indicates a WiFi connection has been established.

The blue AZM (azimuth) LED flashes when the AAT is searching for azimuth using GPS and GLONASS satellites. When the blue LED is solid, the AAT is ready to take measurements.



CHARGING THE AAT'S BATTERY

The AAT's battery must be charged using the Sunsight supplied battery charger which is specifically designed for the Lithium LiFePO4 battery included in the AAT. Usage of other battery chargers will damage the battery and void the battery's warranty.

The AAT will run for approximately 8 hours on a full charge.
AAT can be charged in 1.5 hours from complete discharge.

To charge the AAT:

1. Open the end panel of the AAT to expose the charger port.
2. Insert the Sunsight supplied LiFePO4 Battery charger plug into the charge port.
3. Plug the charger's AC cord into a wall socket (120-240VAC). The charger has an LED indicating charge status: Red indicates the unit is still charging. Green indicates the AAT is fully charged.

POWER ON / OFF

The AAT is powered on using the power button on the keypad on the front of the AAT.

To turn the AAT ON, depress the power button momentarily. The green Link LED will light, indicating that the AAT is powering up. After several seconds, the LEDs will extinguish momentarily and then the battery indicator LED will light, indicating the AAT has completed the power on process. The blue AZM LED will also blink, indicating the AAT is searching for GPS and GLONASS satellites.

To turn the AAT OFF, press and hold the power button for 3 seconds. All LEDs will extinguish, indicating the unit has powered down.

CONNECTING TO WIFI VIA THE HANDHELD CONTROLLER

If using a user supplied Handheld Controller device, please refer to the Using Android/iOS Devices with the AAT video for this one-time setup process. The video can be found at www.sunsight.com under the Training tab. Once the setup process has been completed:

1. Turn on the AAT
2. On the Handheld Controller (phone, tablet, laptop), go to the appropriate screen to view available WiFi networks.
3. Select and connect to the WiFi network that is named “AAT 90xxxxx,” where the x’s indicate the AAT’s serial number. The AAT serial number decal is affixed to the back of the AAT.
4. Once successfully connected to the AAT, open a web browser on the Handheld Controller and in the address bar type aat.sunsight.com orenter the IP address **192.168.0.50.** The AAT web page should appear.

IMPORTANT CONDITIONS FOR OBTAINING AZIMUTH

Learn the tips and tricks for obtaining GPS based azimuth.
You should not be waiting more than 5-10 minutes for azimuth.
Review the training videos.

Refer to the **AZM Diagnostics** webpage provided by the AAT’s onboard website for details concerning azimuth/GPS conditions. This webpage can guide the user to quick and successful resolution of most GPS signal issues.

Always mount the AAT as high as possible and in a way that allows the GPS antennas on the top of the AAT to have an unimpeded view of the sky. Remember that the user’s hands, head, body, etc can block GPS signals, as will most physical obstructions.

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USING THE AAT MOUNT

ALWAYS USE A TETHER TO SECURE THE AAT AND MOUNT WHEN WORKING WITH THE AAT SYSTEM. THE TETHER CAN BE ATTACHED TO THE HANDLE OF THE AAT AND PASSED THORUGH THE LOOP ON THE SIDE MOUNT STRAP.

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ENSURE THAT THE RATCHET STRAP GOES THROUGH THE CORRECT OPENING IN THE AAT MOUNT. SEE PICTURE BELOW. PASSING THE STRAP THROUGH ANY OTHER WAY MAY MAKE THE RATCHET BUCKLE DIFFICULT TO RELEASE.

