



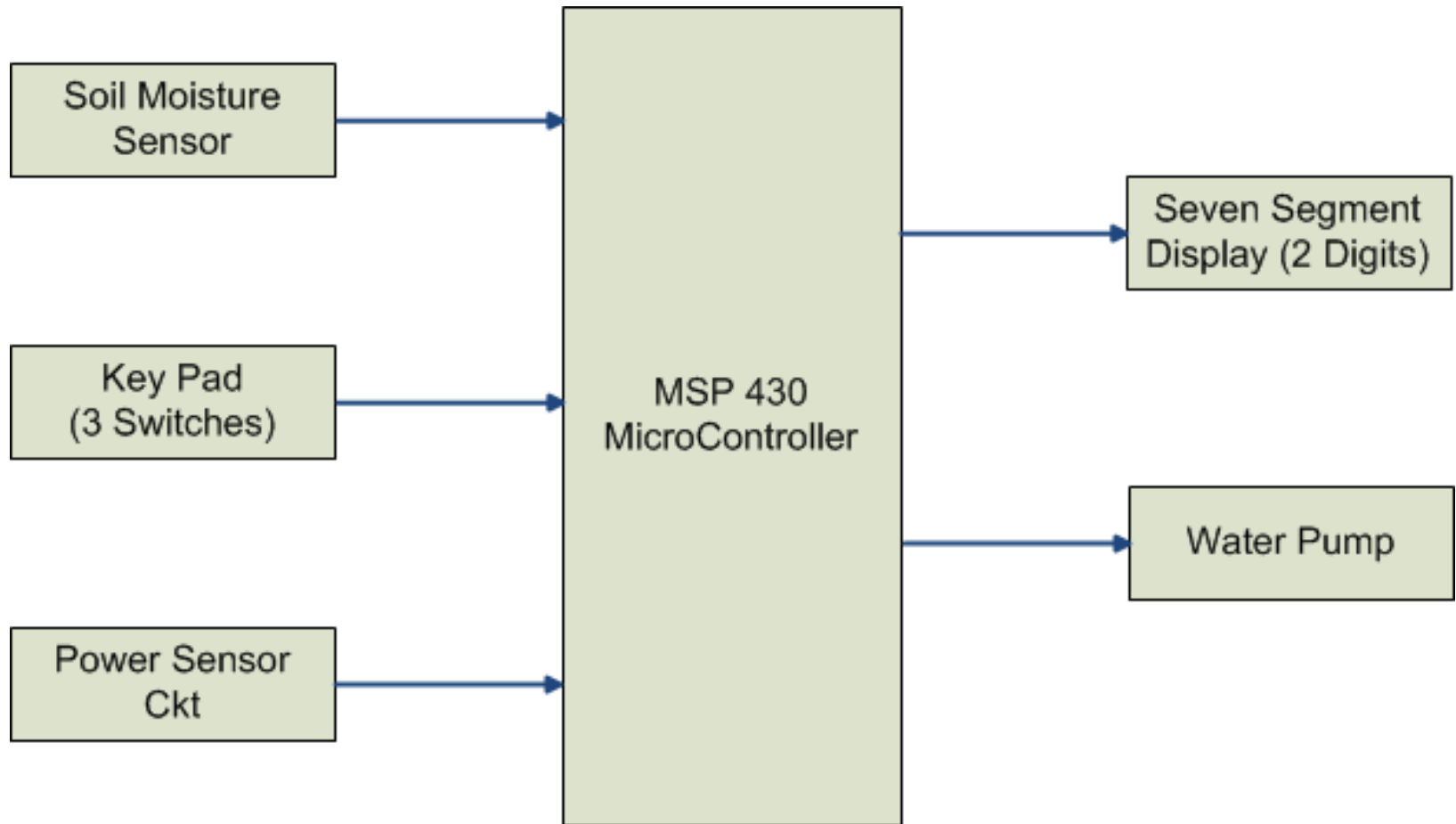
Automated Irrigation System Using MSP 430 Microcontroller

