

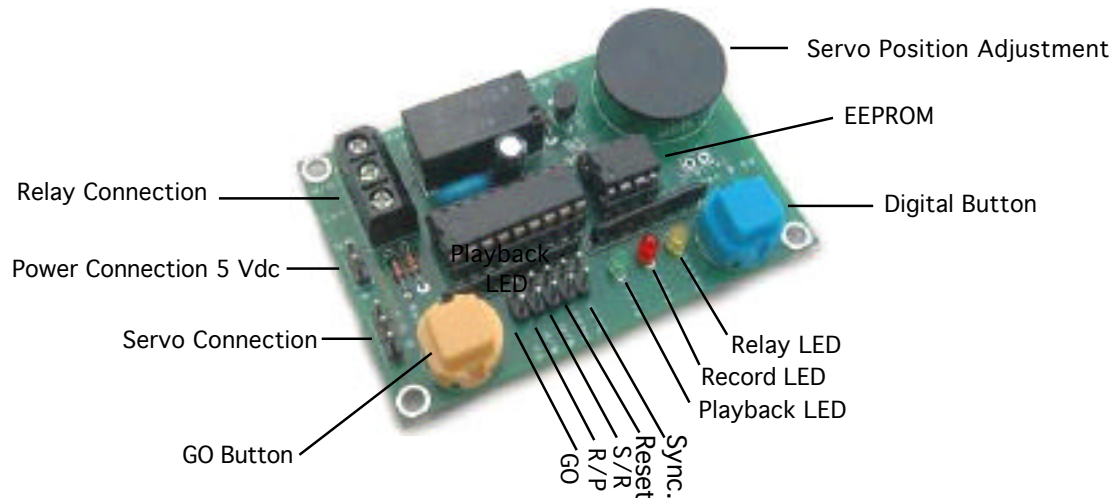


## *Puppeteer Plus Board*

## *Puppet - II+*

*Controller*

(BPE No. PCA-0001)



The Puppeteer plus board provides up to 4 minutes of recording and playback time for one servo channel and one digital (relay) output channel. The board supports sequential recording functions, daisy chaining and loop playback with variable inter-loop timing and automatic start-up positioning.

### **Board Connections**

#### Power Supply Header

The Puppeteer plus board requires +5V DC supply at currents up to 0.5 amps depending on servo used.

#### Servo Header

Three pin header to connect to standard servos- observe polarity of servo connection wire (R,B,W)

The Puppeteer plus board generates pcm signals between 0.5 and 2.5msec long repeated every 20msecs.

Note: Most servos are generally only rated for 1-2msec pulses so care should be taken at the extreme ends of the travel to ensure the servo motor is not damaged by the extreme travel.

#### 3-Way Terminal Block

Switched relay outputs. The relay is rated at 24V DC @ 1 Amp (NO, Comm, NC terminal connections)

### **Controls**

#### Go Switch Button

Press and release to record the servo and digital(relay) actions.

Press and release to initiate playback modes.

#### Go Pins

Used for daisy-chaining multiple Puppeteer plus board - connect subsidiary module Go pins to the sync output pins.

#### R/P Pins

Selects either Record mode (jumper IN place) or Playback mode (jumper OUT).

#### S/R Pins

Selects either loop playback Repeat (Jumper OUT) or Single playback (Jumper IN)

#### Reset Pins

Resets the Puppeteer plus board. (Briefly short the Reset jumper pin pair to reset the controller)

## Sync Pins

## ***Puppeteer Plus Board***

Used for daisy-chaining multiple Puppeteer plus board - connect subsidiary module Go pins to the sync output. Output normally high (+5V), drops to 0V for 50 msec at the beginning of each playback or recording session.

## Digital Switch Button

Press to activate the relay either in manual standby or record modes.

## Potentiometer

Adjusts the servo position during manual standby or record modes.

Adjusts the inter-loop playback delay period when loop play selected (S/R Jumper OUT)

The minimum delay period is approximately 5 secs (left) the max is approximately 50 seconds (right).

