

ISS ENVIRONMENTAL MONITOR SENSOR

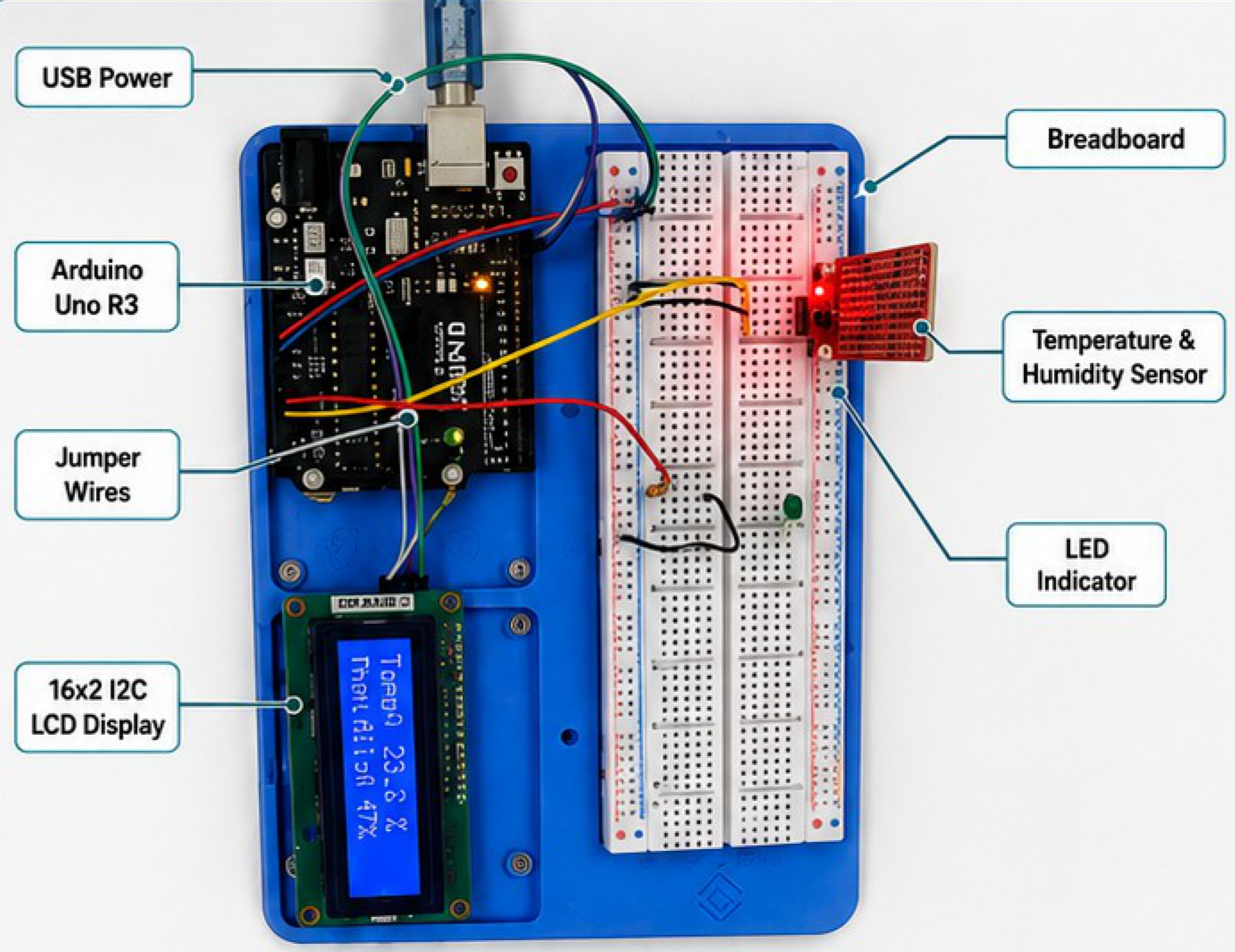
Measures Temperature and Humidity Inside the Cabin

