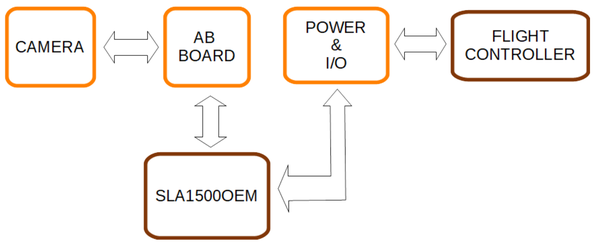
SightLine APPLICATIONS

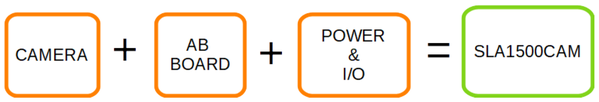
UAV Visual Landing Aid

Premise

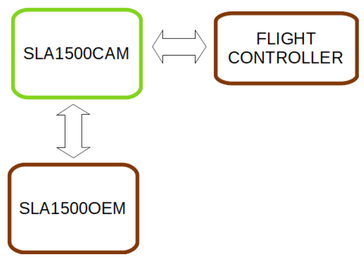
SightLine Applications has developed a precision visual landing aid for UAV's. The Landing Aid supports autonomous landing operations by automatically finding and tracking an easy to place landing pattern. A wide range of cameras must be supported, and custom AB boards must be designed for each one to interface with the SightLine hardware.



Each of these AB boards can have cable, power, and electrical connectivity issues that are problematic for the end user. The proposed solution is to develop an all in one unit with plug and play capabilities that can be directly connected to the SightLine hardware.



By doing so camera connectivity and selection problems are eliminated, and deployment is made much easier for the end user.

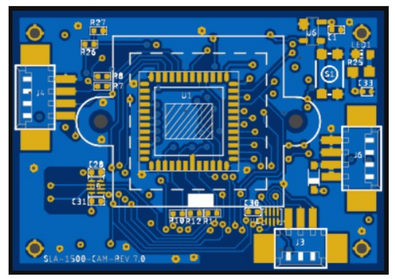


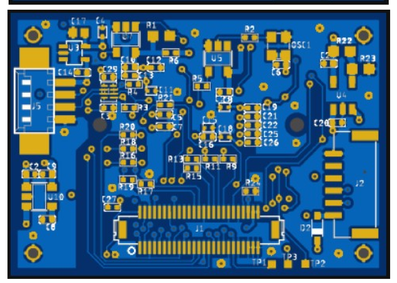
Solution

Quadcopter

For testing purposes we built a custom quad copter with a Pixhawk 4 flight controller. Using QGroundcontrol software we were able to fly the quad-copter to different way points and land the UAV autonomously via GPS. This was vital to our understanding of UAV operation, and end user experience.

Hardware





The 1x1.5” SLA1500CAM utilizes the On-Semi AR0134CS, a monochrome 1/3-inch 1.2 Mp CMOS digital sensor with a 74MHz output. It connects seamlessly with the SightLine SLA1500OEM image processing hardware via a 50-pin Hirose DF12 connector eliminating a handful of cable, and connectivity issues. With a 5V input the SLA1500CAM converts and distributes the 3.3V, 2.8V, and 1.8V required for operation. The SLA1500CAM provides level translation for communication between the SightLine hardware, the flight controller, and the optical sensor. It also offers the following I/O via standard Molex connectors: Power and serial communication for the flight controller, Discrete GPIO, Auxiliary I2C bus, Auxiliary serial communication, and Auxiliary power in.

****Hardware and communication with SLA1500OEM results****

Software

****Software and communication with SLA1500OEM results****

Future Developments

****Whats Left to do****

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