

WTN2P1

Wireless Temperature Sensor



The WTN2P1 is an ultra low power wireless temperature sensor node operating on a pair of 3V coin batteries. Up to 64 such sensor nodes can communicate through one WiSense coordinator node (WSN1120CL).

RF parameters

- Wireless Operating frequency: 865 to 867 MHz (License free in India)
- Radio max transmit power: +13 dBm
- Antenna Type: PCB

Temperature Sensor

- Type: NTC thermistor
- Manufacturer: Murata (Japan)
- Range: -40 deg C to +125 deg C

- Accuracy: 1 %
- Resolution: 0.01 deg C
- Response time: less than 1 second

Power

- Supply: 2 X CR2032 coin cells in parallel (3V)
- Sleep current: less than 2 microamps

Enclosure

- Material: ABS
- Dimensions: 67mm x 45mm x 10mm

Tag Id

- 64 bit IEEE assigned globally unique id.
Example: 0xfc:0xc2:0x3d:0x00:0x00:0x11:0x0a:0x1e
Tag Id is printed on the back side of the enclosure.

Sensor Data

- Reporting interval: Configurable value (minimum of once every second to maximum of once every day)
- Each message from sensor data conveys current temperature and battery voltage data.

Functionality

Each WTN2P1 is configured to operate as an LPWMN RFD (reduced function device). The WTN2P1 runs a simple loop shown below -

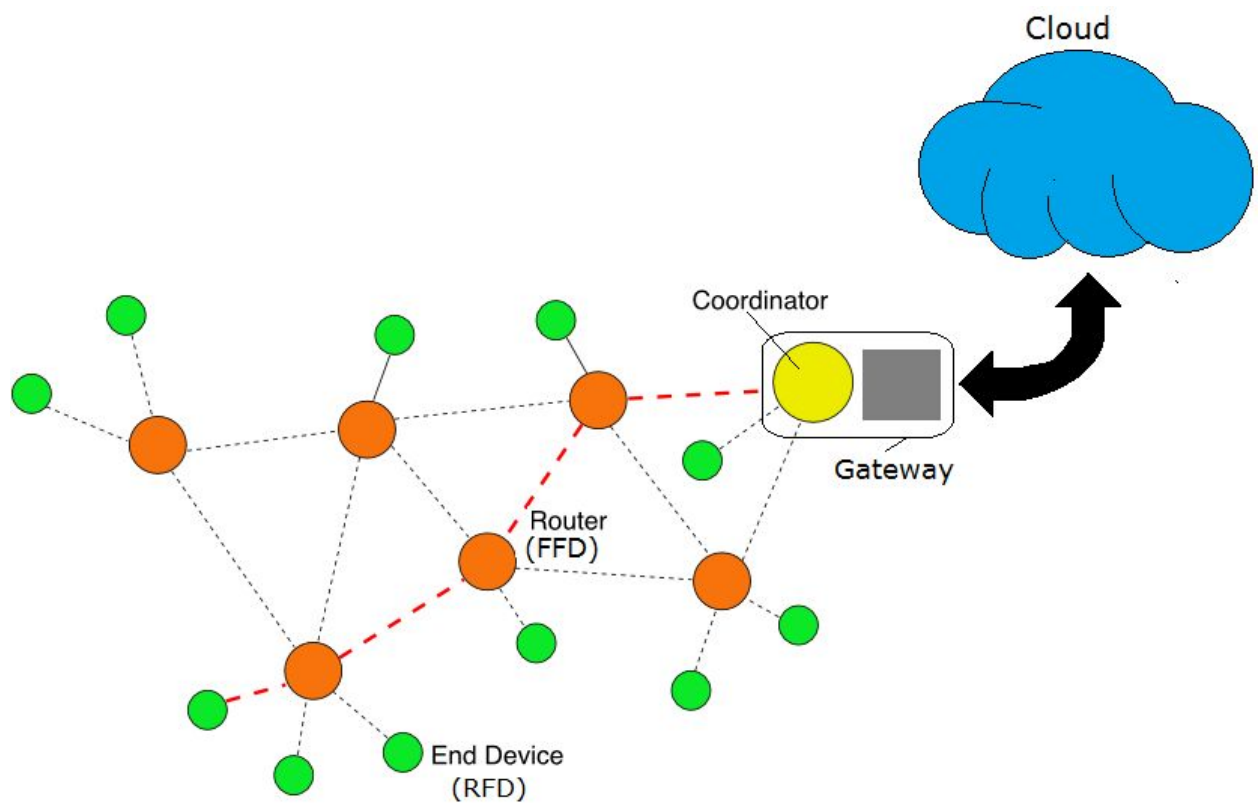
1. On power up, register to a network coordinator (WSN1120CL)
2. Go into deep sleep for configured interval. In deep sleep mode, all sensors, radio and microcontroller are put into ultra low power states.
3. Wake up (after configured interval) and sense temperature and battery voltage. Send sensor data to coordinator node
4. Check if any message is pending. If a message is pending, request message from parent and act on it.
5. Go to step 2

The interval mentioned above can be 1 second to 1 day.

