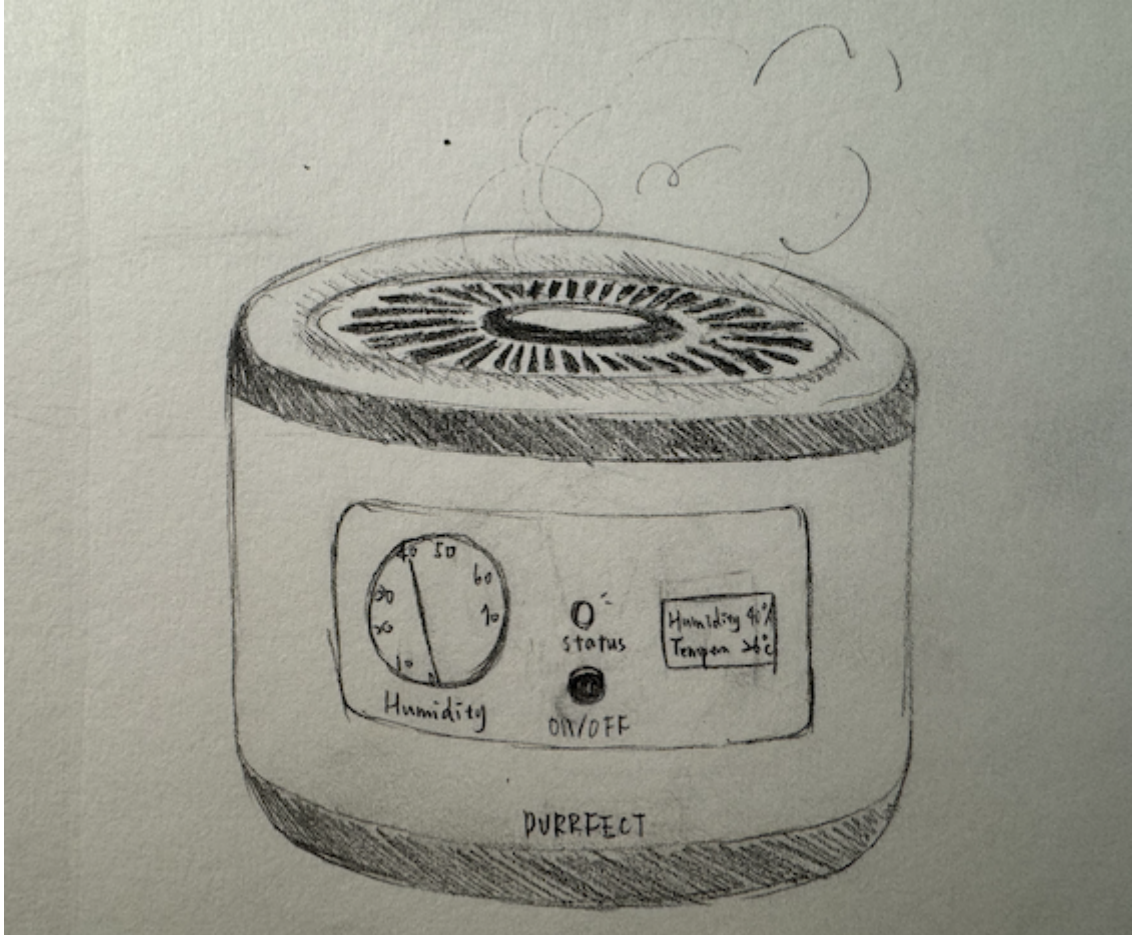# Purrfect Climate - the Smart Humidifier for Cats

Introduction

"Purrfect Climate," the ultimate smart humidifier crafted for your cat's health. Maintaining ideal humidity at 50% and temperature at 26°C, it ensures your pet's comfort through advanced sensors and a user-friendly display. Elegant, safe, and energy-efficient, "Purrfect Climate" is where innovation meets feline care.

Upon activating the power button, the sensor gauges the current humidity level and begins to emit mist until the preferred humidity is achieved.

Processor

- Microcontroller: Adafruit QT Py SAMD21

Sensor

- Sensors: Equipped with Adafruit BME280 (humidity and temperature sensor) to constantly monitor the environment.
- Wireless Communication: Utilizes Wi-Fi to transmit data to the display device.
- Power Solution: Rechargeable battery-powered with a low-power design for longevity, and an option for a wall plug for continuous operation.
- Enclosure: Designed to be pet-safe with no small parts or sharp edges, and resistant to tipping over.
- Custom PCB: To manage sensor data and control humidifier mechanisms efficiently.

Display

- Gauge: A stepper-motor-driven gauge that indicates the current humidity level with a simple, cat-friendly iconography showing if the humidity is at an optimal level.
- LED Indicator: An LED that changes color based on the temperature reading (blue for cool, red for warm, green for optimal).
- Button: A single, large, capacitive button that is touch-sensitive for easy operation, allowing the owner to switch the humidifier on/off and adjust settings.
- Custom Enclosure: Ergonomically designed to fit into home decor, safe and appealing to a cat's curiosity without being a toy.
- Custom PCB: Integrates the stepper motor, LED, and button controls, also houses the DSP/ML algorithms. Battery: A large, rechargeable battery ensuring the display unit can be placed anywhere without the need for constant charging.

How devices communicate