## **Operation**

### First recording

- Power ON the controller with NO jumpers in place to test. The servo should respond to movement of the position control wheel and the relay operate when the Digital switch is pressed ON/OFF.
- Turn the power to the Puppeteer plus board OFF.
- Insert the R/P jumper and turn ON the power to the board. The Red LED will start to flash. The Puppeteer plus board is now ready to begin recording of the servo channel and digital channel. (Since this is the first recording since power was applied to the module, the recording will begin at the start of memory. For adding to a pre recorded program, see the "follow-on recording" below.)
- Press and release the GO button to start record, the Red LED will stay ON. Adjust the servo position using the movement control wheel and/or operate the digital (Relay) action by pressing the DIGITAL button as needed ON and OFF. Digital On/Off action and servo motion positions are recorded together.
- Press and release the GO button. (the controller is now in pause mode) **You have two options at this point.** (1) Remove the R/P jumper to exit recording mode, or (2) If you want to keep recording leave the R/P jumper IN and press the GO button to continue with more recording. In pause mode the Green LED will turn ON this is a guide to ensure smooth splicing of subsequent recording sessions. If you move the position control the Green LED will turn OFF and will only re-light when the servo is in the exact same position it was at the end of the previous session.
- Remove the R/P jumper when the module is paused (Red LED flashing) to exit any recording mode.

## **Playback**

### Single Playback

- Insert the S/R jumper only (IN). Press and release the GO button to playback the recorded session. At the end of the session, the servo will move to a position dictated by the last position of the movement control wheel and wait for the next press of the GO button (Green LED ON indicates playback mode is playing recorded routine. Green LED will turn OFF at the end of playback routine).

### Looping Playback

- Remove the S/R jumper (OUT) for loop playback, the position control will now be read at the end of the playback session and the interloop delay time calculated from this position value. The minimum wait period is approximately 5 secs (left) the maximum time approximately 50 seconds (right). At the end of the session, the servo will move smoothly to its start-up position to avoid sudden actions. (Green LED will blink indicating wait delay is active in count down before next playback starts automatically).

### Follow-on Recording

#### *Module still powered up after a previous session:*

The Puppeteer plus board will remember the last saved position details- proceed as though starting a new recording except that with the Red LED is flashing- adjust the servo position until the Green LED turns ON to ensure a smooth continuation of actions.

#### *Module newly powered up:*

Playback the stored moves – this will load into the Puppeteer plus board the location of the last move. Proceed as per the standard follow-on recording above.

#### *Existing session prematurely terminated:*

Playback the stored moves. At the required termination point, insert the R/P jumper (IN). This will stop playback and load into the Puppeteer plus board the position of the last move. Proceed as per a standard follow-on recording, the new recording will begin at the point playback was stopped, R/P (IN)

*Puppeteer Plus Board*

Servo Positions  
A  
B  
C

Standard +5 Volt dc  
R/C Servo

**Caution**  
Check Correct  
Servo Connection



Black  
Red  
Yellow / White

R/C Servo Connection

Power  
Connection  
5Vdc

**Caution**  
Check Correct  
Polarity (+/-).

BLACK Wire

RED Wire

N/C  
Com  
N/O

**Relay  
Connections**  
24V DC @ 1 Amp

Relay

GO Button

**Configuration  
Jumpers**

GO  
R/P  
S/R  
Reset  
Sync.

