Automated Irrigation System Using MSP 430 Microcontroller

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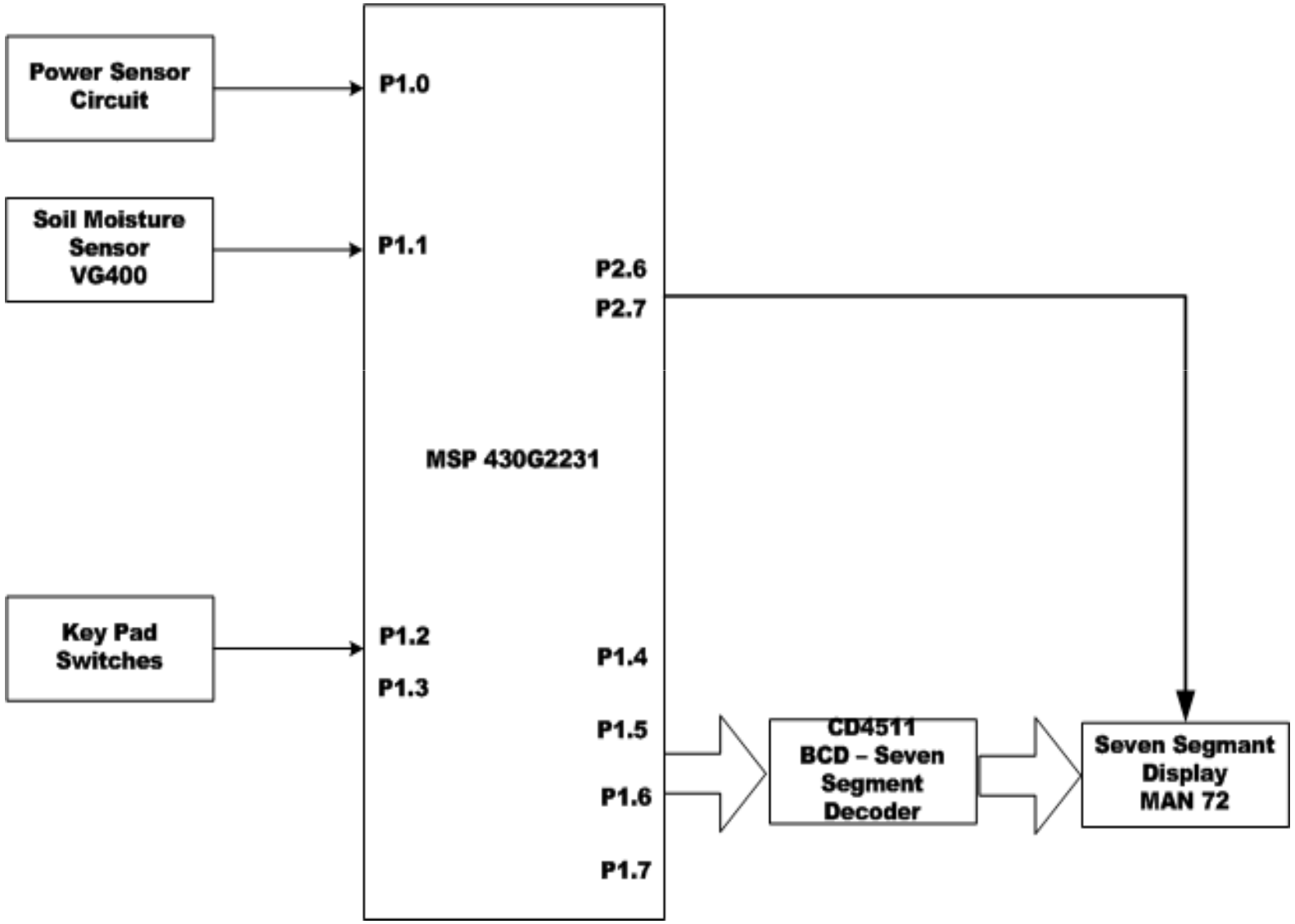
Hardware Components



