

Technical Specification for Wireless Sensor Network Development System

S. No	Sensors	Qty.
1.	Programmable Coordinator & gateway (at 2.4 GHz)	2
2.	Programmable Intelligent End Devices	10
3.	Non Intelligent End Device with sensors	10
4.	Sensors	
a)	PIR/Motion Sensor	20
b)	Water quality	20
c)	Air Quality Sensor	20
d)	Humidity & Temperature Sensor	4
e)	magnetic sensor	4
f)	Light Sensor	4
g)	IR Sensor	4
h)	Smoke Sensor	4

Technical Specification:-The system should be based on IEEE 802.15.14 with a complete set of coordinators, routers, End device, intelligent end device with real time sensors, signal conditioners etc. The system must be supplied with windows based utility software for real time viewing, of the networks in star, ring and mesh networks, and configuration of software Bee configured as per bellow specifications) with indoor and outdoor range 100-300.

Software: - The system must be supplied with GUI software for WSN Programming and analysis with following features:-

- The system must have application software for data acquisition on the mobile using Bluetooth communication. Using android apps as well as lab view and MATLAB software compatibility example programs
- AES 256 data Security Standard: The system consists of encryption standard for your data which cannot be easily hacked.
- Energy Efficient Protocol(LEACH): The system consist of Low-energy adaptive clustering hierarchy ("LEACH") is a TDMA-based MAC protocol which is integrated with clustering and a simple routing protocol in wireless sensor networks(WSNs).

Hardware:- The System must be supplied in water proof plastic enclosures and battery strength indication on seven segments display for real time implementation with following features:-

Programmable Coordinator & gateway (at 2.4 GHz)

- ZigBee Coordinator & Gateway the coordinators must be designed around advance processors and must act as gateway with other wireless connectivity etc.
- Zigbee 2.4 GHz Coordinator based on ARM 7LPC2148.
- Supporting various Network Topology with RF data rate 250 kbps/80kbps.
- On board two relays with isolated Output & one Buzzer for alarm activation.
- On boards 20X4 LCD display for display for end device status.
- Facility to store the data SD Card for Storage.
- Data entry using 4X4 Hex Keypad digital Input.
- On Board USB Communication for PC Data transfer
- Facility for switch selection for radio configuration with / without processors
- On boards facility for GSM/GPRS & Bluetooth for data transfer.
- On Board Power supply (5V, 3.3V) with rechargeable battery backup
- Configurable device software, for GUI based, along with testing utility, RF data rate 250 KBPS with software selectable Data rate, with input / output range 100Ft /300Ft. for support of 2.4. With power supply 2.8V.

Programmable Intelligent End Devices

- The end devices must be enclosed with plastic encl with batteries for filed applications
- The Programmable Intelligent End Device with USB interfaces, with ARM LPC 2148 Processor with SD card storage etc.
- Zigbee 2.4 GHz with external antenna
- Supporting various Network Topology with RF data rate 250 kbps/80kbps
- On board 6V relays with isolated Output & one Buzzer
- On board 16X2 LCD display.
- On Board Power supply (5V,3.3V)
- Can Connect with any digital Sensor* 0-5V or with analog sensors.

Non Intelligent End Device with sensors

- Zigbee 2.4 GHz with external antenna.
- On Board Configuration facility with USB
- End Devices to connect with sensor in range 0 to 3.3 V analog ordigital
- On Board Power supply (5V,3.3V)
- Field deployable ready to use
- USB Powered/ Battery for zigbee
- In Build features of Zigbee for 2.4GHz:
- Supporting various Network Topology with RF data rate 250kbps
- With software selectable Data rate, with input / output range 10-100*meter.
- 4 Channel 10 bit internal A/D, 8 Digital Input / Output

SENSORS:- The system must be supplied with various sensors compatible with the nodes and can be interfaced externally