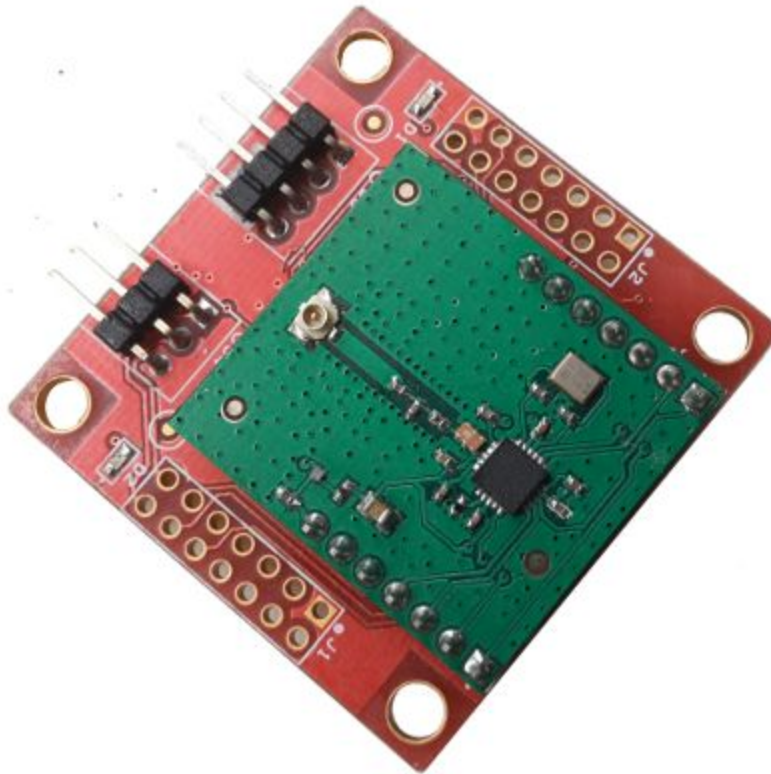


# WiSense WSN1101L

## Datasheet



The WSN1101L is a low profile low power WiSense wireless mesh node. It includes the CC1101 high performance sub-ghz radio (from TI) and the MSP430G2955 microcontroller (from TI). The radio board has a U.FL antenna connector.

The module consists of two PCBs. One PCB hosts the microcontroller while the other hosts the CC1101 radio.

### **Microcontroller PCB:**

- MSP430G2955
  - Ultra low power microcontroller from TI
  - 56 KB flash, 4KB SRAM
  - Standby current (in LPM3) as low as 1 micro amp.
  - Operating voltage: 1.8 V – 3.6 V

- Multiple On-chip 10 bit ADC channels
- Peripheral support (in hw): SPI/I2C/UART
  - I2C and 1-wire (software)
  - UART/SPI (hardware)
- On chip power supply voltage measurement
- On chip temperature sensor
- 2 pin Spy-Bi-Wire protocol for development (Programming and debugging).
- SPI/GPIO interface to the radio module
- UART/I2C/SPI/1-wire/GPIO interface to sensors
- On board serial (I2C) EEPROM (AT24MAC602) with hardwired and globally unique 48 bit and 64 bit addresses.
- On board 128 Kilo-Bytes EEPROM (M24M01) for over the air firmware upgrade. EEPROM can store two full images.
- On board high accuracy 32 kHz crystal
- 1 three pin right angled header (UART) – Tx, Rx and Gnd
- 1 four pin right angled header (Spy-Bi-Wire) – Vcc, Gnd, Test, Reset
- 2 LEDs
- 2 2x7 headers which expose most of the MSP430G2955 pins.
- Dimensions: 42 mm x 42 mm

#### **Radio PCB:**

- CC1101
  - Low-cost sub-1 GHz transceiver designed for low bandwidth and low-power wireless applications.
  - Programmed by WiSense stack to operate in the 865-867 MHz license free band in India
  - Operating voltage: 1.8 V – 3.6 V
  - Sensitivity: -112 dBm @ 1.2 kBaud (865-867 MHz/ 1 % packet error rate)
  - Modulation: 2-FSK, 4-FSK, GFSK, and MSK supported as well as OOK and flexible ASK shaping
  - Programmable output power up to +10 dBm for all supported frequencies
  - Programmable data rate from 0.6 kbps to 600 kbps. Lower the programmed data rate, higher the range.
- U.FL antenna connector. Can use U.FL to SMA cable assembly to connect to antenna outside weatherproof enclosure.
- On board high accuracy 32 MHz crystal
- Uses 2 1x7 2.54 mm pitch headers for mating with microcontroller board
- On board load switch for proper reset of the CC1101.
- Dimensions: 27.5 mm x 30 mm

### Power supply consideration

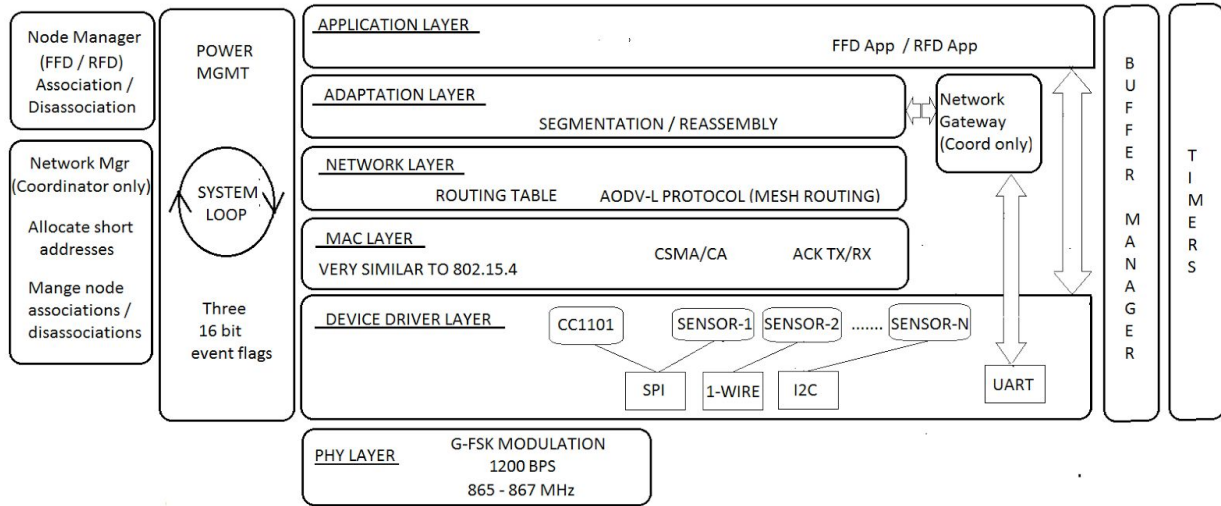
- The WSN1101L supply voltage range: 1.8 V to 3.6 V
- Note: Exceeding 3.6 V can damage the WSN1101L !!!
- The WSN1101L can be powered by a 3 V lithium coin cell or a pair 1.5 V AA/AAA batteries in series. Note that the WSN1101L does not have a battery / coin cell holder. This needs to be purchased separately.

The WSN1101L comes pre-programmed out of the box to operate as a WiSense mesh network reduced function device (RFD) in the 865-867 MHz license free band (in India). Once the node joins a WiSense mesh network, it will periodically (every 3 seconds) report the supply voltage.



WSN1101L in an enclosure with external Antenna

## WiSense Network Stack Layers



## WiSense Network Stack