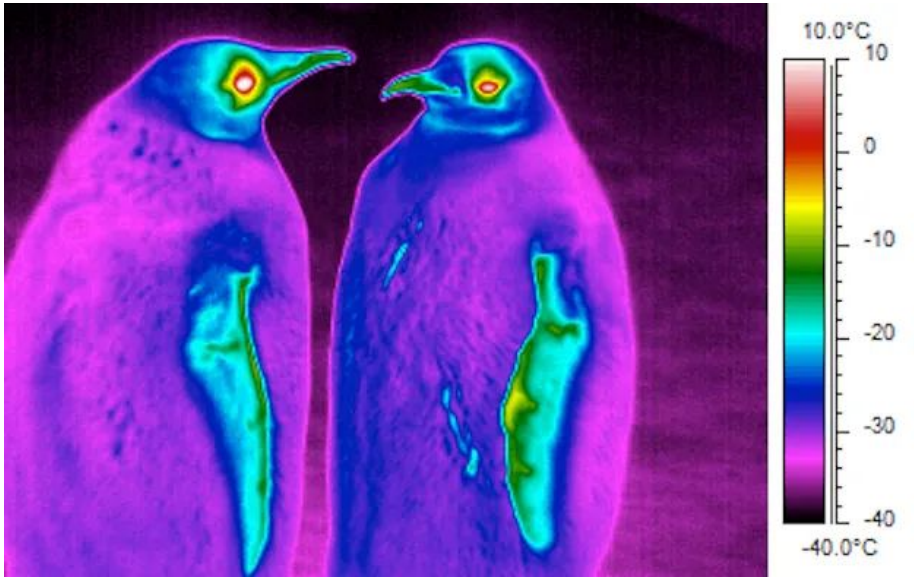
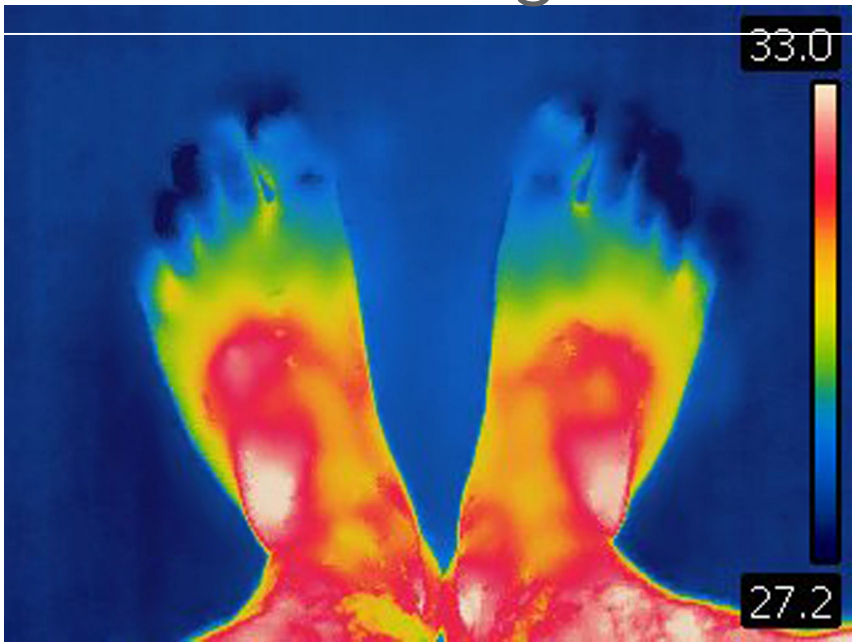
PASSIVE INFRARED(PIR) MOTION SENSOR HC-SR501

Frederick Levins
ECE 484 Midterm Presentation

CORE IDEA OF PIR

Using Infrared radiation, emitted through heat, to track objects and movement without emitting itself





HISTORY

Motion Detection system invented by Samuel Bagno in the 1940s

Herbet Berman in 1970 develops the segmented mirror

Eltec develops in 1979 dual (differential) pyroelectric sensors

Fresnel lenses were introduced first in the USA driven by the search for alternatives to get around Berman‘s patent in 1980

