PlaneSight

Mode S / ADS-B Receiver

Datasheet

Introduction

PlaneSight is an ADS-B receiver intended for professional users with exceptional requirements. With a sensitivity of -96dBm, PlaneSight outperforms most professional ADS-B receiver including many of those used for ATC services. Place the ADS-B antenna at a good location and the maximum range for detection of aircraft will be outstanding.

There are many commercial aircraft supporting Mode S only. To detect those aircraft, a multilateration system is required. PlaneSight enables multilateration by timestamping the frame accurately at the time of arrival. Accurate timestamping is achieved by the built-in GPS/Glonass-receiver supporting 1PPS and FPGA.

Common SSR standards such as Mode A/C, Mode S and ADS-B do not support synchronized transmissions. Due to this, frames transmitted by aircraft may sometimes overlap each other at the time they arrive to the receiver on the ground. This phenomenon is called FRUIT, False Replies Unsynchronized In Time. PlaneSight supports advanced algorithms to "repair" various FRUIT-scenarios including Mode A/C reply overlapping ADS-B frame.

PlaneSight decodes all Mode S and ADS-B frames. In addition, each frame is tagged with the current signal-to-noise level and timestamp for multilateration. This comprehensive set of data may either be streamed to PlaneSight Cloud or transferred directly to your own desktop computer or server using PlaneSight Local. All software is open source and available at GitHub.

PlaneSight is intended for indoor installation. With built-in support for Power over Ethernet (PoE) PlanseSight can be deployed very close to the ADS-B antenna while the Internet-router/PoE-injector may be as far as 100 meters away from the receiver unit.

Specification

General	
MTL:	-96 dBm
Dynamic Range:	-96 to 10dBm
Accuracy of Timestamp:	±50 nano seconds
Interface:	LAN PoE connection 10Base-T IEE 802.3af (48V DC PoE)
Data format:	Raw data / Configurable (open source)
Networking board:	Raspberry Pi (Raspbian OS)
Electrical	
Power supply:	5V 450 mA through USB Micro connector or IEEE 802.3af PoE-PD interface 48V Class 0 (0.44 – 12.95W)
PoE Input Voltage:	36-57V (1500V isolation on LAN PoE Input)
Power Consumption:	2.3W typical
Physical & Environmental	
Weight:	250 gram
Dimensions:	40 x 65 x 92mm (1.57 x 2.56 x 3.62 in)
Operating / Storage Temperature:	-25 – 80°C / -40 – 85°C
Humidity:	Max: 90% non-condensing
Compliance	
FCC:	47 CFR Part 1
CE:	RED, RoHs, REACH, WEEE