**Microcontroller based Overheat detector using Temperature sensor with Buzzer indication**

A blue and white truck with green text

AI-generated content may be incorrect.

**❄️ Refrigerated Truck ❄️**

**🔋 Power & Runtime Calculations**

The system operates from a **12V DC adapter**, and components requiring 5V (like the ATmega328P, LM35, OLED, etc.) are powered through a **7805 linear voltage regulator**.

We have calculated the **power consumption** of each module and the **total current drawn** from the 12V source to understand adapter requirements and thermal dissipation.

**1. Power Consumption Calculations**

**LM35 Temperature Sensor:**

**ATmega328P Microcontroller:**

**OLED I2C Display:**

**Buzzer:**

**IRLZ44N MOSFET (Gate control only):**

**L293D Motor Driver (Logic power only):**

**Internal Fan(Air Circulation):**

**External Fan (Heatsink):**

**Peltier Module (TEC1-12706):**

**2. Total Power Consumption**

**At 5V side (through 7805):**

**At 12V side (direct):**

**Total Power:**

**3. Current Draw from 12V Adapter**

Components powered through the 7805 (5V side) actually draw more **current** from the adapter due to voltage drop and inefficiency (linear regulation):

So the total **12V current draw** from the adapter is:

**4. Adapter Recommendation**

To safely power this system:

* **12V, 6A** adapter minimum (preferably **7A** for headroom)
* Adapter power rating:

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