Oct. 13, 1953 S. M. BAGNO 2,655,645

METHOD AND APPARATUS FOR DETECTING MOTION IN A CONFINED SPACE

Filed Sept. 26, 1947 5 Sheets-Sheet 1

FIG. 5

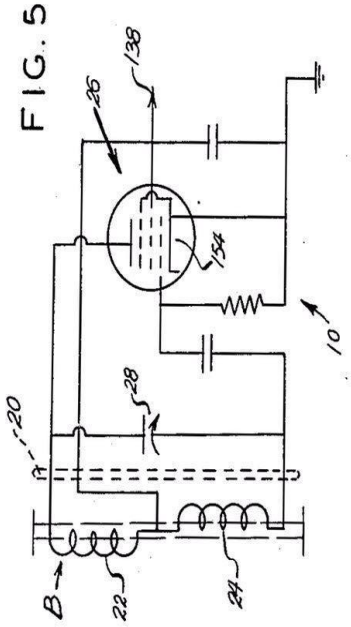


FIG. 1

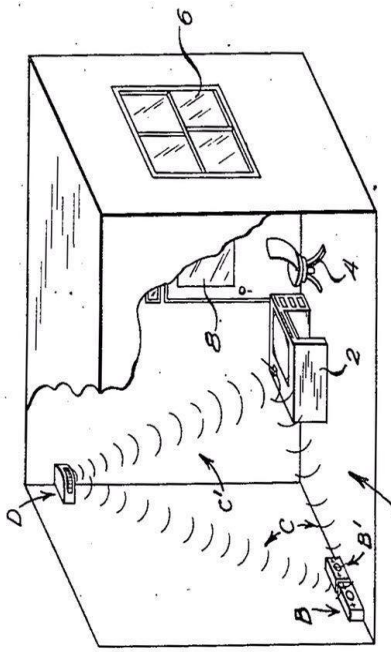


FIG. 2

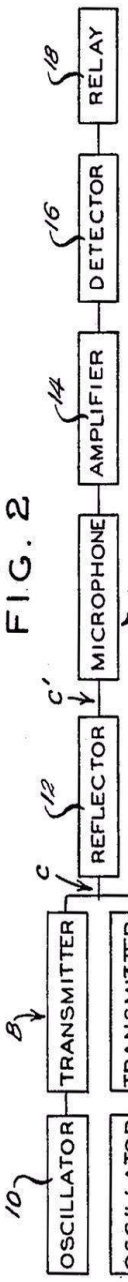
