2022

D-0022
Astro+
Installation Instructions

LEVIL AVIATION
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Revision Date:

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AMENDMENT RECORD

This procedure is reviewed to ensure its continuing relevance to the systems and process that it describes. A record of contextual additions or mission is given below:

Revision No.	Date	Responsable Person	Description of Change
1	12/08/2022	Maureen Magner	Initial release

Warranty

Levil Aviation warrants this product to the original purchaser to be free from defects in material and workmanship for a period of one year from the date of the original purchase. The following are not covered: software, damage resulting from accident, neglect, misuse, fire, or flood, improper voltage supply or failure to follow operational guidelines supplied with this product. Extended warranty is available for purchase on our website.

Please register your product online at: http://aviation.levil.com

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1. Introduction

The Astro+ provides ADS-B weather and traffic information, GPS navigation, AHRS and Data Recording. The Astro+ can be used as a portable or permanent-mount instrument. It integrates static and dynamic pressure transducers which make available accurate indicated airspeed and pressure altitude obtained from the pitot static system, ultimately offering a "six-pack" solution displayed on a tablet. The Astro+ has an option to facilitate installation with remote GPS and ADS-B antennas and power inputs for 5V power systems. Compatibility with a wide range of Apps and mobile devices makes the Astro+ the ideal all in-one solution for a wide variety of aircraft where weight, space and cost are important. The Astro+ features 1 serial port that can be used for data transfer it and other avionics in the cockpit. The new Data Recording feature allows you to insert a SD Card and record all your flight data (position, groundspeed, altitude, attitude, etc.) and display the information on various platforms. You have the option to preset your desired file recording format, depending on how you wish to use the data (.gpx,.fdr, or .csv).

2. Installation

This device is considered a portable avionics suite, with the option to install it remotely. For certified airplanes please discuss your installation options with your A&P.

I. Layout

Figure 1. Astro+ Front view

Option 1 – Single Antenna for ADS-b in

Option 2 – Remote installation option with Dual Antennas for GPS and ADS-b in

Figure 2. Astro+ side views

II. Charge before use

When using the Astro+ as a portable device, you must first charge the internal batteries using a USB-C cable. The LED next to the USB port indicates when the device is charging. When the LED goes off, the internal battery is fully charged. This process can take up to 6 hours. A fully charged battery supplies power for up to 4 hours. When using the aux port connected to power (5V) the battery will be charged automatically with the external power.

III. Positioning

- Align the airplane icon on the Astro+ top label with the roll axis of your aircraft. It does not have to be centerline, but parallel with the roll axis.

- ON/OFF switch should face the back of the aircraft.
- Install Astro+ on a surface that WILL BE LEVEL with the horizon DURING un-accelerated, straight and level flight. It is ok if the surface is not level on the ground (i.e. in tail draggers).
- For optimal magnetic heading, install Astro+ as far away from ferrous metals as possible. (i.e. magnetic compass, cell phones, steel airframe)

- Caging capability is available to offset roll and pitch errors after installation, using our proprietary software Levil Aviation App (Apple devices)
- When using the mounting brackets option the structure must be able to sustain 6G pull test in the vertical axis when installed. This is equivalent to a 0.75lbs x 6Gs = 4.5lb of pull. Side forces should be at least 2lbs of pull.
- When choosing a location to install the Astro+ take the following into consideration:
    - The Astro+ must not obstruct the pilot's view or any avionics
    - Install away from the landing lights wiring and instruments such as magnetic compass, that may affect the Astro+ internal heading gyro
    - Do not install within an enclosed container, this could prevent the WiFi signal to reach its maximum distance
    - The Astro+ with remote antennas connects with external systems (a GPS antenna , ADS-B antenna, AUX port) which need to be considered when choosing an installation location
- If installed on a surface that has significant vibration, it is recommended to dampen the vibration by using a cushion between the surface and the Astro+ brackets

IV. Antennas

- Attach the supplied ADS-B antenna and option GPS antenna depending on the configuration you purchased. See top label for reference. When using antennas other than the ones supplied, verify the required specifications for each:
    - GPS: Active 3.3V antennas recommended, tuned for the proper frequency (1575.42 MHz) and match for 50 Ohm Impedance
    - ADSB: Tuned for 978 MHz and/or 1090 MHz
- Install the end of the GPS antenna with a clear view of the sky
    - For the option with the internal antenna the antenna is located under the dome label and must have a clear view of the sky for optimal reception.
- Install the ADS-B antenna with line of sight to ground towers and nearby aircrafts.

V. Installation Brackets

- To secure the Astro+ after locating a suitable surface, you may use the flanges supplied. To use the flange, remove the front and back screws that hold the forward and rear black lids. Without removing the lids install the flanges using the same screws provided.
- The structure must be able to sustain 6G pull test in the vertical axis when installed. This is equivalent to a 0.75lbs x 6Gs = 4.5lb of pull. Side forces should be at least 2lbs of pull.

