

COMPONENT SELECTION

LINEAR POLARISATION FILTERS

Linear polarisation filters are used to isolate the intensity of a particular e-vector of polarisation at the gathered point. The pattern of polarisation in the sky relies on the position of the sun. This pattern has polarisation vectors at all different angles throughout the sky. Since a polarizing filter only allows specific polarization of light through, by gathering the intensity of that light at a known angle, we can then use that information to determine the position of the sun.

BLUE ENHANCED PHOTODIODES

There are two key reasons why blue enhanced photodiodes were chosen for our device. Firstly, the circuit we are using for our technology is based off of the structure of neurons in crickets' eyes. The specific photoreceptors found in the retina of these insects and others to gain polarisation information are particularly sensitive to blue light. Secondly, blue light is scattered the most throughout the atmosphere and therefore, is what the Rayleigh Scattering Model is based off of to determine polarisation.

LOGARITHMIC RATIO AMPLIFIER

This is an integrated circuit that takes in current as inputs, specifically one input current compared to a reference current, and computes the logarithm of these currents to produce a readable voltage. Photodiodes produce current and therefore, we used this component as it is not only capable of producing a voltage from current readings, but also compares the two current readings which gives polarisation information.