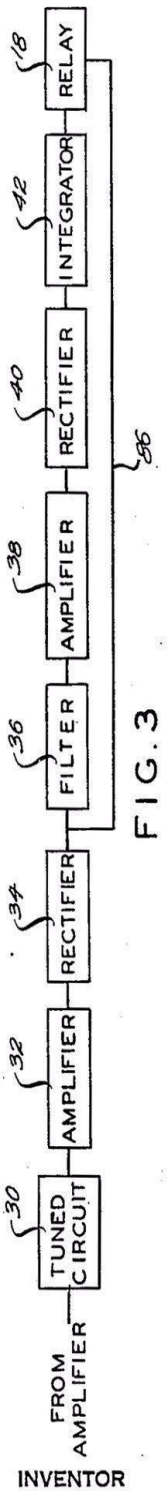
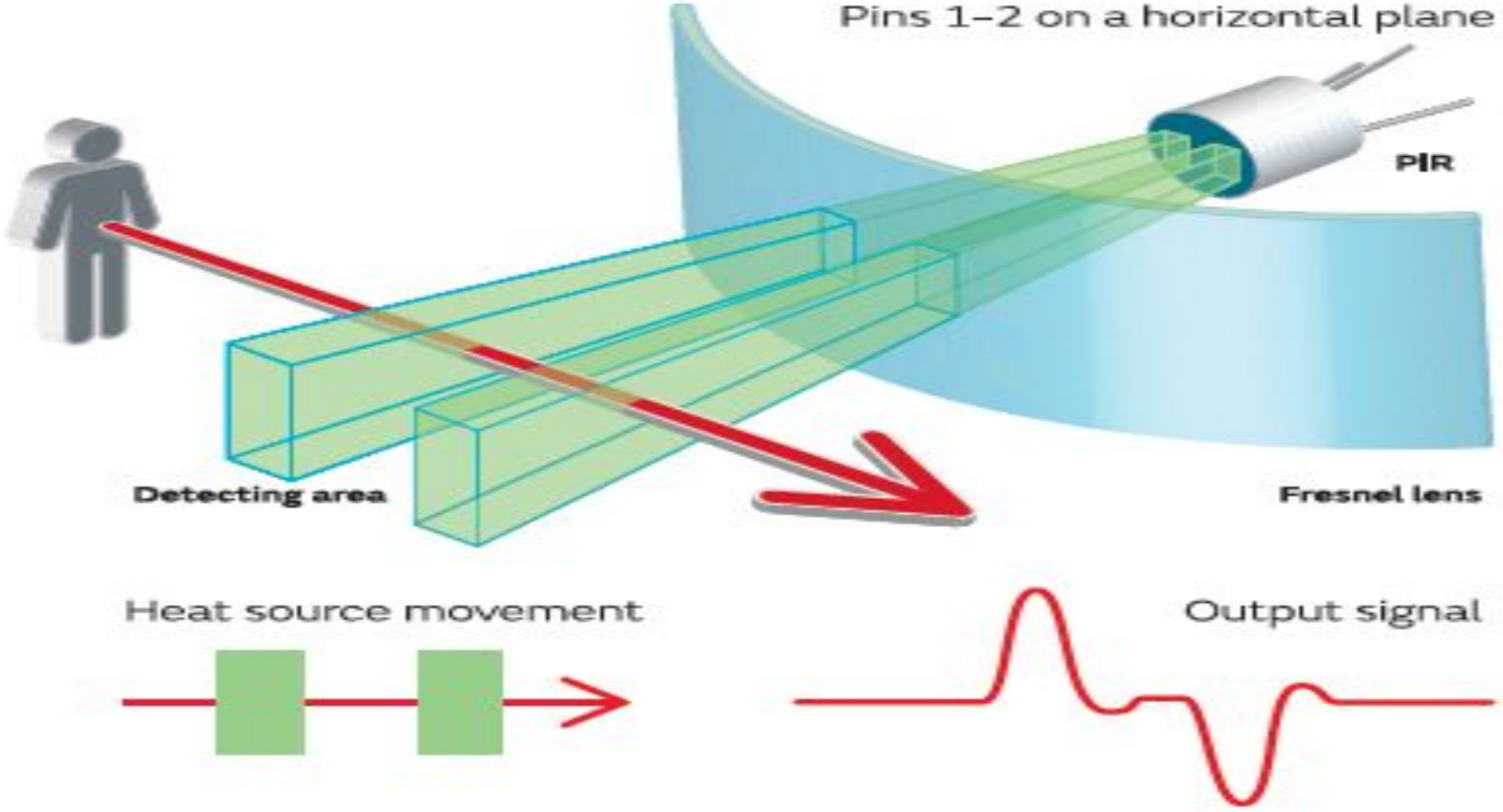


FIG. 3



INVENTOR
SAMUEL M. BAGNO
BY James and Franklin
ATTORNEY


Pins 1–2 on a horizontal plane
PIR
Detecting area
Fresnel lens
Heat source movement
Output signal