Hardware Components - 1

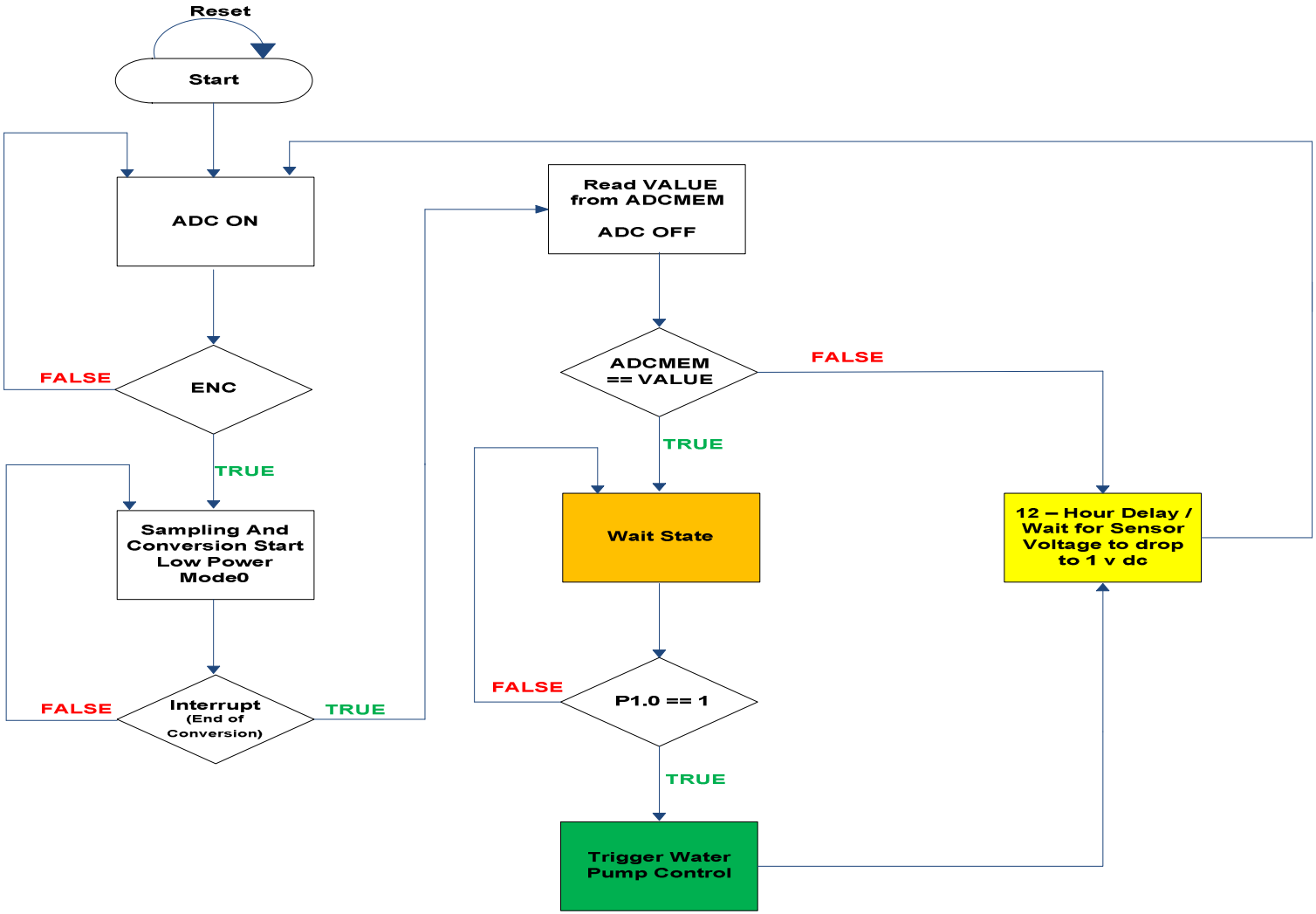
- Soil Moisture Sensor

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

ADC Interfacing With Sensor - Algorithm



Hardware Components – 2

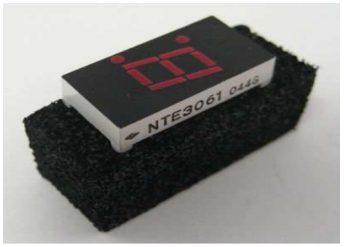
- Key Pad (3 Switches)
  - Switch A is to increase the time(up)
  - Switch B is to decrease the time(down)
  - Switch C is to confirm selection

Pseudo code – Key Pad

```
void main(void)
{
 WDTCTL = WDTPW + WDTHOLD; // Stop watchdog timer
setTime(0x12,0,0,0); // Init
BTCTL = BT_ADLY_1000; // Set interval
IE2 |= BTIE; // Enable BT int
__BIS_SR(LPM3_bits + GIE); // Sleep, enable ints
}
#pragma vector=BASICTIMER_VECTOR
__interrupt void BT_ISR(void)
{
    incrementSeconds();
if(sec==60) {sec = 0; incrementMinutes();}
if(min==60) {min = 0; incrementHours();}
if(hours>12) hours=1;
}
```

Hardware Components - 3

- Seven Segment Display (MAN 72)



  - It will receive its output from the decoder.
  - Will display user entered value (Water Pump on duration)

Hardware Components -4

CD4511 BCD – Seven Segment Decoder is used to mitigate the limited port problem.

It will be connected to the MSP in order to give the input to the seven segment display (MAN 72).

Status: Progress with the Components

Component	Status
VG400	Received and Tested
CD4511	Received , Testing in Progress
Mini Push Button Switches	Received, Testing in Progress
MAN72	Received, Testing in Progress

Task Division

Name	Component`	Division Based On
Ajinkya Fotedar	Keypad	
Animesh	Seven Segment Display	
Pavan Kumar Malka	ADC – Sensor Interfacing	
Varun Kumar Polala	Power Sensor Circuit	Electrical Background

Project Status

Overall Progress: Have received almost all the components and some of them have been tested and are working fine. Integration of all the components will be done with in this week

Challenges & Plan B

- Software Interfacing will be a challenge.
- Also, we are yet to figure out how we will be using the RTC in the calendar mode or the Counter mode.
  - Plan to switch to higher pin count device