

Humidity

HP Prime



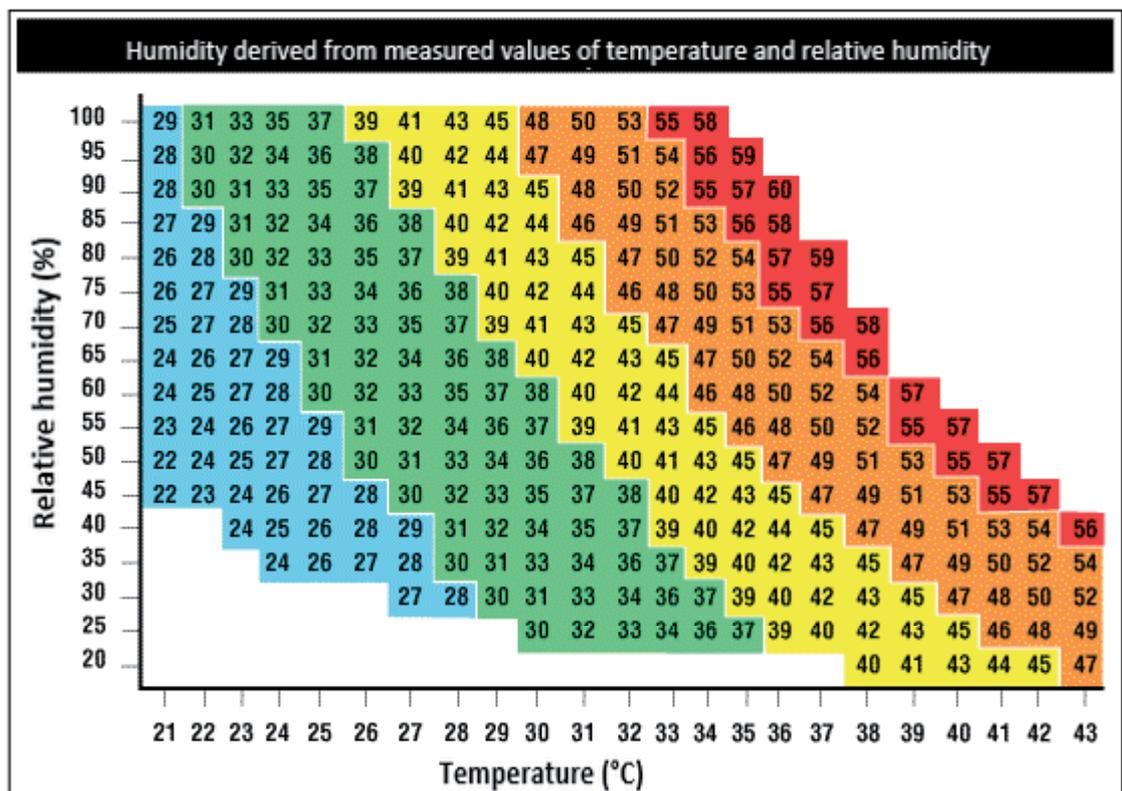
Objective: Perform a test measurement and familiarise yourself with the concepts of relative humidity and atmospheric pressure.

Equipment: HP Prime, StreamSmart, thermometer, hygrometer, barometer



Task:

- 1/ Perform simultaneous measurements of the air pressure, air temperature and ambient humidity.
- 2/ Interpret the air pressure based on the current weather.
- 3/ Analyse the table below showing humidex (heat index) values and give each colour an explanatory legend



Step-by-step solution:

1/ Use the three sensors (thermometer, barometer and hygrometer) which you connect to the StreamSmart application at the same time, the DataStreamer application will display results of all three measurements in real time.

2/ In our example, the measured values will be constant. Therefore it is not necessary to display curves. Using the **M** button, we will display only values measured by each sensor.

Channel 3 shows that the ambient pressure is 101.61 kPa. This means that although it doesn't rain, the weather could be bad! Even at high atmospheric pressure it may be cloudy. Lower pressure encourages the rising of the air containing water droplets (ambient humidity is 68.32%, indicating the presence of water in the air) which gather and then fall as precipitation. Humidity is 68.32 %.

Atmospheric humidity is expressed as a percentage and represents the ratio between the amount of water in the air and the maximum amount of water that the air can contain. If we measure relative humidity of 50%, it means that the air contains half the amount of the maximum amount of water vapour that it can contain.

We measured ambient temperature at 21.42 °C.

3/ For relative humidity of 70% and a temperature of 21 °C, the field of the heat index table is blue and displays 25. The value of 25 corresponds to the felt temperature (in °C). Blue fields indicate an acceptable felt temperature. Green fields indicate some discomfort. Yellow fields indicate great discomfort when it is necessary to restrict strenuous physical activity. Orange fields indicate danger. Red fields indicate high risk (heatstroke) with a possible risk to life. The heat index can be interpreted as a measure of comfort.

Screenshots:

