The heartbeat sensor is based on the principle of photoplethysmography. It consists of a light-emitting diode and a detector like a light detecting resistor or a photodiode. The heartbeat pulses cause a variation in the flow of blood to different regions of the body. When tissue is illuminated with the light source, i.e. light emitted by the led, it either reflects or transmits the light. Some of the light is absorbed by the blood and the transmitted or the reflected light is received by the light detector. The amount of light absorbed depends on the blood volume in that tissue and the detector output is in the form of the electrical signal and is proportional to the heartbeat rate.

When the temperature sensor is varied, it senses variations in temperature across it. It gives readings in degrees celsius since its output voltage is linearly proportional to temperature. It uses the fact that as temperature increases the voltage across the diode increases at a known rate. In this, output voltage varies with the temperature.