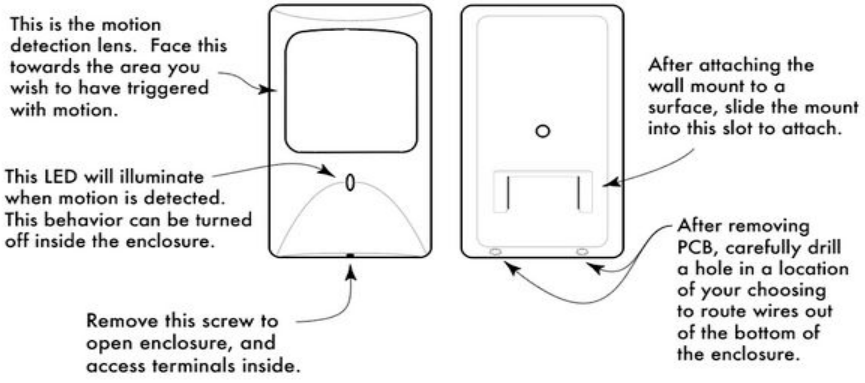
Modern Use Cases

Motion Detection Lights
HUBBELL WIRING DEVICE-KELLEMS Occupancy Sensor: Occupancy/Vacancy, Fluorescent/LED, Hard Wired

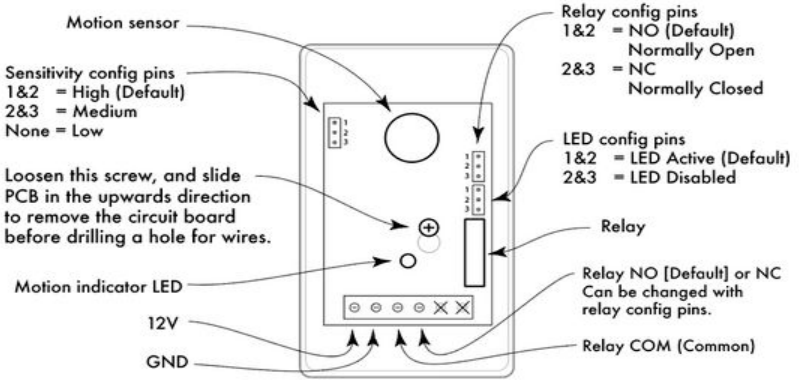
Motion Detection Security System
BOSCH SECURITY VIDEO ISC-BPR2-WP12 Blue Line Gen2 PIR Motion Detector for Security Systems

Motion Detection Thermostat
Smart Digital Thermostat with PIR Sensor (MT-110) Universal Smart Electric NEW