Playback LED

Record LED

Relay LED

( Relay Output )  
Digital Button

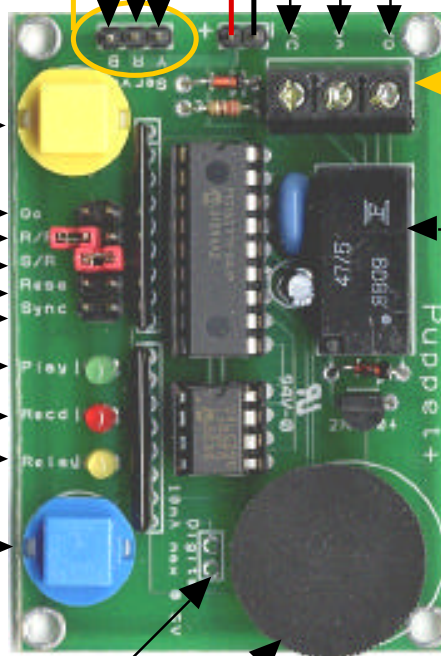


Optional 5vdc 10 mA  
Digital output connector

Servo Position  
Control / Adjustment

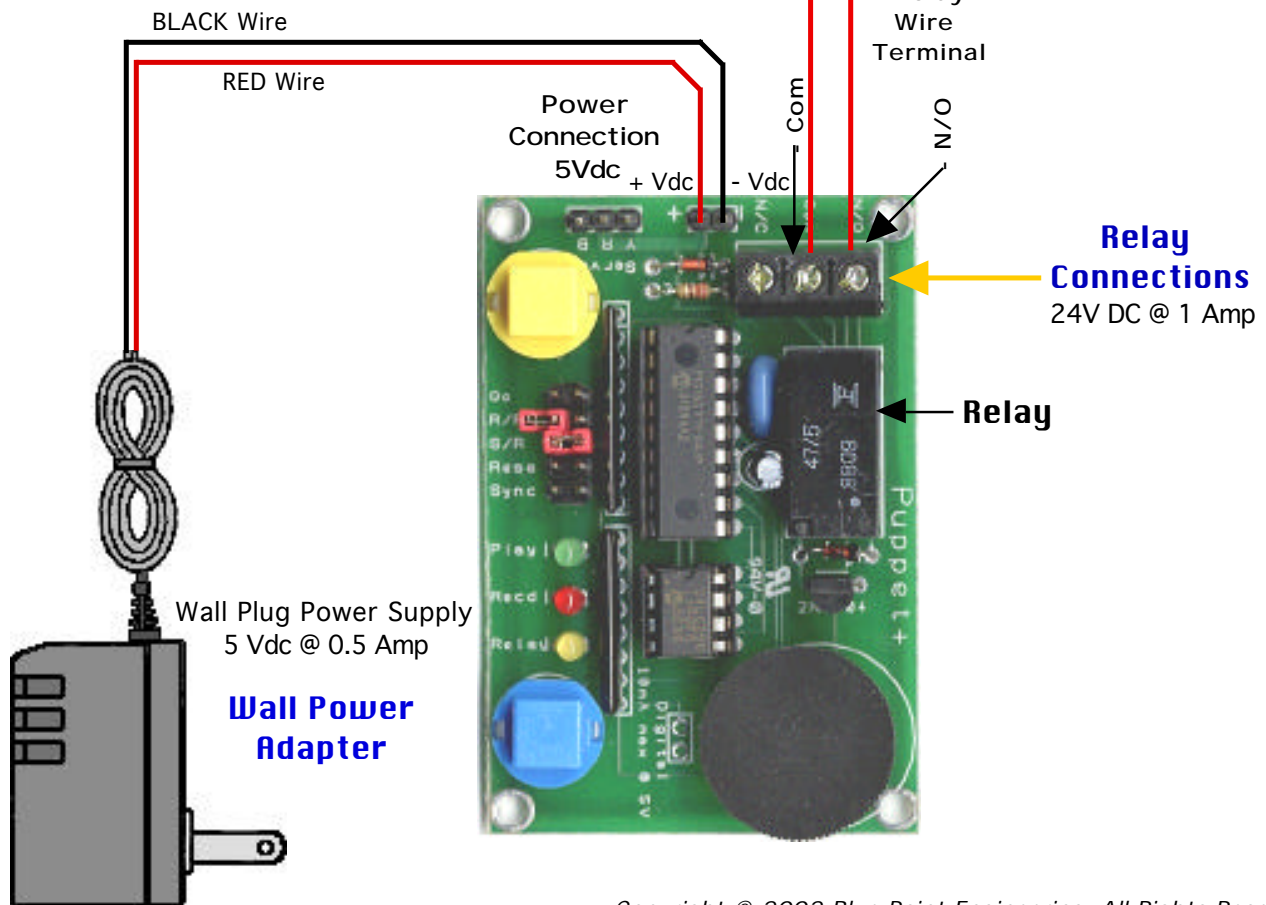
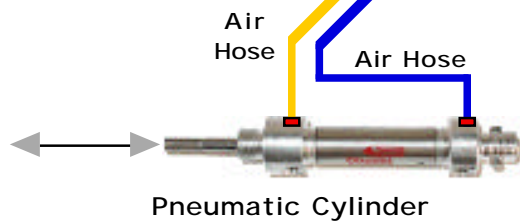
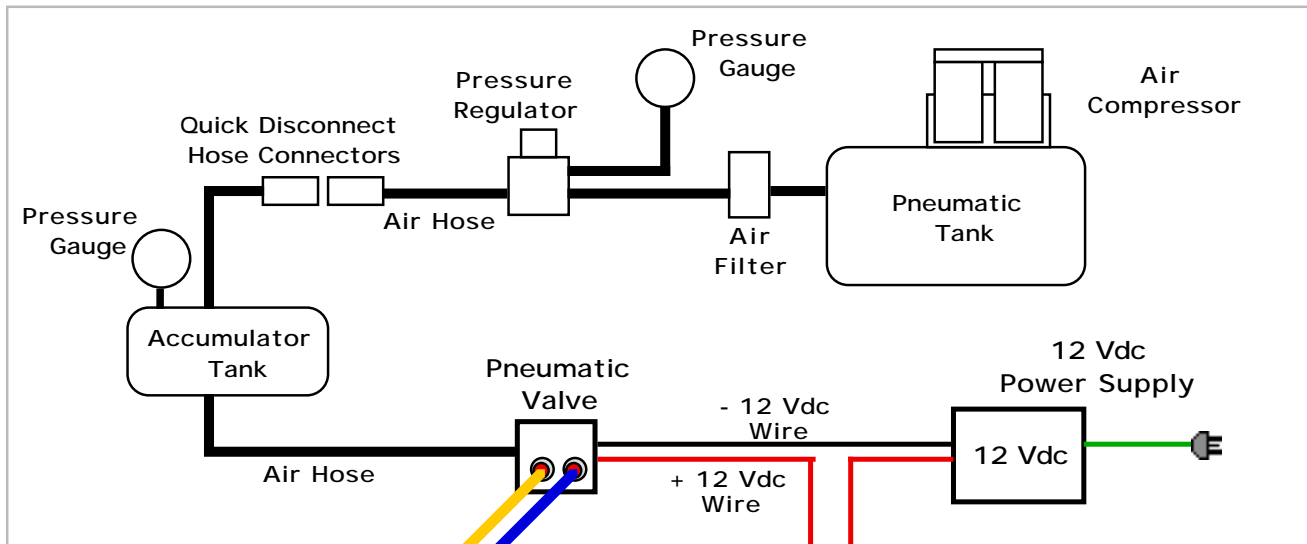
Wall Plug Power Supply  
5 Vdc @ 0.5 Amp