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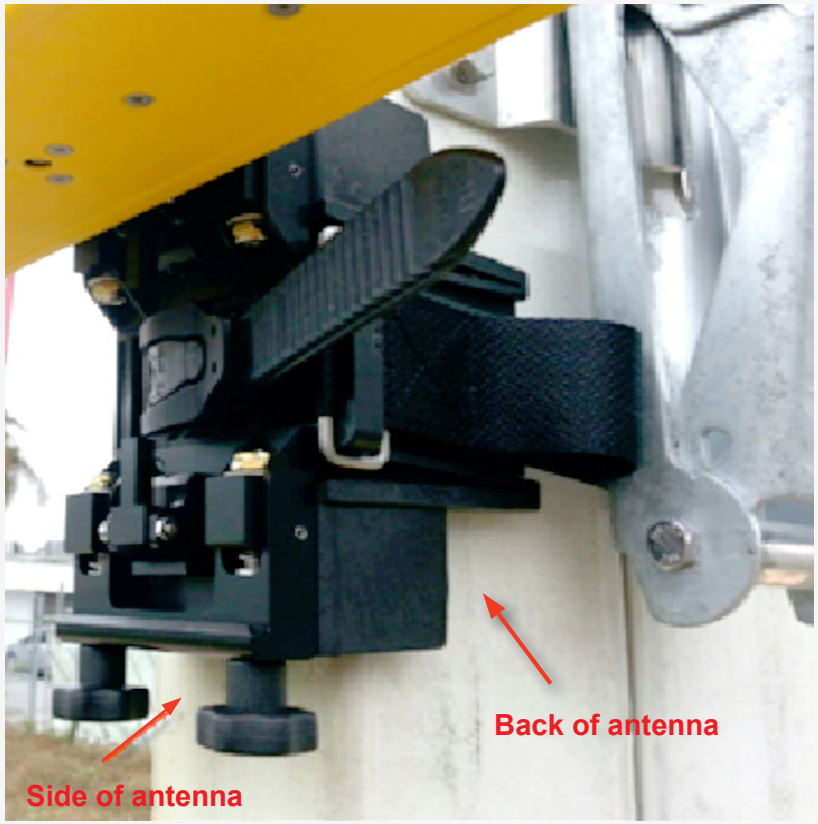


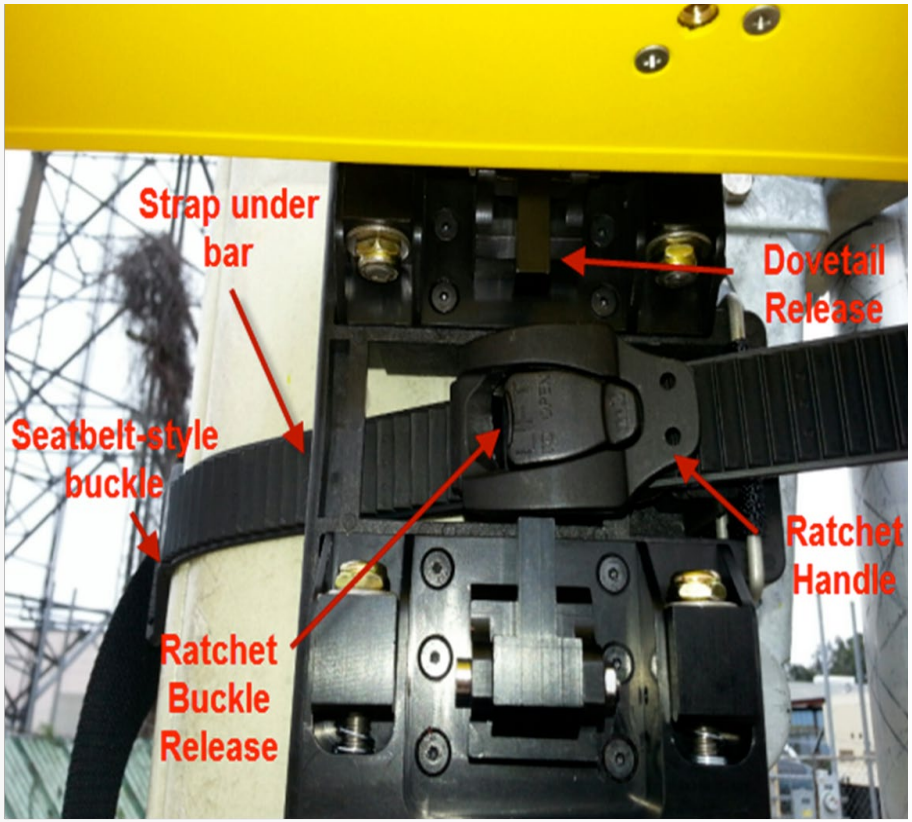
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MOUNT DESCRIPTION

The mount is secured to the antenna by means of a strap that uses a ratchet portion to apply pressure, holding the mount to the antenna. Once the mount is securely attached, the AAT is then attached to the mount and the system is ready to use.