PIR Motion Sensor



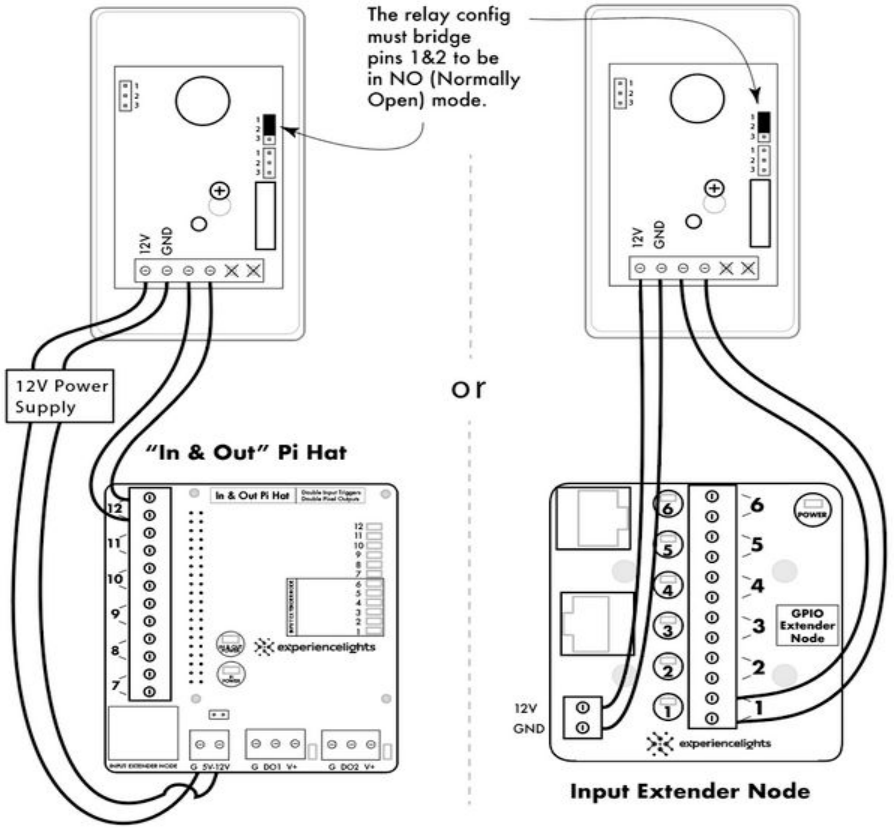
Inside Enclosure



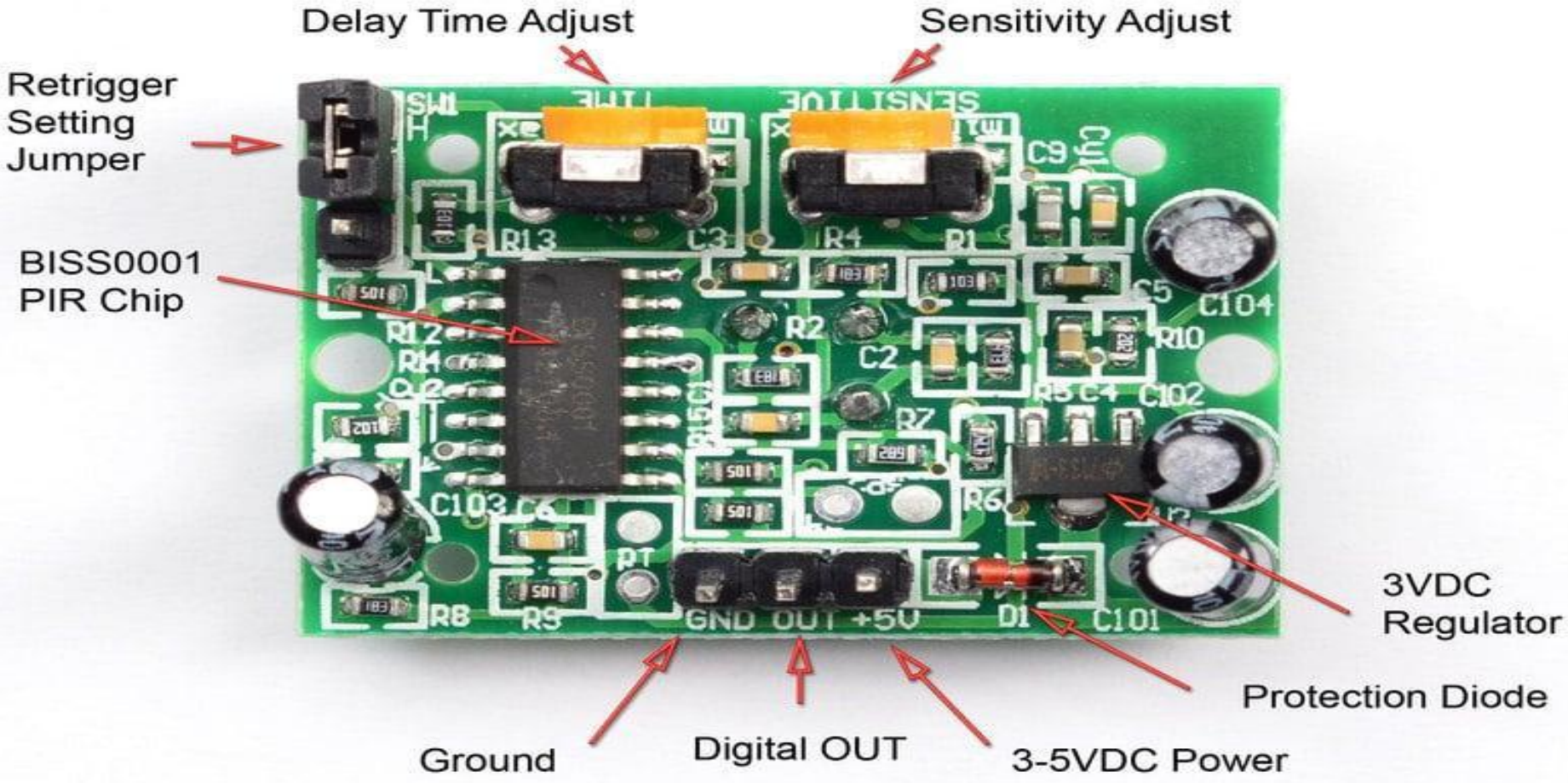
experiencelights

Input Terminal Hookup

This motion sensor can be hooked up to either an Input Extender Node or a Raspberry Pi "In & Out" Pi Hat; both available at experiencelights.com



Design and Layout of My Chip: HC-SR501



Other Important Attributes of HC-SR501

COST (Amazon):

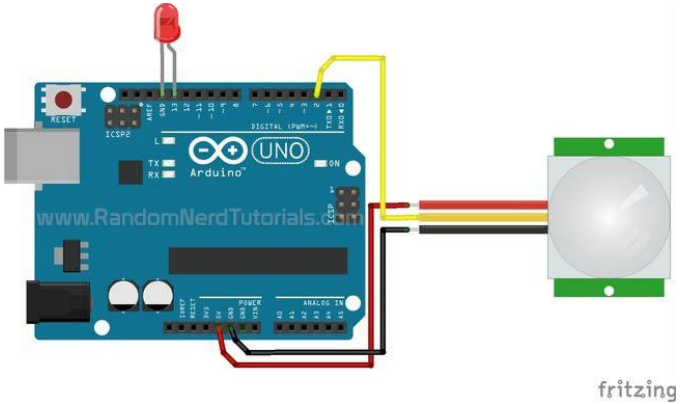