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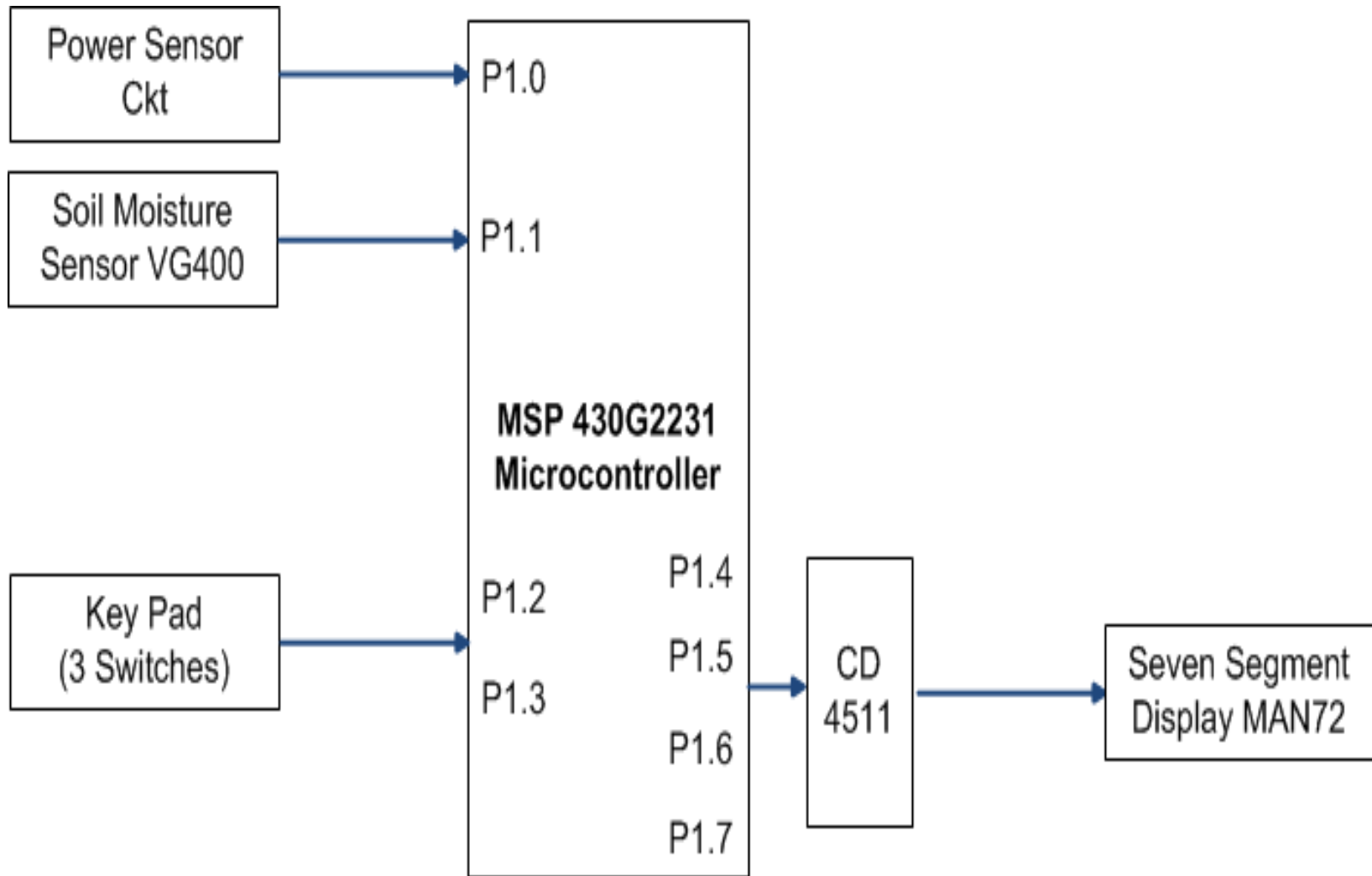
Introduction

- This project aims to give a solution to those fields where there is power scarcity and minimize the manual intervention in irrigating the fields. This project can be used for any type of irrigation system.
- The Automated Irrigation System using MSP 430 Microcontroller monitors the soil moisture content, and the AC power supply to the water pump and controls the operation of the water pump.
- The signal from the soil moisture sensor gives the indication of moisture content of the soil based on that input (i.e. ADC Output), and the power sensor circuit output, the microcontroller will decide when to turn on the water pump. The user can communicate with the microcontroller through a key pad (3 switch) and the seven segment display to set the time duration of the pump operation.

Block Diagram



Hardware Components



Hardware Components - I

- Soil Moisture Sensor

Low Voltage Soil Moisture Sensor Probe

VG 400 -LV

- ADC10 will interface with the sensor through Port 1.1 (ADC Analog Input A1)
- MSP430 waits for the interrupt from soil moisture sensor
- Software sets ASC10SC to start sample and conversion, internal oscillator times sample and conversion

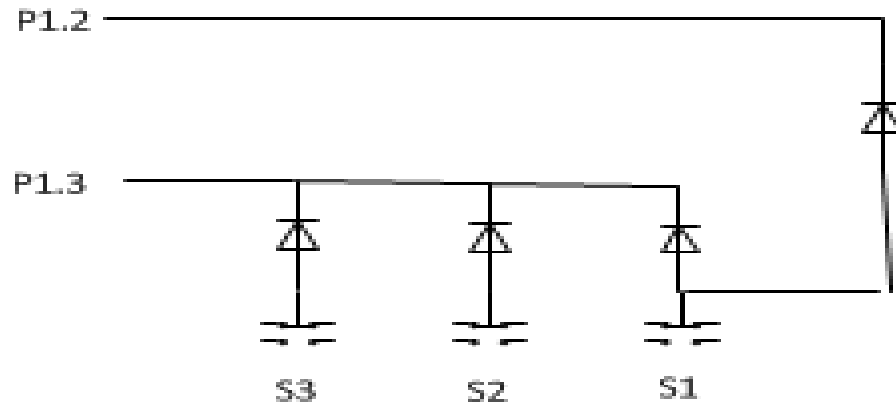
Hardware Components - 2

- Power Sensor Circuit

Power sensor circuit will have an LED to indicate AC power. This circuit is realized using with *Step down transformer – Rectifier – Regulator* combination. Regulated DC power can be connected directly to port of the microcontroller. (Microcontroller power ratings will be taken into consideration before applying the DC power) as an indication of AC power

Hardware Components – 3 P

- Key Pad (3 Switches)
 - Switch A is to increase the time(up)
 - Switch B is to decrease the time(down)
 - Switch C is to confirm selection
 - Get the character from the keypad
 - Move the character to flash memory location



P1.2	P1.3	O/p
0	0	NOP
0	1	S3
1	0	S2
1	1	S1

Hardware Components - 4

- Seven Segment Display
 - Interrupt will be enabled to the Port connected to the display
 - Copy the flash memory content and drive the display
 - CD4511 BCD – Seven Segment Decoder is used to mitigate the limited port problem

Status

Component	Status
VG400	Received – Testing in Progress
CD4511	Ordered
Mini Push Button Switches	Ordered
MAN72	Ordered

Project Status

- Awaiting the Some of the Ordered components
- Started Testing Soil Moisture Sensor
- Plan to work on respective components in parallel

Plan B

- Managing all the components may pose problem
 - Plan to switch to higher pin count device