FOR BEST RESULTS WHEN USING THE AAT, ALWAYS MOUNT THE AAT AS HIGH AS POSSIBLE TO PROIVIDE THE BEST VIEW OF THE SKY FOR THE AAT'S GPS SYSTEM.





QUICK ANTENNALIGN ALIGNMENT TOOL (AAT) OPERATING INSTRUCTION

INSTALLING THE AAT AND THE MOUNT

1. Adjust the seatbelt-style strap and buckle in the ratchet strap to provide enough slack for the strap to pass completely around the antenna.

2. Hold the mount up to the antenna to determine an acceptable mounting location. Make sure to place the mount as high as possible on the antenna.

3. After determining the optimal location for the mount, pass the strap around the antenna and insert the ratchet portion of the strap into the ratchet buckle on the mount a few clicks to make sure the ratchet strap is well engaged with the ratchet buckle.

4. Take the slack out of the seatbelt portion of the strap by pulling the seatbelt strap through the seatbelt-style adjuster on the ratchet strap.

5. Once the bulk of the slack has been removed, use the ratchet buckle to tighten the ratchet strap. DO NOT OVERTIGHTEN THE RATCHET STRAP AS THIS WILL MAKE THE RATCHET BUCKLE DIFFICULT TO RELEASE. Two or three clicks on the ratchet buckle is usually plenty of tension to secure the mount.

6. Check to see the mount is tight and touching the antenna on the back and the sides. Making sure the mount is on correctly will assure accurate measurements for tilt and roll.

7. Once the mount is secure, insert the upper edge of the AAT's dovetail rail into the mount. Rotate the AAT down until the AAT locks into place.

8. Tighten the two knobs on the top of the mount to further secure the AAT. This tightening is required to properly align the AAT to the mount.

REMOVING THE AAT AND THE MOUNT

1. Loosen the two mount knobs completely.

2. Pull the release lever under the AAT and rotate the AAT up to remove the AAT from the mount.

3. After the AAT is safely stowed, remove the mount by pulling the release on the ratchet buckle. If the mount has been over tightened, this can be difficult. Be sure to tighten the ratchet buckle only as much as required.

DEFINITIONS

AAT – AntennAlign Alignment Tool.

Mount (Side Mount or other mounts) - Mechanical attachment used to secure the AAT to various devices to be measured, such as antennas. AAT comes standard with a Side Mount which can be used on either side of the antenna. Mounts for special antennas are available from Sunsight. Sunsight is continually developing new mounting options to support the many shapes and sizes of antennas produced by antenna manufacturers. Contact Sunsight if you encounter an antenna that prevents attachment of the AAT using the standard mount.

Captures – The AAT user can capture measured data once the device has been aligned to record the final alignment position of the antenna. The user can create up to 512 data captures. The user can make several captures against one profile, if needed.

Quick Capture – Quick Capture is a hybrid process where no profile is built ahead of time, but a capture can still be made. While on the **Measure Only** screen, the user selects Quick Cap, enters the site name, sector and antenna position and saves the results for reporting later.

Orientation – The AAT has the flexibility to be mounted in several orientations (example: left, right, front, or back of the antenna). As such, the user must select the correct AAT orientation on the web page using the Handheld Controller.

Profiles - Profiles are target data for an alignment. There is a separate profile for each device being aligned (ex. A three sector site with 1 antenna per sector will have 3 profiles). Typically, an AAT user will receive specific alignment requirements for the antennas that are being adjusted. These requirements may come from an RF data sheet or other means, but are typically supplied by the customer. AAT user can program up to 256 Profiles into the AAT ahead of climbing a tower. Once on the tower, the climber merely needs to select the previously built profile to see the target measurements for the alignment.

Handheld Controller – A Handheld Controller can be a smart phone, tablet, laptop or other WiFi/Browser enabled device that is used to access the AAT's internal website. The Handheld Controller can be supplied by Sunsight Instruments or the user. NO special software is required to use the AAT. If a customer supplied Handheld Controller is used, it should be configured using the one-time setup documented in AAT Android/iOS Quick Start Guide available from Sunsight Instruments at www.sunsight.com.

Reports – The AAT produces PDF reports that are copied directly onto the Handheld Controller device (phone, tablet, laptop). The user then has the option to email the reports from the Handheld Controller via WiFi or cellular data. The user also has the option to copy the file from the Handheld Controller to a laptop or PC using Bluetooth or a USB cable.

CONTACT INFORMATION

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