The DHT11 and DHT22 are both popular sensors in the DHTxx series, sharing a similar appearance and pinout, but they differ in specifications. Here's a brief comparison:

**DHT22:**

Temperature Range: -40°C to +125°C

Temperature Accuracy: ±0.5°C

Humidity Range: 0% to 100%

Humidity Accuracy: 2-5%

Cost: More expensive

**DHT11:**

Temperature Range: 0°C to 50°C

Temperature Accuracy: ±2°C

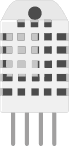
Humidity Range: 20% to 80%

Humidity Accuracy: 5%

Cost: Generally, more affordable

In summary, the DHT22 has a wider temperature range and higher accuracy for both temperature and humidity measurements compared to the DHT11. However, the DHT11 is often chosen for more budget-friendly projects where the broader specifications of the DHT22 are not necessary.

**Specifications:**

DHT11 Temperature Humidity Sensor Fritzing part Illustration 

|  |  |  |
| --- | --- | --- |
|  | **DHT11** | **DHT22** |
| Operating Voltage | 3 – 5V | 3 – 5V |
| Max operating Current | 2.5mA max | 2.5mA max |
| Humidity Range | 20-80% / 5% | 0 – 100% / 2 – 5% |
| Temperature Range | 0 - 50°C / ± 2°C | -40 - 80°C / ± 0.5°C |
| Sampling Rate (per second) | 1 Hz | 0.25 Hz |
| Body size | 15.5mm X 12mm X 5.5mm | 15.1mm X 25mm X 7.7mm |
| Advantage | Ultra Low Cost | More Accurate |

Indeed, while the DHT22 offers superior accuracy and a broader operational range for temperature and humidity, the DHT11 has notable advantages in terms of affordability, compactness, and a higher sampling rate. Here are the key points of distinction:

**DHT11 Advantages:**

* **Affordability:** The DHT11 is more budget-friendly compared to the DHT22.
* **Compact Size:** The DHT11 has a smaller form factor, making it more suitable for space-constrained projects.
* **Higher Sampling Rate:** The DHT11 has a faster sampling rate of once per second (1Hz) compared to the DHT22, which samples once every two seconds (0.5Hz).

Despite these differences, both the DHT11 and DHT22 operate within the voltage range of 3 to 5 volts, with a maximum current of 2.5mA during conversion. An interesting feature is that these sensors are swappable, meaning that if a project is initially designed with one sensor, it can be easily replaced with the other. While some code adjustments may be necessary, the wiring configuration remains the same. This interchangeability provides flexibility in choosing the appropriate sensor based on project requirements without major modifications to the setup.