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Betalight Powered Wireless Sensor Pod

The betalight-powered wireless sensor system provides a radiation powered temperature sensor node that transmits sensor data using BLE and displays real-time sensor data. The betalight-powered wireless sensor system is designed as an easy-to-use device to measure ambient temperature and humidity.

The system comprises of two units namely,

1. Transmitter Unit (Sensor Unit) which contains a betalight powered bluetooth wireless temperature sensor and its electronics circuits.
2. Receiver Unit which collects and displays the real-time sensor data.

The ultra-low power energy harvesting module used in the sensor unit can accept the energy produced from the radiation source and store this energy to power a conventional 3.3V electrical system.

It also includes a power management IC (PMIC), which is used to regulate the power from the energy harvesting module and bias the temperature sensor and Bluetooth module in a pulse mode.

Specification:

Classification: WSN (wireless sensor network)

Dimension: 25mm x 53mm x 5.2mm

Power source: Betalight Voltaic (BLV 3.5µW)

Operational Voltage: 3.3 V

Communication: BLE (Blue Tooth Low-energy)

Device Range: 10 meters

Operational lifespan: 12.3 years minimum

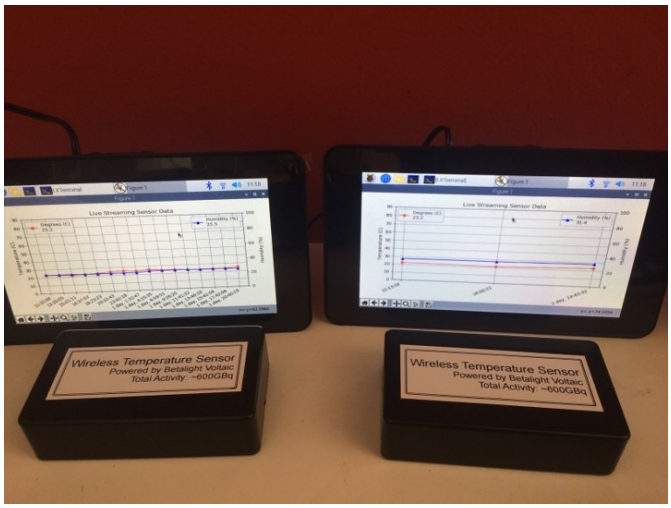
Operating Temp: -10˚ ~ 60˚C

Typical Weight: ~150g

External Packaging: IP65 plastic.

Shelf Life: N/A (decays continuously)

Radiation Activity: ~600GBq



NB –The image above is from a University of Bristol prototype unit as part of the EPSRC-funded ASPIRE project which underpins the Arkenlight technology.

Use Applications:

- Wireless sensor networks (BLE)
- Battery-less WSN
- Structural health monitors
- BLE Beacon
- Security systems

Features:

- Contactless operation using tritium based Gaseous Tritium Light Source (GTLS)
- Supports BLE communication with a Linux PC which is pre-programmed with custom firmware for a particular sensor unit.
- Wireless Sensor Node (WSN), transmitting data at every 2.5 hours intervals with ambient temperature below 20˚C.
- The sensor units include an expandable terminal on the Motherboard that can support I2C/UART/SPI sensor interface.