

## Device Operation Organization and Required Specifications

### Basic Requirements:

- **Temperature Sensor (MAX6675):** Must completely shut off the heater when the temperature exceeds 450°C.
  - **Weight Sensor (HX711):** Used as a safety condition during operation.
  - **Electric Door Lock:** Controlled using a relay.
  - **Induction Heater:** Controlled via a relay and operates according to the duration set from the user interface.
  - **Cooling Fans:** Operate based on the defined time; connected to a power MOSFET on a PWM pin (you can define it) for speed control.
  - **Touch Screen:** Used to control the system and display the graphical interface.
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### Device Operation Mechanism:

#### When the device is turned on:

- The user interface appears with the device logo.
- If the screen is not touched within two minutes, the logo remains displayed.
- Upon touching the screen, a main menu appears with three options:
  - Person
  - Clothes
  - Environment
- When one of the options is selected, three heating options and three time options appear. After selecting them, instructions are displayed along with **Start** and **Cancel** buttons.

- A **Safe Mode** button appears in the center bottom of the screen, same size and appearance as the others.

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### Operating Settings:

For each option, there are heat and time settings. These parameters determine the heating intensity and duration for each option:

Option	Parameters (X, Y, Z)
Low Heat	X = 110, Y = 25
Medium Heat	X = 120, Y = 30
High Heat	X = 130, Y = 35
2.5 Minutes	Z = 150
5 Minutes	Z = 300
8 Minutes	Z = 480

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### Details of Each Mode:

#### 1. "Person" Mode

##### Instructions:

- Remove clothing hangers.
- Place incense in the designated area.

##### Operation Process (Z):

- Lock closes, and the induction heater starts for X seconds.
- At second 40, the lock opens, waiting for the person to enter.
- **Notification Appears:** Prompting the person to enter.

- If the scale does not read a value greater than 0 within 15 seconds → turn off the heater and pause X and Z until entry.
- Upon entry, the device verifies weight:
  - More than 50 kg: continue operation.
  - Between 0 and 50 kg:
    - Turn on red light.
    - Turn off the heater within 5 seconds.
    - **Notification Appears:**  
Warning that the person is not an adult, and the device will not operate.
- Upon confirming weight is above 50 kg:
  - Continue with green light on.
  - Turn on fans after 10 seconds at 15% PWM.

#### **Work Cycle:**

- After X seconds, temperature is recorded.
- Heater turns on for Y seconds after the temperature drops by 100°C.
- This repeats (measure → heat for Y sec) until Z ends or person exits.

#### **Upon Exit:**

- If the scale reads 0 kg → turn off the heater after 5 seconds.
  - Close the lock after 10 seconds.
  - Run fans for 1 minute at 80% PWM.
  - **Notification Appears:** End of session and a warning not to touch the incense chamber for 10 minutes.
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## 2. "Clothes" Mode

### Instructions:

- Hang the clothes.
- Close the door.
- Fill and close the incense chamber.

### Operation Process (Z):

- Check weight:
  - 0 kg: Close the lock and begin operation.
  - Weight present:
    - Turn on red light.
    - Keep the lock open until the weight returns to 0.
- Start heating for X seconds.

### Work Cycle (Y):

- After X seconds, record the temperature.
- Heater turns on for Y seconds after the temperature drops by 100°C.
- Repeat until Z ends.
- Fans operate from X seconds until the end of Z at 10% PWM.

### After Z Ends:

- **Notification Appears:** Collect clothes, program complete, and warning not to touch the incense chamber for 10 minutes.
- Run fans for 1 minute at 80% PWM.

- Lock closes after 10 seconds if not already closed (if weight is still 0).
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### **3. "Environment" Mode**

#### **Instructions:**

- Ensure incense is placed in the chamber.

#### **Operation Process (Z):**

- Check weight:
  - 0 kg: continue operation.
  - Weight present:
    - Do not turn on the heater.
    - Do not lock the door.
    - Turn on red light until the weight returns to 0.
- Lock the door.
- Heater runs for X seconds.

#### **Work Cycle:**

- After X seconds, record the temperature.
- Heater runs for Y seconds after temperature drops by 100°C.
- Repeat (measure → heat) until Z ends.

#### **30 Seconds Before Z Ends:**

- Turn off the heater regardless of the current cycle.

#### **After Z Ends:**

- Run fans for 1 minute at 80% PWM.
  - Lock closes after 10 seconds if not already closed (if weight is still 0).
  - **Notification Appears:** Program complete, with a warning not to touch the incense chamber for 10 minutes.
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**Safe Mode:**

- Heater is disabled.
- Lock opens.
- Fans are turned off.
- **Exit Button** to return to the main menu.