



EK210 A6 H8 Final Presentation - Room Occupancy Monitor

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Executive Overview



- Device that counts the amount of people walking into and out of a room using ultrasonic sensors.
- Allows for variable height and maximum room occupancy.
- Alerts and prevents entry when maximum occupancy is reached.

Usability: User Interface



- Maximum occupancy and other settings can be changed in the code by connecting a computer to Arduino.
- LCD screen displays room count and whether or not the room is full.
- LEDs and buzzer
- Stepper motor rotates a stop sign on a bar when maximum occupancy is reached.
- Power options include 9V battery or wall power.
- Variable-height tripod.

Usability: Operational Conditions



- Power considerations
 - Outlet or battery
- Initialization
 - Positioning and angling
- Location
 - Indoor and outdoor spaces

Specification Sheet

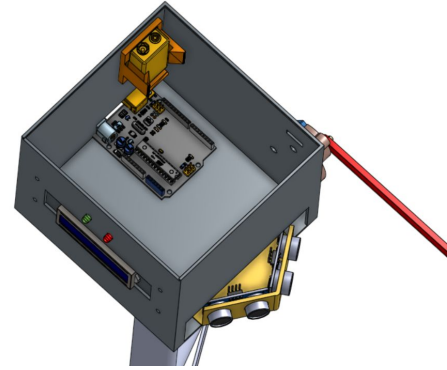
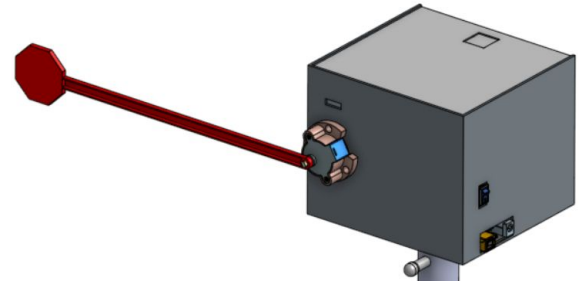
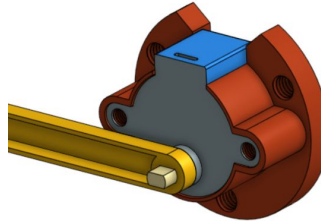
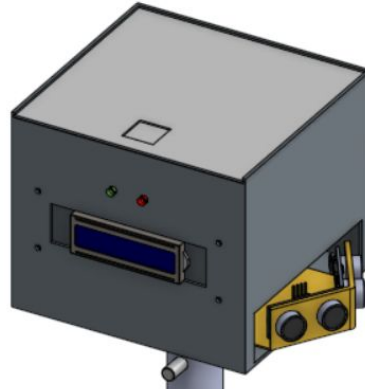
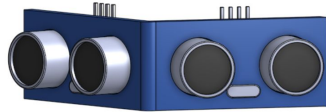
Name:	Room Occupancy Monitor
Color	Matte Black
Enclosure dimensions:	150 mm x 125 mm x 140 mm
Tripod height:	0.58 m - 1.9 m
Mechanical bar length:	284 mm
Battery life:	Unlimited with AC power supply, approximately 9 hours with a 9V battery.
Power cable length:	1.83 m
Maximum sensing range:	<ul style="list-style-type: none">- 4 m (theoretical)- Tested max doorway width up to 1.33 m across- Default range is 0.93 m across (used in test cases)
Pace:	Irrelevant (for normal walking speeds), not useful in race/high speed environment
Timing:	Cannot count people faster than 1.5s apart. (Default, is easily modifiable in code)

Testing (Reliability)

- Pace is not a limiting factor in the reliability
- Code is designed to prevent fatal errors: where the occupancy count goes opposite what it should do/expected
- Error rate: 13%, with only 3% fatal
- Expected: zig - zag pattern



Pictures & Drawings



Functional Overview Video