WiSense LPWMN

A WiSense LPWMN (low power wireless mesh network) instance comprises of -

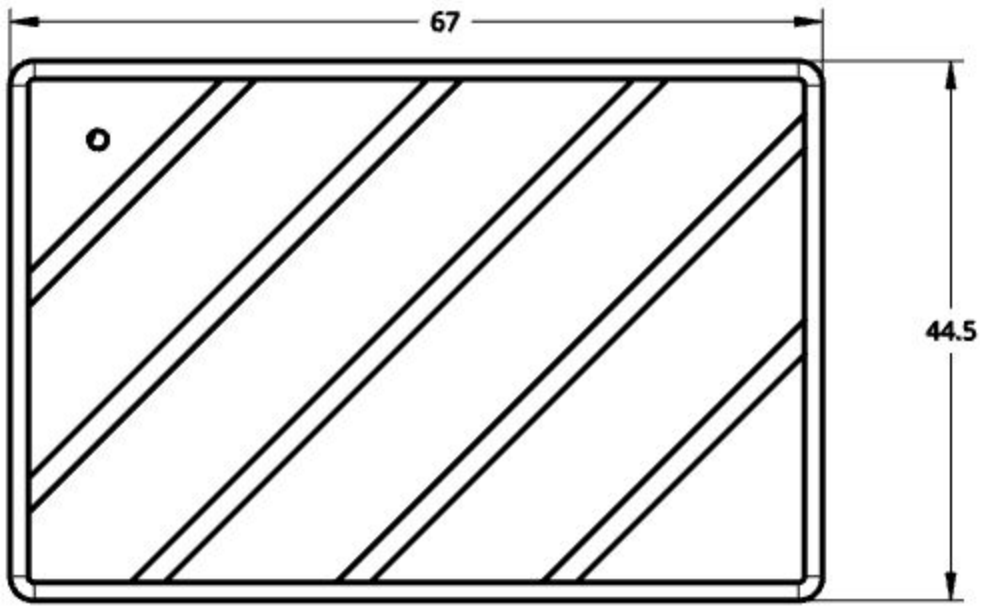
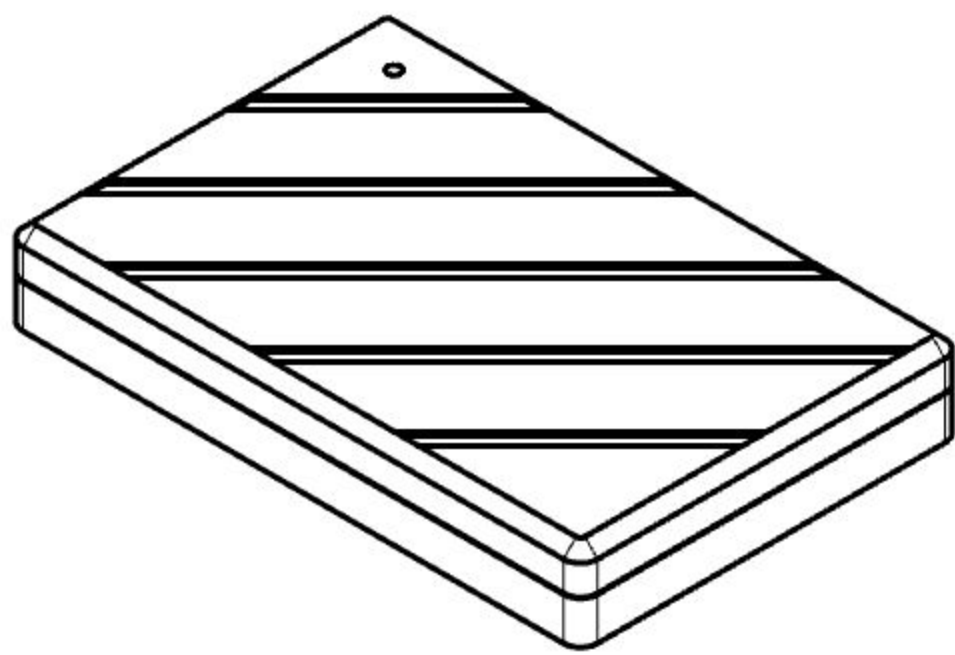
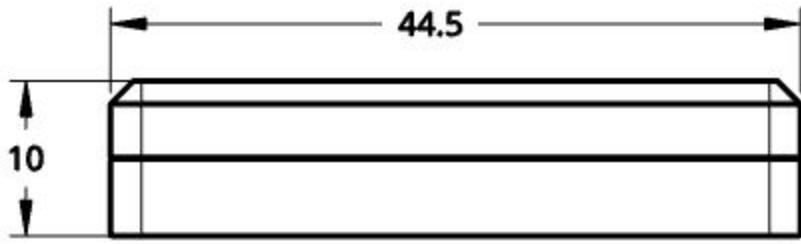
- Exactly one Coordinator node
- One or more FFDs - full function devices which take part in mesh routing and need to be mains or solar powered.
- One or more RFDs - reduced function devices which are in deep sleep most of the time and only wake up to sense and communicate if required. These devices/nodes are usually battery powered (a 3V coin battery, 2xAA, 2XAAA etc) and therefore energy constrained. The WTN2P1 is configured to operate as an RFD.



WiSense LPWMN



A WiSense coordinator node is **required** to receive data from a WTN2P1 node. The coordinator node serves as the entry and exit point of all messages sent to and received from a WiSense LPWMN (low power wireless mesh network). The coordinator in turn can be interfaced to an external host (PC, Laptop, Raspberry PI, Arduino etc) over UART or over a serial to USB converter. If the latter interface is used, it will provide both power and serial connectivity to the Coordinator.



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