1. PURPOSE

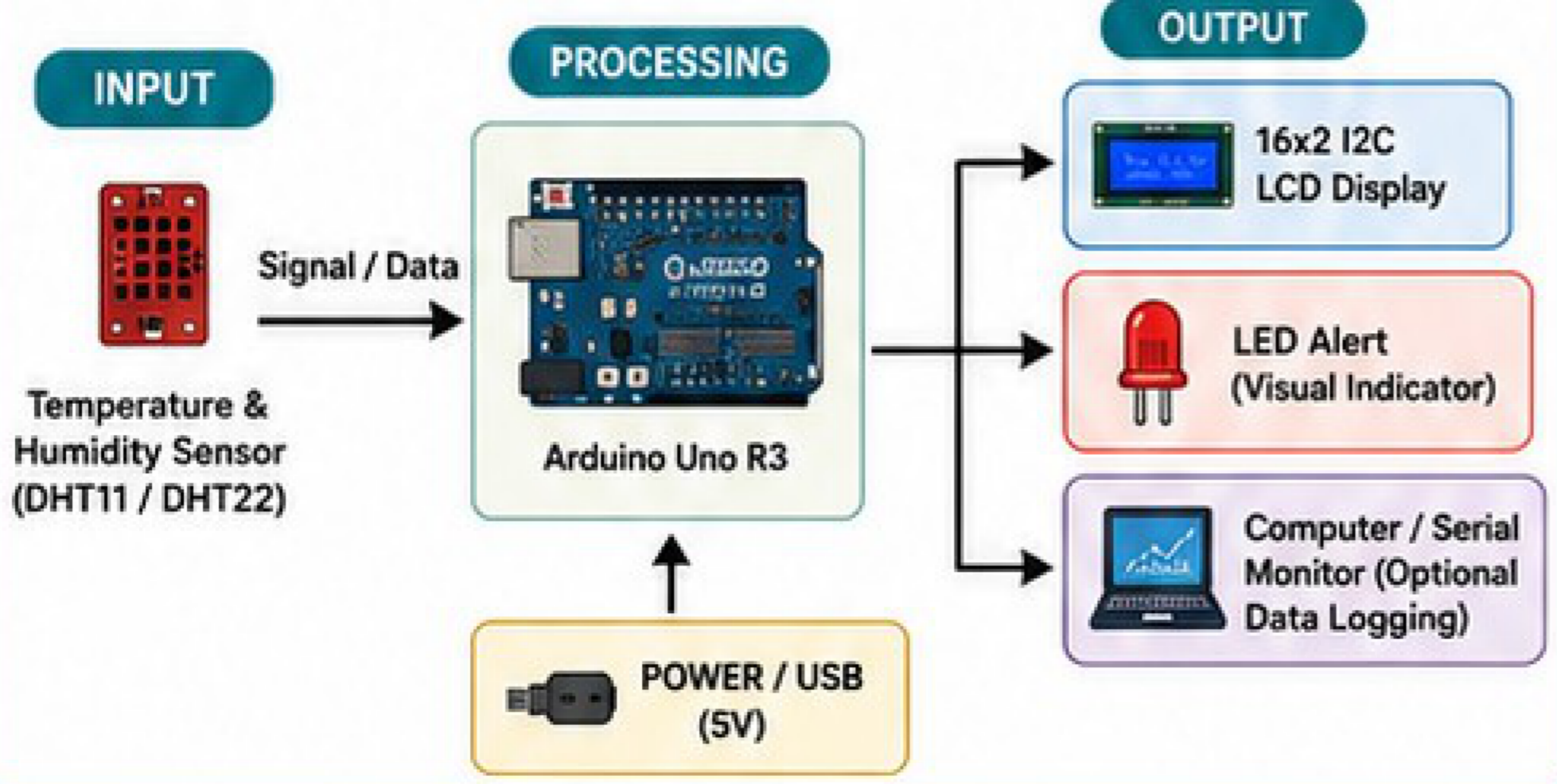
This project simulates an environmental monitoring system for the International Space Station. It measures cabin temperature and humidity, displays the readings on the LCD, and can warn the crew when conditions move outside a safe range.

2. COMPONENTS USED

- Arduino Uno R3
- Temperature & Humidity Sensor
- 16x2 I2C LCD Display
- Breadboard
- Jumper Wires
- LED Indicator
- Resistor
- USB Power



3. SYSTEM ARCHITECTURE



4. HOW IT WORKS

- 1 Sensor reads temperature and humidity from the cabin air.
- 2 Arduino reads the sensor data and checks whether values are in the safe range.
- 3 LCD displays the live readings. Example: "Temp: 23.2°C" "Humidity: 47%"
- 4 LED or alert message indicates normal or warning conditions.

5. SAFE RANGE / SYSTEM RESPONSE

<p>SAFE</p> <p>Temperature: 18–27 °C Humidity: 40–70%</p> <p>LED GREEN Normal Conditions</p>	<p>WARNING</p> <p>Slightly Outside Range Check Conditions</p> <p>LED YELLOW Alert Soon</p>	<p>DANGER</p> <p>Far Outside Range Urgent Response Needed</p> <p>LED RED Take Action</p>
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7. WHY IT MATTERS

On the ISS, astronauts need stable environmental conditions for health, comfort, and equipment safety. Monitoring temperature and humidity helps prevent discomfort, condensation, or unsafe cabin conditions.

- Health & Comfort
- Prevents Condensation
- Protects Equipment

8. PROJECT HIGHLIGHTS

- Real-time Monitoring
- Clear LCD Feedback
- Visual Alerts for Safety
- Optional Data Logging
- Simple & Low Cost