**Wall Power  
Adapter**



**Puppet Plus - Controller Board**  
**Optional Pneumatic Output Mode**  
**Electrical Pneumatic Valve**

*Puppeteer Plus Board*



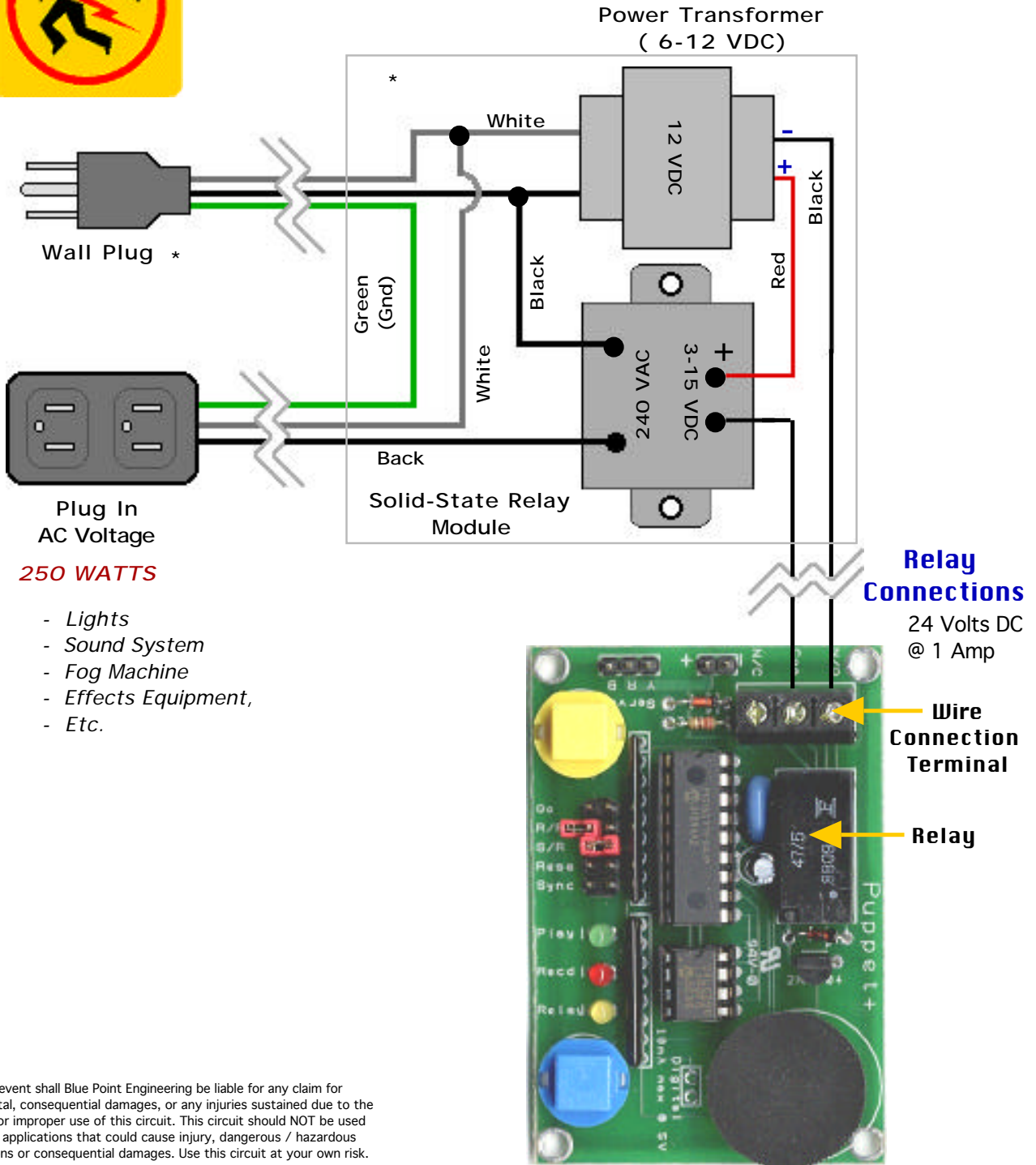
# Puppet Plus Controller Board Optional Digital to AC Output Mode

*Puppeteer Plus Board*

## Caution:



\* Use caution when working with AC Voltage. Touching or incorrectly wiring this circuit could cause serious personal injury or damage to equipment.

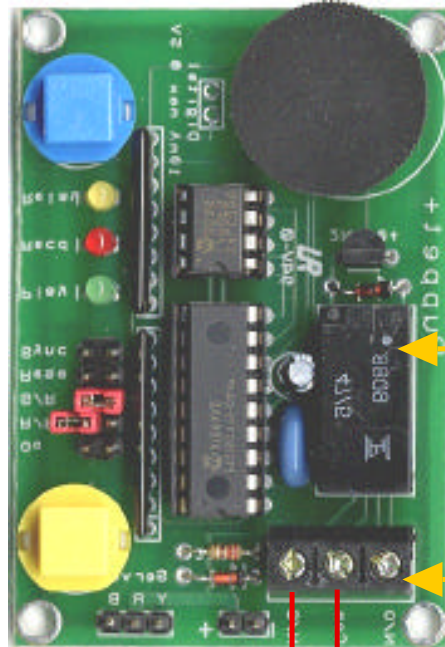


\* In no event shall Blue Point Engineering be liable for any claim for incidental, consequential damages, or any injuries sustained due to the use of or improper use of this circuit. This circuit should NOT be used for any applications that could cause injury, dangerous / hazardous situations or consequential damages. Use this circuit at your own risk.



