

Team 33 Requirement Summary:

Module Name	High Level Requirements	Points
Sensing Module	<ul style="list-style-type: none">• This module will take accurate measurements of temperature and distance and deliver them to the control module.	10
Alarm Module	<ul style="list-style-type: none">• This module will successfully have a repeated beeping noise when a patron does not meet criteria to enter• This module will have a single success tone when a patron does meet the criteria to enter• This module will not set off an alarm if a patron is not in the appropriate distance	10
Control Module	<ul style="list-style-type: none">• This module will send deny signals when patrons do not have appropriate body temperatures (i.e. above 100.3 or below 95.0)• This module will send accept signals when patrons do have an appropriate body temperatures (i.e. between 95.1 and 100.2)	10
Power Module	<ul style="list-style-type: none">• This module should supply enough steady power to the circuit	10
Display Module	<ul style="list-style-type: none">• This module should display the appropriate user actions or temperatures at all times	10
	TOTAL	50

1) Block Requirements and Verifications

- Individual blocks function as specified in the Design Review.

(Maximum - 50) _____

2) System Integration

- All blocks work together to create the final system design
- All wires soldered or connectorized (no solderless breadboards)

(Maximum - 50) _____

3) Team knowledge of project, problems, solutions

- All members appear knowledgeable regarding design decisions
- If blocks/the project failed, a good engineering explanation is given

(Maximum - 40) _____

4) Clarity/professionalism and team participation

Clear/Professional

Chaotic/Confusing

10

0

(Maximum - 10) _____

4) Complexity multiplier (x1.0 - x0.5)

(Maximum - 1) _____

(Maximum - 150) _____

Alarm Module R&V

Requirements	Verification
<ul style="list-style-type: none">• Speaker will start with a frequency of 10Hz +/- 10Hz and increase quickly to a frequency of 300 Hz +/- 100 Hz for a deny signal.• The deny alarm will sound for 1.5 seconds.	<p>1A. Measure the output wave of the speaker by connecting the oscilloscope pins to the output of the speaker</p> <p>2A. Measure the amount of time that the signal is high by measuring the top most part of the square wave on the oscilloscope. This can be done by moving the measuring lines.</p>

Sensor Module R&V

Requirements	Verification
<p>1. IR Thermometer will read the temperature to an accuracy of 0.50°F</p>	<p>1A. Connect IR thermometer to a microcontroller</p> <p>2A. Probe known temperatures</p> <p>3A. Compare to oral thermometer with accuracy of 0.50°F</p>

Display Module R&V

Requirements	Verification
<p>1. Show temperature on LED Display</p>	<p>1A. Connect LED display to working microcontroller.</p> <p>1B. Send test data to display</p> <p>1C. Read display and verify that corresponding segments are lit.</p>

Power Module R&V

Requirements	Verification
<ol style="list-style-type: none">1. Provide 5.0V +/- 5% from 12V Source2. Can operate current within 0 - 1.2A	<p>1A. Measure the output voltage using an oscilloscope, ensuring the output voltage stays within 5% of 5.0V.</p> <p>2A. Connect the output of the voltage regulator to VDD node in a constant current test circuit.</p> <p>2B. Alter values of resistance until 1.2A is achieved.</p> <p>2C. Measure the output voltage using an oscilloscope, ensuring the output voltage stays within 5% of 5.0V.</p>

Control Module R&V

Requirements	Verification
<ul style="list-style-type: none">• This ATMEGA Microcontroller will interpret input data from the IR Thermometer and decide whether to activate the speaker alert system.• Any temperature above 100.3 degrees fahrenheit will set off the alarm	<p>1A. Build a test program that will automatically send a series of ones and zeros</p> <p>2A. Verify on the oscilloscope by connecting pins to the input of the speaker in order to ensure the correct decision was made within the tolerance.</p>