CATE
Special Sensor Report

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The special sensor that I used in my project was the Eltec 442 Pyroelectric Detector obtained from Acroname Inc (www.acroname.com). It is part number R3-PYRO1.

The pyroelectric detector outputs an analog voltage corresponding to the movement of a heat source across its field of view. When no heat sources are moving, 2.5 V (digitally measured as 127) is measured on the output pin. The output voltage increases when a heat source is moving to the left. Similarly, the output voltage drops when the heat source is moving to the right. The detector requires a specially assembled fresnel lens molded from polyethylene to help focus infrared energy.

The detector has four pins, only three of which are used (as seen in Figure 1). The power and ground pins are connected to the power and ground on the microcontroller board, respectively. The output signal is connected to one of the analog input ports. The unused pin is an external 2.5 V reference.

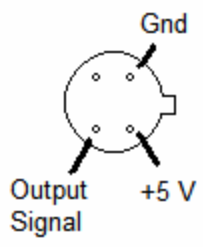

Figure 1 – Pinout

My experiments with the detector reveled that the standard voltage seen when there is no moving source is 127 (occasionally bounces to 128). Other measured values are shown in Table 1. The data was collected by walking at a casual pace in front of the detector's filed of vision. The value recorded was the one measured right as the test subject was directly in front of the sensor.

Distance (ft)	Moving Left Voltage	Moving Right Voltage
0.25	202	46
1	199	51
5	192	61
20	136	120

Table 1 – Measured Data

From the experiments, it was also determined that the pyroelectric detector has a quick response time on the order of several milliseconds.