SAGEBRUSH Technology, Inc.

Aero20 Frequently Asked Questions

1. What kind of payload can the Aero20 carry?

Answer: The Aero 20 was designed to accommodate a 20 lb. payload. However, equally important factors are the physical size and inertia of the candidate payload. The Aero20 is designed work with a payload that has a moment of inertia of 80 lb-in^2 about either of the Aero20's rotational axes. The payload can be anything that will fit in the gimbal, cameras, antennas, optics, etc. The one restriction is that the yoke is designed for wiring and may not allow the installation of waveguide or fiber optic cable.

2. What are the volumetric restrictions of a candidate payload for the Aero20?

Answer: The payload sphere has an approximate diameter of 15 inches. However, critical drive components also reside inside the sphere. There is a set of payload interface bosses located in the sphere with a spacing of 7.44 inches. A good rule of thumb is that the Aero20 will handle a payload with a volume of 288 cubic inches. This translates to something like 6 inches x 6 inches x 8 inches. In most cases payloads need to be counter balanced, therefore, volume must be reserved for that. Please contact Sagebrush Technology for technical assistance concerning a specific requirement.

3. How good is the Aero20 stabilization?

Answer: The standard Aero20 is stabilized with respect to its two rotational axes. This is accomplished via an on-board inertial pack. Actual performance is payload and aircraft dependent, but a properly balanced payload should have a pointing accuracy of about 0.1 degrees and a stabilization performance (jitter) of 1 to 5 milli-radians using our standard instrument package.

We can upgrade the instruments depending on the customer's requirements. However, the standard instruments can be exported without a license, which will not be the case with many of the higher end sensors. In addition, the cost will increase significantly as the instrumentation is improved.

4. How does the Aero20 mount to the aircraft?

Answer: The Aero20 is generic in the respect that the top of the Aero20 has an interface of eight 0.190-28 UNC-2B thread holes on an eight-inch bolt circle. This can be used to install a user-defined adapter plate that interfaces to the appropriate aircraft mount.

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5. What is the maximum operating airspeed for the Aero20?

Answer: The current Aero20 has been flight tested at speeds up to 70 knots without performance degradation. However, the mounting interface will withstand airspeeds of up to 250 nautical miles per hour. Slewing, pointing, and stabilization may degrade at higher speeds.

6. How fast will the Aero20 slew?

Answer: The Aero20 is designed to slew at a rate of up to 60 degrees per second in both the azimuth and elevation axes. This rate may degrade if the payload inertia higher than the rated value.

7. How does the Aero20 supply power and communications to the payload?

Answer: Power can be provided for a payload in two ways. The first way is to pass user provided power directly through an I/O connector. The second way is to utilize an on board 12-volt DC supply. This source will supply one amp at 12 volts continuously. The Aero20 maintains 3 serial communication ports. Generally, one port is reserved for payload communications, one port is reserved for video transmission, and the other port is used to command the unit.

8. How does the Aero20 receive commands?

Answer: The Aero20 is designed to accept commands via a user interface. This interface can be another computer or a direct joystick connection from its hand controller. The Aero20 accepts commands via either RS 232 or RS 422 at a maximum baud rate of 115,000 baud. The command packets consist of a header, address, data bytes, and a check sum. Additionally, the Aero20 is designed to transmit certain information when queried. An example would be gimbal position in azimuth and elevation.

9. What is the pointing accuracy of the Aero20?

Answer: The Aero 20 is designed to have a pointing accuracy of 0.1 degrees in both the azimuth and elevation axes.

10. Do you sell a stabilized, empty, gimbal system?

Answer: We prefer to integrate the payload (it can be customer-supplied) so that the gimbal can be balanced, instrument wiring installed, and the performance tuned prior to shipment. Once the gimbal has been set up, the payload can be removed and reinstalled in the field without significantly affecting the performance. If a variety of sensors and different instruments need to be installed for different tests, we would need to work out a system to maintain the overall balance and gimbal performance regardless of the instrument configuration. We would also have to consider how the environmental housing could be adapted to different instrument packages.

11. Is the gimbal FAA approved?

Answer: The Aero20 is not FAA approved. To date, all of the systems have been sold to military or law enforcement customers operating "Public Use" aircraft. However, there are mechanical mounts used as an interface between the aircraft and the Aero20 that are FAA approved. This may be adequate, depending on the application, to obtain an approved FAA Form 337. In other circumstances a Supplemental Type Certificate (STC) may be required. This is dependent upon the payload installed in the Aero20 and ancillary equipment installed in and on the aircraft.

12. Will you provide installation support on my aircraft?

Answer: Sagebrush Technology Inc. does not perform aircraft installations. However, we will support the installation with resources on a case-by-case basis. Normally, for commercially rated aircraft, an approved and signed FAA Form 337 will be needed to document the installation of a system containing an Aero 20 on both fixed and rotor winged aircraft. There are numerous FAA approved installation and maintenance facilities.

13. Can you ship the Aero 20 anywhere in the world? Is an export license required?

Answer: We can ship to any country that is not the subject of a trade embargo by the United States Government. Under most circumstances, no export licenses are required for Aero 20 gimbals, but we are required to keep records of the end users and end-user applications for gimbals shipped to foreign countries. We cannot ship to persons or entities that have been denied export privileges by the United States Government.