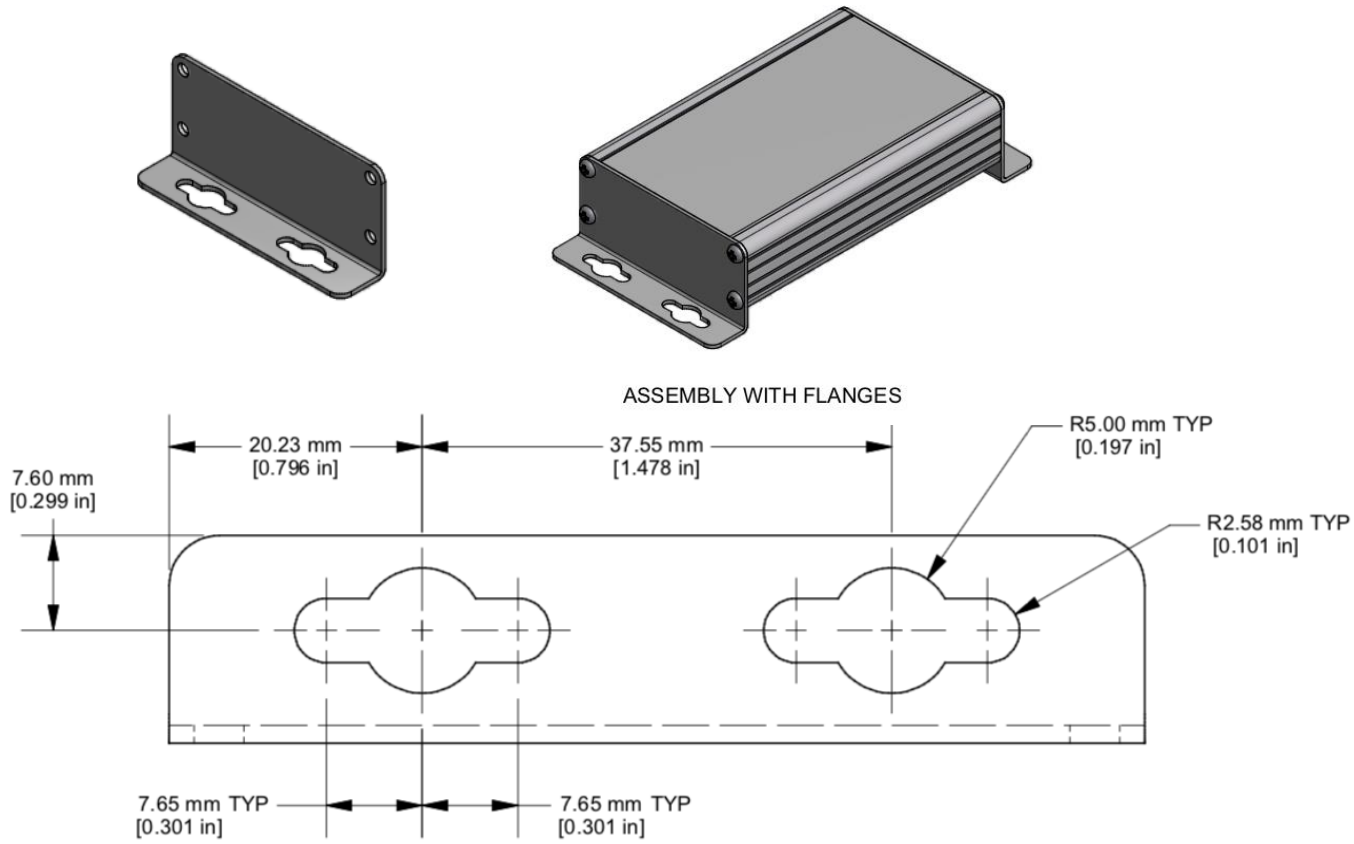
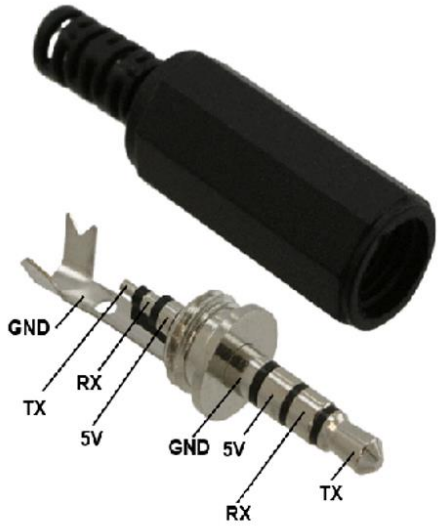


Figure 3. Astro+ Installation Bracket

VI. Aux Port diagram



3. AUX Relay Ports

This is a standard serial port, RS232, that can be used to extract data such as ADS-B, GPS, AHRS etc. When using the Transmit or Receive Pins, make sure there is a common ground between the iLevil and the external Hardware. A 5V power supply may be wired to power the unit.

4. Operating Limitations

a) The Astro+ system is not a required system and may not be used as a substitution for the certificated aircraft system.
b) No operational credit may be taken for installation of the Astro+ system.
c) No operational credit may be taken for such items as reduced approach speed and shorter landing distances.
d) Although the Astro+ transmits AHRS Data is not to be used as a substitution for the certified AHRS instrumentation of the airplane. The AHRS supplied by the is to be used only as supplemental information to the pilot.
e) Levil Aviation does not provide or endorse any carry-on device that displays the information sent by the Astro+.

f) Ferrous Materials near the Astro+ may affect the compass reading.
g) When transporting or temporarily storing in an airplane or vehicle, temperature range should be no less than 20 ° F (-12 ° C) and not more than 150 ° F (65 ° C)
h) Storing our device at temperatures higher than 170 ° F for extended periods of time (more than 2 hrs.) may cause damage to battery and possible fire.
i) DO NOT disassemble, remodel, drop or modify the Astro+ as this will invalidate the warranty of the unit as well as the FAA NORSEE certification.
j) Do not use the Astro+ as an anti-collision system. Not all traffic is displayed using ADS-B in. Most aircraft are not currently ADS-B Out equipped and therefore not detectable by the Astro+ .
k) Levil Aviation does not provide a display for this unit. Any display the pilot chooses to integrate Should comply with FAA certification requirements or qualify as a carry-on device. Under no circumstances should any display be placed in any way that it will obstruct the pilot's views of the aircraft flight instruments or the external view, which may be detrimental to the ability of the pilot to fight the aircraft.