LOW POWER WATER LEVEL SENSOR FOR LORA WAN

AIM:

Design and Development of Low Power water level sensor for LoRa WAN.

PURPOSE:

Water level sensors can be used in various applications like water tanks, dustbins, snow level measuring, river level monitoring etc. General water tankers of apartments and residential areas located at top of the buildings. Wire based level sensors are available in market and need lot of wires from sensor to monitoring area. This kind of system will be expensive and need maintenance. Wireless level sensor has advantages than wired. There are various wireless technologies available but price and range are directly proportional. Here LoRa comes to picture and give us good solution. LoRa is a Long range low power wireless communication technology. We can interface with it to Arduino and ESP32 Nodemcu microcontrollers. Proposed project title is low power water level sensor for LoRa WAN. LoRa WAN is a gateway communication system that can communicate with any cloud servers like AWS, IOT or any customized server. LoRa WAN is a kind of LoRa receiver and it can receives data from number of LoRa transmitters.

DESCRIPTION:

Resistive conductive leads acts as like water level sensor. It has three conductive leads those can measure levels of water. LoRa module (sx1278) connected to Arduino SPI communication. On other hand ESP32 nodemcu interface with LoRa (sx1278).

WORKING:

Water level sensor placed at the top of the tank and it can measure water level. Arduino reads water level information and displaying on 16x2 LCD display. LoRa transmitter transmits this information to

LoRa receiver and ESP32 nodemcu updates this information to IOT cloud server. For Every 60 seconds interval of time, water level data will upload to IOT server.

TECHNICAL SPECIFICATIONS:

HARDWARE:

Microcontrollers	:	Arduino Uno and ESP32 Nodemcu
Crystal	:	16 MHz
LCD	:	16X2 LCD
LoRa Module	:	SX1278
Water Level Sensor	:	Conductive Leads
Power Source	:	12VDC adaptor

SOFTWARE:

Arduino IDE

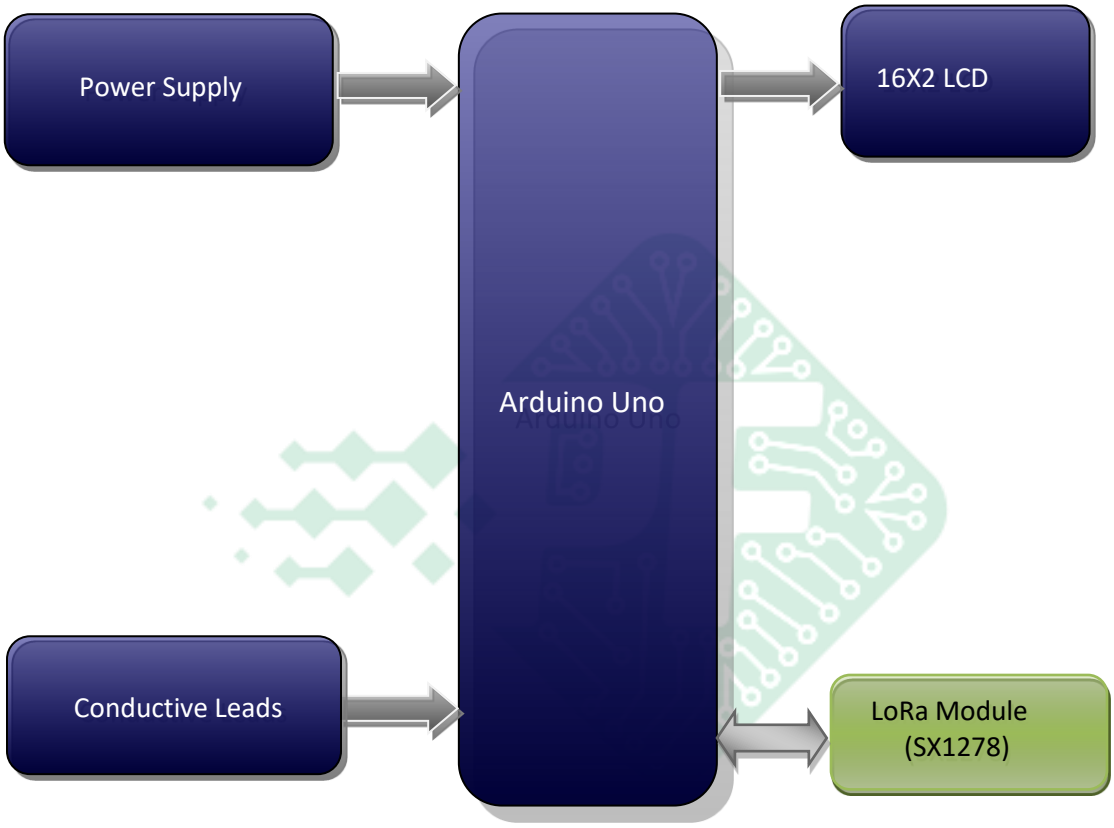
Proteus based circuit diagram

APPLICATIONS:

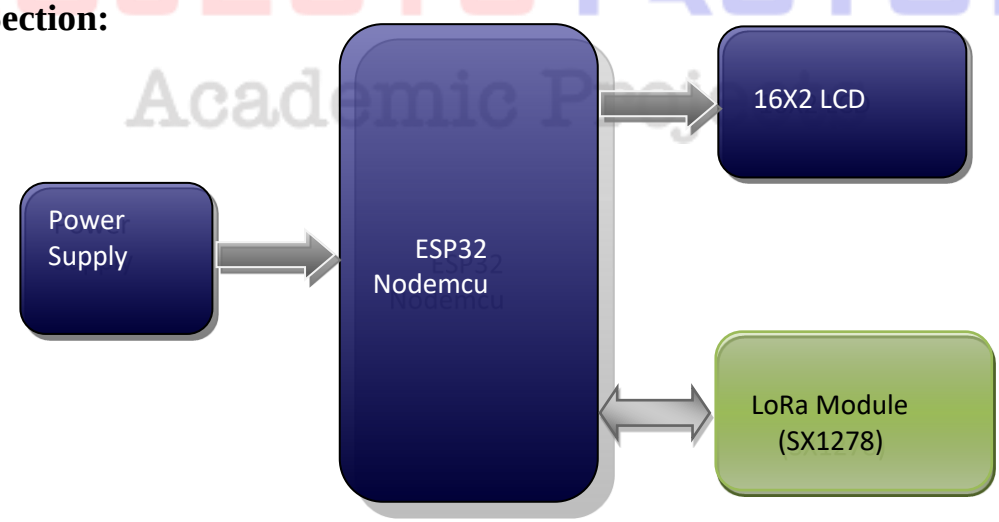
- Water level sensor applications
- Liquid level monitoring system using LoRa
- Fuel level monitoring using LoRa

BLOCK DIAGRAM:

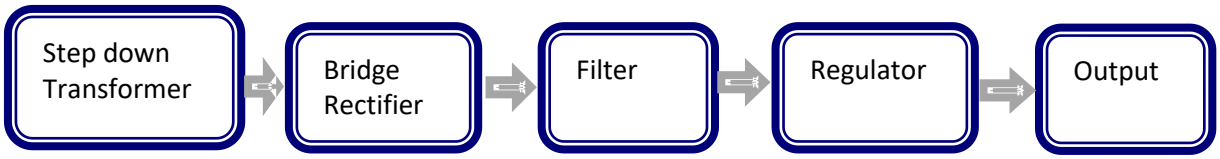
Transmitter Section:



Receiver Section:



POWER SUPPLY BLOCKDIAGRAM:



INTERFACES COVERD:

- We have covered LoRa module interface
- Water level sensor interface