

SMART IRRIGATION SYSTEM WITH RASPBERRY PI PICO AND GSM

AIM:

Design and Development of Smart Irrigation system with raspberry pi pico and GSM.

PURPOSE:

Irrigation is very important for any country. Based on irrigation efficiency food production varied. To increase food production we have to focus on irrigation system. There are lot of things includes in irrigation system. Water management is main parameter of irrigation system. There is lot of water wastage in regular traditional method like manual control water pump. Here we do water pumping is based on soil moisture wet and dry conditions. Also we will read temperature and humidity through GSM modem to know irrigation parameters. Here proposed project title is smart irrigation system with raspberry pi pico and GSM.

DESCRIPTION:

GSM modem (sim800c) Connected with raspberry pi pico uart port. GSM modem works on AT commands and AT commands stack implemented in pi pico programming. DHT11 sensor interfaced with pi pico through one wire protocol. AC water pump controlled by relay and relay connected to digital pin of pi pico. Soil moisture sensor connected to pi pico digital pin.

WORKING:

When soil moisture detected wet then pump will be OFF. If it detects dry condition then pump will be ON. Pico sends message to register mobile number through GSM modem about soil moisture condition. Also it sends temperature and humidity values. For every two minutes raspberry pi pico sends message of all sensors status to register mobile number. Also pi pico displays all sensors status on 16x2 LCD display.

TECHNICAL SPECIFICATIONS:

HARDWARE:

Microcontrollers	:	Raspberry PI pico
LCD	:	16X2 LCD
GSM Module	:	SIM800C
Temp Sensor	:	DHT11
Humidity Sensor	:	DHT11
Soil moisture Sensor	:	Resistive type
Relay	:	12VDC
Water pump	:	230V AC
Power Source	:	12VDC adaptor

SOFTWARE:

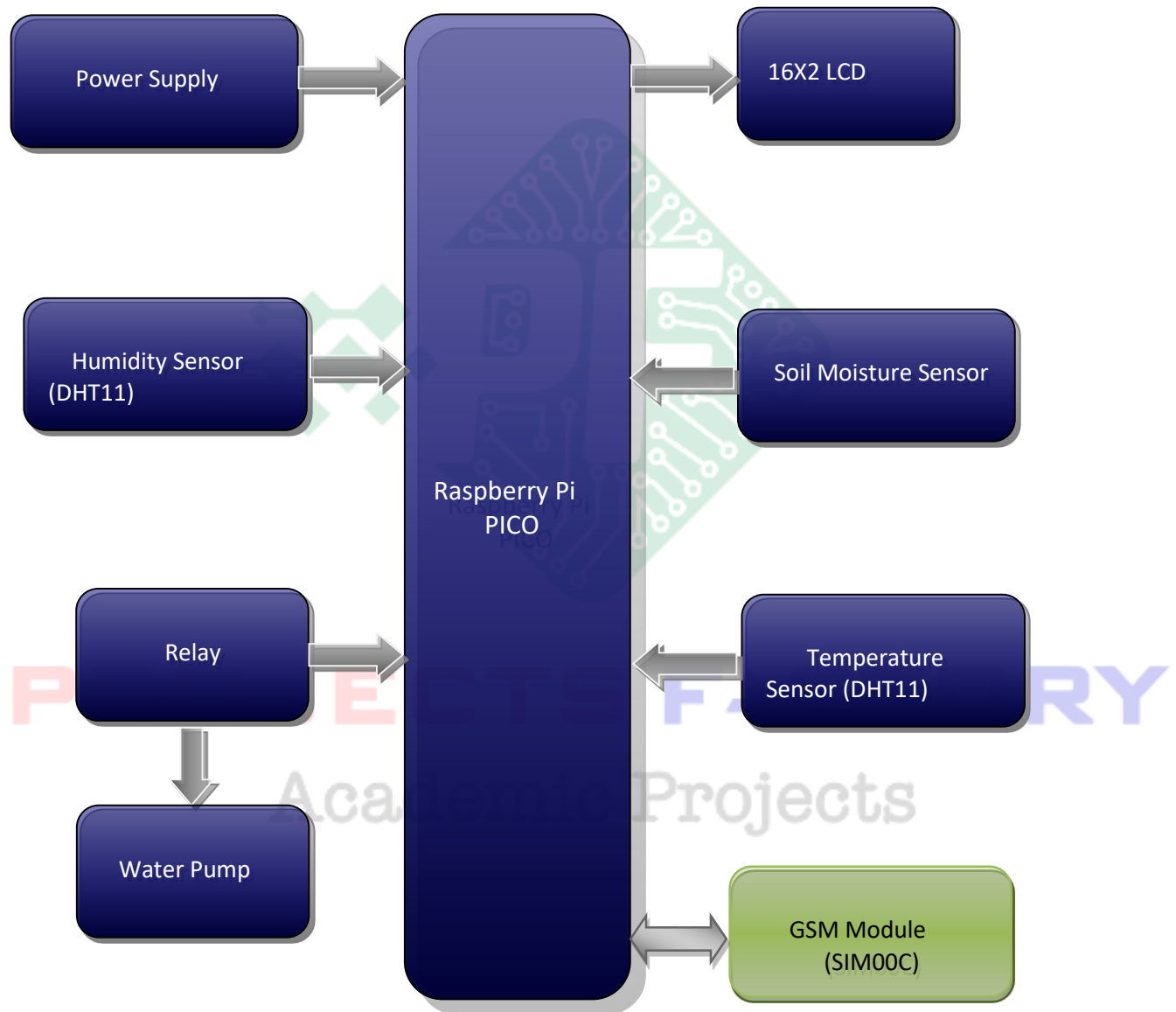
Arduino IDE

Proteus based circuit diagram

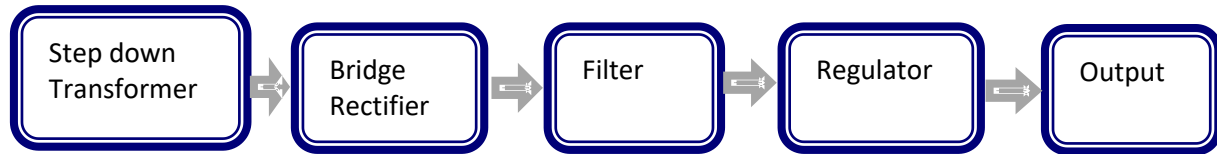
APPLICATIONS:

- Irrigation applications
- Smart agriculture applications
- GSM irrigation system

BLOCK DIAGRAM:



POWER SUPPLY BLOCKDIAGRAM:



INTERFACES COVERED:

- We have covered Raspberry pi pico firmware
- GSM module and sensors like DHT11, soil moisture interfaces



PROJECTS FACTORY
Academic Projects