



# Installation Information

This document is provided to help make your pinpoint installation go smoothly. It is not a complete installation manual, but should provide a quick reference and answer some questions.

## **Installation Materials Required** (Not including tools)

- Pinpoint AHRS
- Pinpoint MSU (Magentometer)
- Pinpoint OAT Probe
- Comant GPS Antenna
- SMA to TNC cable for GPS antenna (specify length)
- 2 and 3 conductor shielded cable (not included)
- Adapter fittings for Pitot and Static Lines (not included)
- 3 Non-Magnetic #6 screws, nuts, and washers (not included; for mounting the MSU)
- 4 #8 screws, nuts, and washers (not included; for mounting the AHRS)

Note that the vials containing the MS39029/56-348 sockets used on the pinpoint's connectors also contain some black "blanks". (MS27488-22-1) These are not required, but may be used in any open socket location to provide for a more perfect environmental seal if required.

## **Mounting the components**

The mounting locations of the Pinpoint components are very flexible and will vary from aircraft to aircraft.

In general, the OAT probe should be mounted in a shaded location, out of the propeller slipstream, such as under the wing and greater than 3' from the fuselage side.

The MSU can be mounted in any location free of moving ferrous materials, and electrical motors or other items that can cause magnetic shifts. Possible locations would be the wings/wingtips, tailcone, or any other area with more than 20" separation from items as listed above. The MSU mounts with the connector facing upwards, and there is an arrow on the bottom of the unit that should point forward, aligned with the direction of flight of the aircraft. It does not need to be on the aircraft centerline, but should be aligned parallel to the centerline of the aircraft. The MSU should be mounted using #6 non-magnetic (Stainless/Aluminum/Brass) screws.

The GADAHRS itself can be mounted in any location, preferably somewhere with good access to both the pitot and static system, and where wires can be run easily to the IDU-1 connector J1, and the MSU and OAT probes. Consideration should also be given to its proximity to the GPS antenna, which is a surface-mount antenna and would ideally be mounted externally to the cabin, at the highest point of the aircraft, within 10 degrees of horizontal and with a full clear view of the sky. The GADAHRS is the central component to this system and thus is the most important to locate for accessibility. It does not need to be perfectly leveled, as leveling is accomplished in software during calibration. It can also be oriented in any orientation for front/rear/left/right. (i.e. The pitot and static ports can face either forward, aft, left, or right) The orientation will be set in software during the leveling step of the calibration to accommodate your installation.

You'll notice that the wiring diagram from the Pinpoint may be different from previous wiring diagrams. In the current diagrams, you should NOT use the shield of the wire for signal grounds, but instead use one of the connectors in the bundle, and ground all shields to the backshell. Note that although the wiring diagram shows shielding being connected on both ends of the cables, you should only ground shields at ONE end. Either end will work, but the end with the best grounding source or easiest accessibility should be used.

Additionally you will see that in the Pinpoint wiring diagram, dual power (A & B) is accommodated. This allows you to have 2 power sources for the GADAHRS and MSU and prevent unit failure from the loss of one power source. You are not required to use both A & B power, if your installation already provides for redundancy. In that case, simply use the A side. You'll also notice a pair of diodes on the heater power input of the GADAHRS. These are to prevent cross-powering of the A&B Bus from the opposite bus, while still powering the heater system from either bus. If you only use one power bus, you do not need to add a diode, but may do so if you wish. **NOTE: NOT SHOWN on the print is that pin 16 should be installed on the GADAHRS, and tied to ground temporarily during the leveling and compass swing and alignment, after which it needs to be cut and disconnected from ground for the AHRS to display attitude. If you leave this wire in place for future calibrations, you should heat-shrink the end of the snipped wire to prevent it from contacting a ground during flight.**

The Pinpoint include an ADU (Air Data Unit) built in to the system. Many people upgrading to the Pinpoint will already have an Air Data system installed into their Chelton system, feeding data in using pins 13 and 34 of the J1 cable. If yours is such a system, you will install your ADU inputs from the Pinpoint GADAHRS into pins 15 and 36, providing for 2 Air Data systems that can supply air data to the Chelton System.

Before completing the wiring of the system, verify that your J2 harnesses (screen interconnects) all include all wiring used in the pinpoint. (i.e. if you have 2 air data systems, and use pins 15/36, ensure that pins 15 & 36 are continuous from J2 to J2 on each screen, to allow the units to receive the data.

The pitot and static ports on the GADAHRS are female ports that accept ¼" (-4) Male 37 degree flare fittings, but the fittings require O-Rings installed on their bases. The fittings included are AN815-4D fittings, for ¼" O.D. flared aluminum tubing, with the sockets using a 7/16-20 Thread size. **These fittings are very probably not what many installers will need to install to your pitot and static system.** Most common pitot systems use ¼" O.D. Plastic poly tubing using Nylon tubing fittings, and common static systems often use ¼" I.D. Tygon tubing using push-on fittings. To easily adapt to the more common pitot and static systems, a suggestion is to instead use 2 AN816-4D fittings installed into the GADAHRS with O-Rings, which will provide you with two 1/8" Male NPT fittings which should be much more easily adaptable to common pitot and static fittings.

## **Installation of IDU software for Pinpoint Use**

The latest revision of software for the IDU-1 is available. Upgrading is done as with any upgrade. The UPDATE.EXE file is placed on a SmartMedia page, and the system started with the card inserted before power-on, and from the Ground Maintenance page you select "Update Databases and Applications". The system will prompt you when it's done and you can proceed to the Calibration and Alignment steps if you're ready.

## **Calibration and Alignment of the GADAHRS**

When your system is ready for alignment, and power is applied, you should have a glowing green heartbeat LED on the top of the AHRS that blinks if everything is OK, and is solid green if in the ground maintenance mode.

1. Level the airplane longitudinally
2. Ensure that pin 16 of the GADAHRS is grounded for calibration
3. Apply power to your #1 display and the GADAHRS with a SmartMedia card inserted into display #1.
4. Select the last option on the Ground Maintenance Page. (Pinpoint Alignment...)

5. Select the HELP option and read through every step. Take notes as required
6. Select the LEVELING option and follow the on-screen prompts. Note that in this section you must choose in which orientation your GADAHRS is installed, noting which direction the pitot and static connectors face.
7. Exit
8. Power Down
9. Select the COMPASS SWING option and follow the prompt. Note that the compass swing should be done with the engine running and all normal electrical components on. You will taxi the plane in a complete circle in both directions, slowly, allowing the unit to sense any magnetic effects in any heading.
10. Select the COMPASS ALIGNMENT option. You will need to enter your current LAT/LONG position, Altitude, Month, and Year for which the system can calculate the variance from True North to Magnetic North. The compass alignment is best performed at the compass rose available on some airports, to adjust for any offset in the MSU installation. It is preferred to do the alignment with the engine off and using a towbar, to allow you to get the plane perfectly aligned with the cardinal headings. Note that in the compass alignment section, if you have dual-Pinpoints, you could align them both.
11. When the above is complete, **DISCONNECT PIN 16** for flight mode. The unit will NOT display attitude with this pin grounded.

This should provide you with some general installation information needed for a successful Pinpoint GADAHRS install. If you require any additional assistance, please contact one of our technicians at Direct2Avionics by calling: 541-504-8300