1 for $3.50

5 for $9.95

Sensing range from 3 to 7 meters

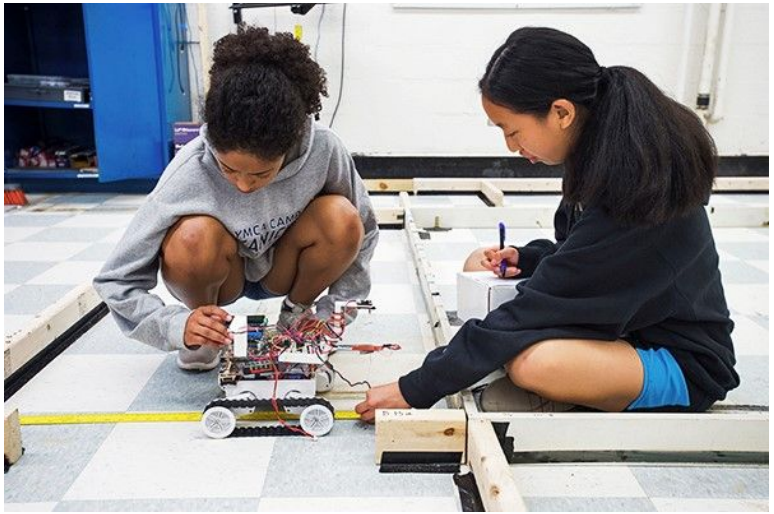
Functional Operation at 5V to 20V

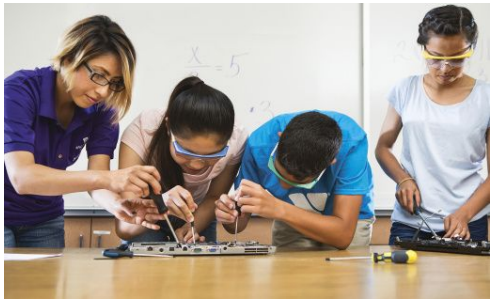
Video of Simple Operation of HC-SR501 w/ Arduino



Best Chip Use Case: Early Academics Intro To EE

Cost Effective
Applicable
Interesting
Available for Various Other Interdisciplinary Studies Integration
Sounds Cool





Citations

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