

Eon

**Temperature Control System - Den
Written Requirements**

Revision History

Authors	Description of Change	Sections	Rev	Date
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1 Team Description

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2 Terminology

Term	Definition
HVAC	HVAC stands for heating, ventilation, and air conditioning. This technology provides thermal comfort and acceptable indoor air quality.
Weather Channel API	An API is an application programming interface, which allows the temperature control system obtain desired data from the weather channel.
Threshold	A certain temperature range that the system will be able to maintain.

3 Temperature Control System

A heating/cooling control system that is capable of taking user input (temperature in either Fahrenheit or Celsius) in and activating a HVAC system. This system also allows for scheduling and a external temperature display based on location information that is collected from the Weather Channel API. The control system is also capable of maintaining a climate type within a room at a predefined threshold of temperature. For example, if the user would like a warm climate, a temperature of 80 degrees F can be maintained constantly.

3.1 Overview

The system provides interior temperature control. There will be a weekly calendar setting, city of choice, and user override.

1. Connection to Wifi

The system **shall** establish a stable internet connection, allowing the user to utilize all possible features of the thermostat.

- 1.1. Features that will require internet connection
 - ❖ Setting temperature based on user defined city
 - ❖ Display weather channel API

2. Weekly Calendar

The weekly calendar provides user with the capability to set up a temperature schedule and populate it with desired temperatures. The calendar will display desired temperatures in a weekly table, that requests three inputs from user: day, time and temperature.

2.1. Modifications of the calendar

The system **shall** allow for the insertion, modification or deletion of data, at any point in time (i.e: changing temperatures in calendar).

2.2. Calendar settings

The user **shall** be able to set up the calendar where the current week's settings can be automatically transferred to the next week's settings. Otherwise, the user can either input desired temperatures weekly or default temperature will be maintained where there is no specified temperatures for that week.

3. Setting temperature based on user defined city

The controller of the system **shall** be able to allow user to input a location (city or zip code), which will be used to adjust the indoor temperature.

3.1. Error handling

The system **shall** consider invalid user input (i.e: zip code) and display error messages in such cases.

4. Custom temperature input

The system **shall** allow user to input (or modify an already set) temperature of choice (in Fahrenheit or Celsius) to adjust the indoor temperature.

5. Display of Weather Channel API

The system **shall** display and utilize the Weather Channel API to meet user preferences.

6. Maintain temperature threshold

The system **shall** allow for a simple entry of temperature, which is maintained with the aid of the thermostat. The threshold will be 1-3 (Celsius or Fahrenheit) of the user's desired temperature.

7. User defined temperature threshold

The system **shall** allow for the user to define their own temperature threshold instead of utilizing the default 1-3 (Celsius or Fahrenheit) threshold.

8. Enable / disable system

The user **shall** be able to enable (resume) or completely disable all events in the system for an unspecified amount of time.

9. Vacation Mode

When activated, default vacation mode **shall** disable complete thermostat functionality for a user defined amount of time.

9.1. Other possible Vacation Mode implementation

The user **shall** be able to control indoor temperature during vacation mode if certain weather conditions may apply.

10. Error Override

In the case of a HVAC system malfunction (leading to a failure in room temperature change in a finite amount of time), the system **shall** automatically go into a Disabled State.