# Puppet Plus Controller Board Optional Small DC Motor Control Mode

*Puppeteer Plus Board*



Relay

## Relay Connections

24 Volts DC @ 1 Amp

Wire Connection Terminal

12 Volt DC Power Supply

+V

Red Wire

A

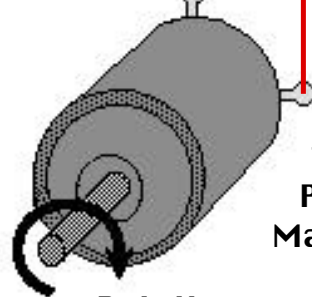
-Gnd

Black Wire

B

MOTOR POWER

Motor



12 Volt DC Permanent Magnet Motor

Rotation

OR

12 Volt DC Power Supply

-Gnd

Black Wire

A

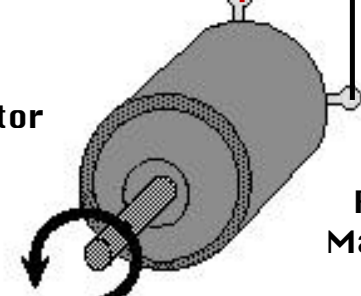
+V

Red Wire

B

MOTOR POWER

Motor

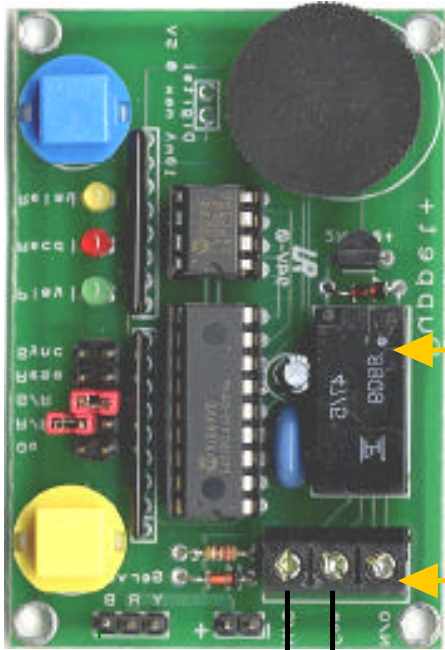


12 Volt DC Permanent Magnet Motor

Rotation

# Puppet Plus Controller Board Optional LED Effect Control Mode

*Puppeteer Plus Board*

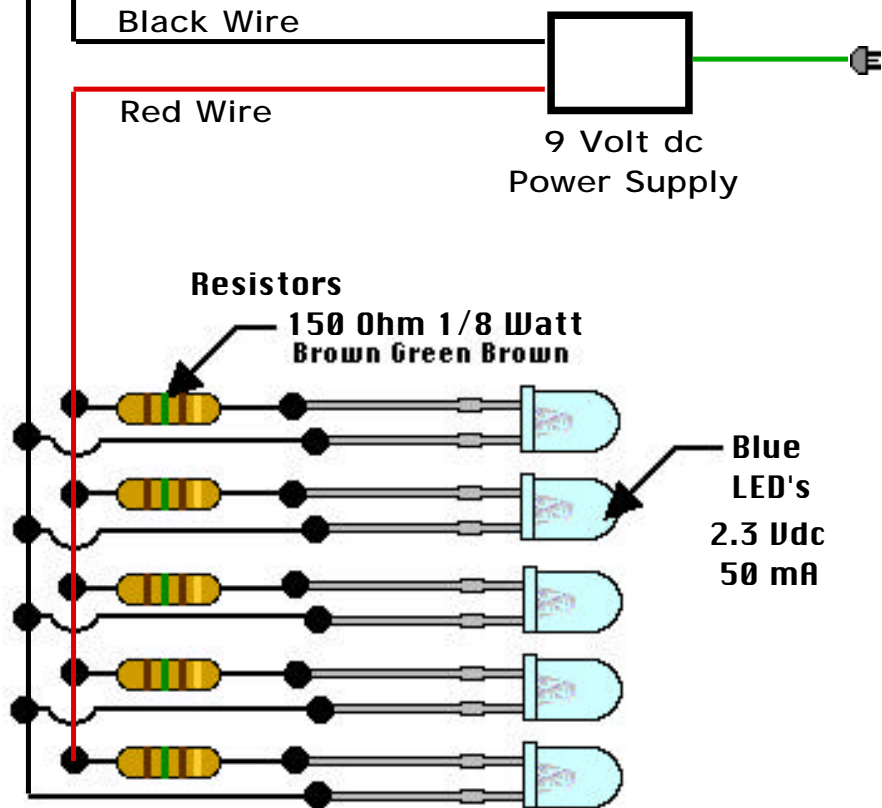


Relay

## Relay Connections

24 Volts DC @ 1 Amp

Wire Connection Terminal



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