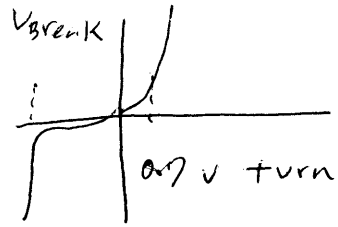


2013/2/11



Diode



①

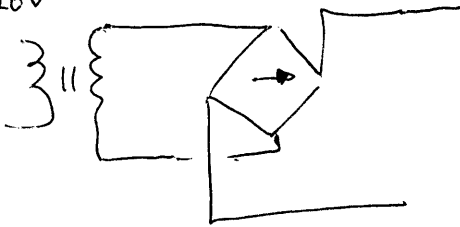


Zener Diode

12V

5.1

AC
120V



Relay coil
SSR

24V
12V Control ckt

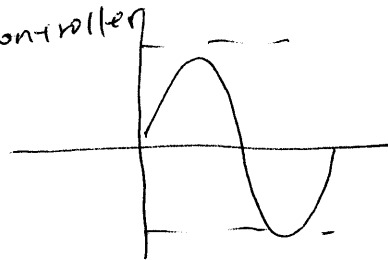
+12, +15V OP-AMP.

Analog ckt

+5V

microcontroller

+3V



Battery power ckt

mA

Circuit Simulation

- Multisim

Control Circuit

- PLC Ladder Diagram

Motor, Relay

Transistors, Diodes

Analog ckt, Digital ckt

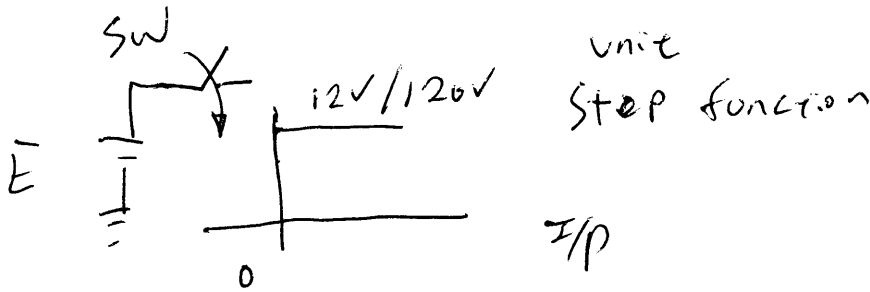
2

System Simulation

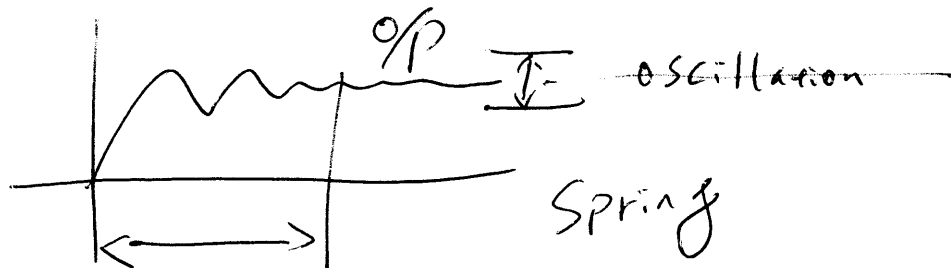
* Control System

* DSP

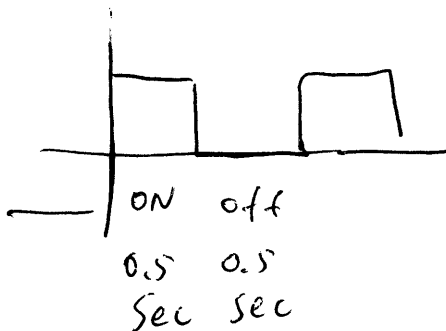
Simulink/MATLAB



unit
step function



$$F = KX$$



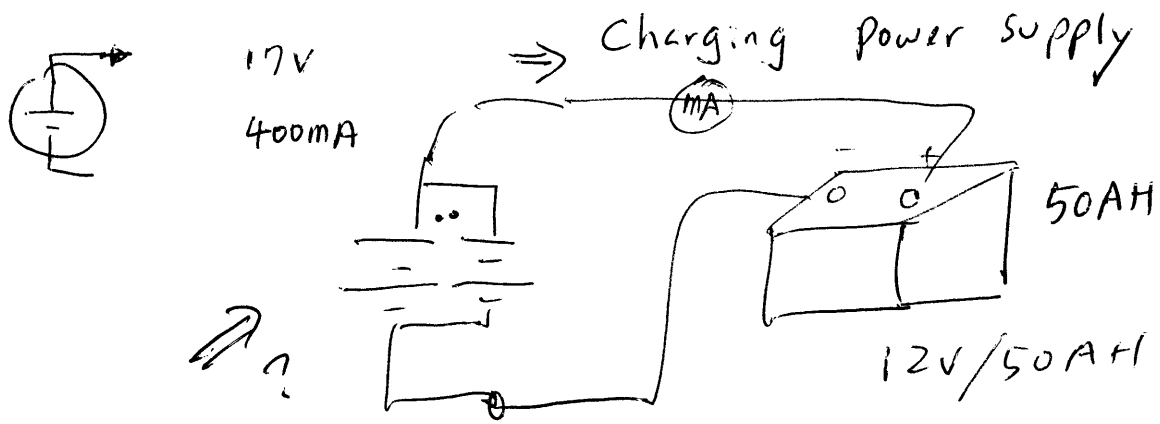
• Function Generator

1 Hz

• Program

Solar power

(3)



N # in Series

N # in parallel

✓ Sunlight
Winter 6AM 8AM -- 12 --
Spring
Summer
Fall

Battery
50AH

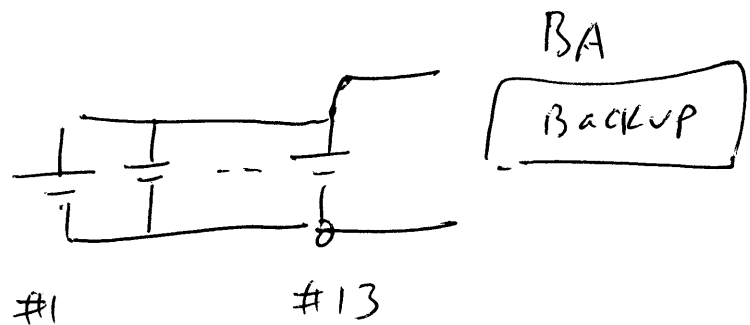
ECET 102/101

50A 11h.

(25A) / 2h

13A 4hr. State of charge = 0

$$\frac{13A}{0.4A} = 30$$



Cost/Benefit Trade-off

USB-based Data Acquisition

Monitoring

~ title vague

4

For

* Application

DAQ - Data rates

High Speed

Low Speed

* Reliability of DC motor

• temperature of winding

Direct measurement

Indirect measurement

$\overset{0}{C} \rightarrow$ Convert to Resistance
Voltage
Current

$R(t)$

$\rightarrow R(\text{temp})$

20°C (R_{winding})

$\leftarrow \Omega$

$R \uparrow$ when $\text{temp} \uparrow$

$\overset{0}{C}$, I current

$$V/I \Rightarrow R$$

Over current

$V[1]$

$V[1]$

$V[2]$

$I[1]$

$I[1]$

$I[2]$

$\Downarrow$

$R[1]$

$R[2]$

$\rightarrow$

Universal Sensor

PT Potential Transformer

output 110V

CT Current Transformer
Power plant

output 5A

3 {

Transmission

Distribution

Industrial plant

Commercial Building

Power panel

132KV

3 { 120V

69KV

3 { 120V

power output

— Standard 15A

$$746W = \frac{1HP}{}$$

120V (10A)

120W

$\Rightarrow$ HP