Pan-Tilt Assembly

1 Introduction

The Pan-Tilt Assembly consists of two Hitec 425BB RC Servos that are connected in series to move a platform in azimuth (first axis) and elevation (second axis). A Polaroid 600 Series instrument grade electrostatic transducer and a Sharp GP2Y0A02 Infrared Sensor are fitted to the scanning head. The assembly can be seen in Figure 1.

The servo leads are terminated in 3-pin 0.1” pitch sockets. A Polaroid 6500 Series Sonar Ranging Module that drives the ultrasonic sensor and conditions the return signals is fitted within the gray plastic base box.

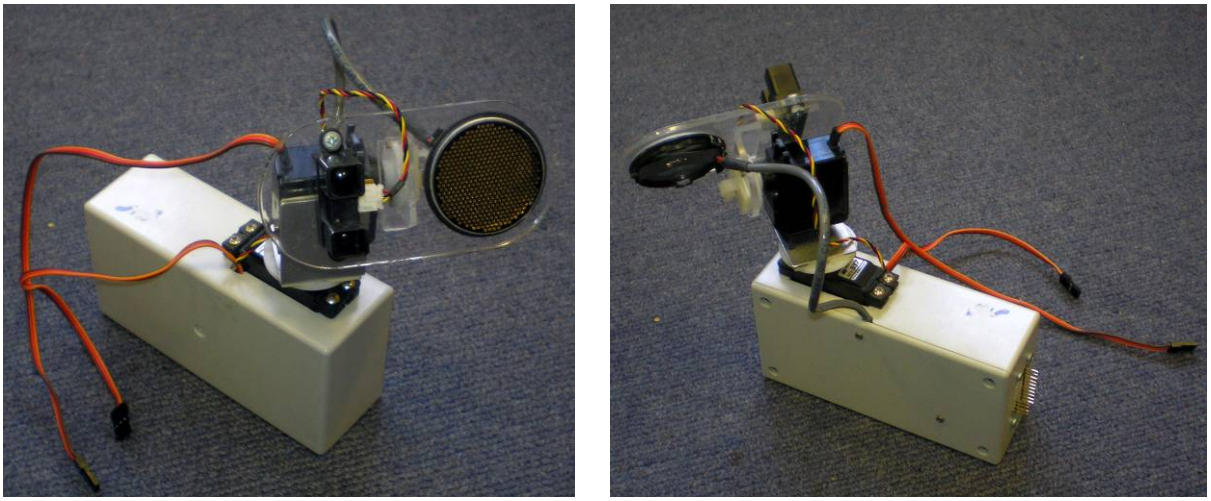

Figure 1: Pan-Tilt Assembly

2 Geometry

The dimensions of the box that forms the base of the scanner assembly are 130 mm long x 43 mm wide x 67 mm high. The maximum height of the assembly is 170 mm when the sensors are directed straight up.

The azimuth axis lies in the vertical centre plane of the base box and is 22.0 mm behind the front face of the box. The elevation axis intersects the azimuth axis and is 126.0 mm above the underside of the base box.

When the elevation angle is zero the centrelines of both the ultrasonic sensor and the infra red sensor are 126.0 mm above the underside of the base box. The ultrasonic sensor is offset 56.5 mm from the azimuth axis and the infra red sensor is offset 4.5 mm *in the same direction*.

3 Electrical Connections

Electrical connections are shown in Figure 2. Note that 4K7 pull-up resistors are fitted to the signals OSC and ECHO.

David Rye, September 2014

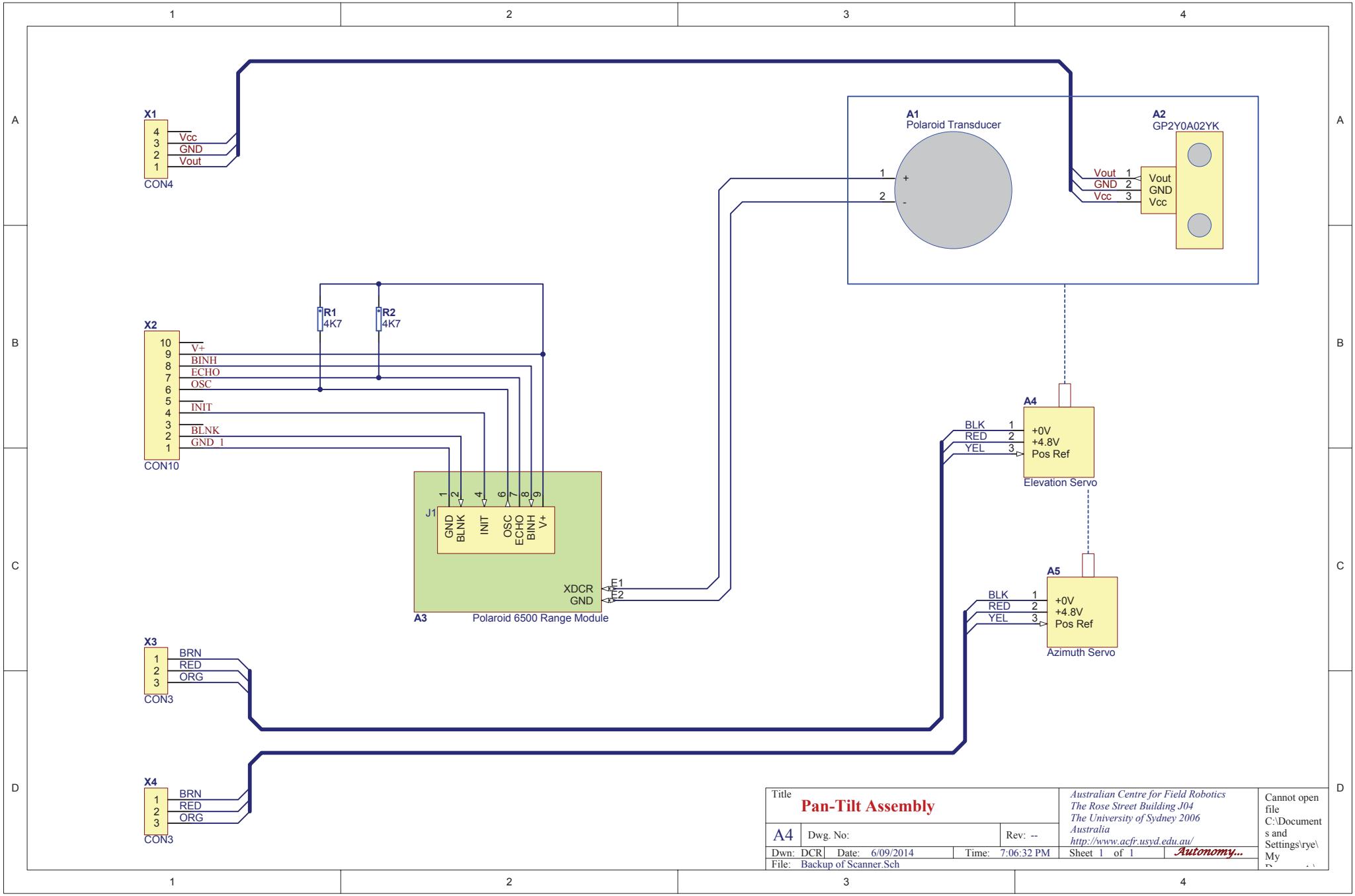

Figure 2: Electrical Schematic of Scanner Assembly.