# Wizard - IV Board

Controller

*(BPE No. WAC-0040)*

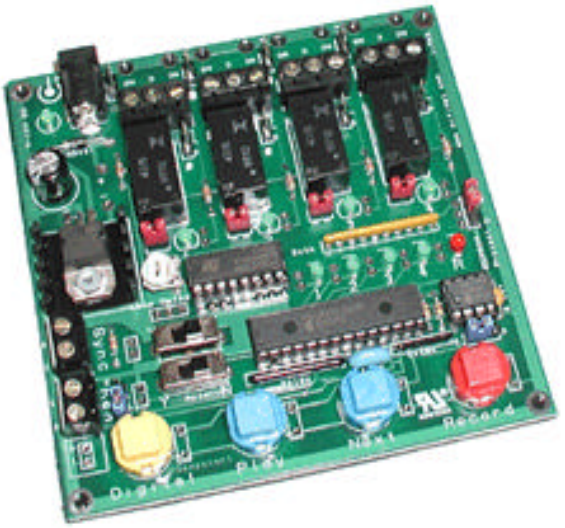


The **Wizard - IV Controller Board** or Programmable four (4) Channel Relay interface board will record and playback up to **25 minutes** of programmed **ON** and **OFF** action for 1 - 4 digital outputs / Relays ( 2 Amp @ 30 Volts dc ).

The board incorporates such features as recorded looping playback, variable delay between recorded programmed routines, auto loop, auto start-up on power start, a connection terminal for remote switch activation by manual switch, PIR sensor, pressure pad, etc, to activate playback routines.

Recording relay output sessions are built up on a channel-by-channel basis - no complex programming is needed or connection to a host computer to program routines. All programming is easily done on-board the controller through push button switches and LED status indicators.

## WIZARD - IV BOARD



*Board Size: 4" L x 4" W x 1/2"H*

*Wizard - IV Board is pre-assembled and tested. Regulated 9 Volt dc power supply @ 2 Amp power supply required*

## WIZARD - IV BOARD FEATURES:

- 4 - selectable on-board relays ( 2 Amp @ 30 Volts dc ).
- Relays have insert wire terminal connection blocks.
- 4 - direct Digital control signal 0/4.5 Volts dc -100 mA connection pads, for hard wiring to board outputs.
- On-board potentiometer to determine the time delay between playback loops during automatic loop play, fully adjustable between 0 and 65 seconds.
- On- board NEXT, PLAY and RECORD buttons.
- Record enable / disable jumper to protect recorded programming routine.
- On-board AUTO-PLAY and LOOP-PLAY switches.
- On-board Status LED's ( Green and Red ).
- Battery remote operation or wall power operation.
- Remote terminal block activation connection for manual start switch, pressure mat or PIR sensor.
- Programming and operation Green and Red status LED's.
- EEPROM - containing the programmed data, can easily be removed and copied to other Wizard- IV boards.
- Synchronization output signal to activate other Wizard boards.
- Board is powered from regulated 9 Volts dc power supply or can be run from optional Remote Battery operation for mobile setup.
- Power supply polarity protection on-board to prevent board electronics damages.
- Ability to share a common power connection when multiple device set-up is needed.
- REM - board trigger input with sensor H or L signal activation jumper.
- Many more unique features.

# Board Functions:



**Digital** - On / Off -key
Pressing the Digital key will activate the current channel selected output relay as ON or OFF.
This is a momentary switch.

**Play** - key
Replays a set of recorded relay actions.
During play back the channel LED's will form a bar-graph indicating the amount of time used.
When the recorded routine has finished playing the bar-graph-LED's will go out.
A switch, sensor may be connected to the REM connection and this will function in the same way as the Play-key.

**Next** - channel key
Changes the current active channel to the next channel.
Each key-press selects the next digital channel - 1 through 4.

**Record** - key
The record - key has no effect unless enabled by the record-enable E/D Jumper. (see drawings for details)
Press and release the record key to start recording a routine. Press and release the Record-key to stop recording. If the Record-key is held down when power is applied to the board, all memory will be erased. (Takes approximately 20 seconds, LED will form a bar-graph indicating EEprom easing is occurring.).
During the recording of a channel the LED's will form a bar-graph indicating the amount of time being used. When the action has finished playing the bar-graph-LED's will turn off.

**NOTE:**
The recording on channel -1 will set the maximum available recording time for all other channels.
Always record channel -1 first, then the other channels ( 2-4 ). Recording periods for channels 2-4 cannot be longer than for channel -1.

**D / E Jumper -** EEprom Protect.
The Record / Enable jumper protects the programmed routine in the EEprom.
If the jumper is set at the "**E**" enable position then recording will be permitted. Move the jumper to "**D**" disable recording to prevent recording to the EEprom.

**SYNC Terminal**
Synchronizing connection for multiple board module operation. On-board terminal connection delivers a pulse low signal (30 msec) at the start of playback and record event which may be used to trigger other Wizard boards connected in a chain or master module - slave module setup. Sync output to Rem input of other boards.

**REM Terminal**
Used to trigger Wizard board by remote switch, sensor. Can also be jumpered together for no-stop playback.

**LOOP -** slide switch.
To make the Wizard- IV board play the recorded moves repeatedly, move the switch to the **"Y"** position. The recorded moves will start to play when the PLAY-key is first pressed. There will be a pause at the end of playing (determine by the position of the **Loop Delay** control) after which the recorded action will start again. Note: To record new program routines, the LOOP switch must be set to the **"N"** position.

**LOOP -** delay.
**Pause between playback loop option.**
When the Wizard- IV board is set to the **LOOP "Y"** position, the length of the pause between repeated playbacks may be set by the on-board **Loop Delay** control potentiometer.
Turn the **Loop Delay** control counter clockwise (CCW) for the minimum delay (approximately 2 seconds and clockwise for the maximum delay (approximately 65 seconds).

**AUTO -** slide switch.
To make the Wizard- IV board play the recorded moves repeatedly on power - ON or reset, move the switch to the **"Y"** position. The recorded actions will start to play on any power-up.
Note: to record new program moves, the AUTO switch must be set to the **"N"** position.

**REM Jumper** - H and L positions. ( Sensor NO or NC relay input option)
To begin playback when the input line drops from + to ground, set the REM jumper to the L position. To begin playback when the action input goes from ground to + (sync pulse) set to the H position

**Clearing Memory to start a new program.**
The Enable jumper must be set at the (**E**) position and the Record-key jumper also set to the (**E**) position.
The LOOP switch and the AUTO switch must be in the "**N**" position.
The **RECORD - key** is held down during Power Up, and released after power is applied.
The LED's "1-4" will form a count down bar-graph indicating that current programmed EEPROM memory is being cleared. (This will take approximately about 20 seconds).
After the initial 20 seconds all green LED's "1-4" will turn OFF and the current selected channel LED will turn ON, indicating the board is now ready for new programming.

**Relay - NC, C, NO** connections.
NC = Normally Closed position of the relay contacts ( Circuit is ON- will open circuit (OFF) when activated )
C = Common connection to relay contacts
NO = Normally Open position of the relay contacts ( Circuit is OFF- will close circuit (ON) when activated )

Relay **BUS Jumpers**
When relay connection BUS pins have a jumper in place, the common connection for relay -1 will be the same for relays 2-4. This helps eliminate a common wire to every relay (C) when a common connection source is used for any combination of relays 1-4. ( see drawings for more details )

**Relay / Pin Output Jumpers.** When this jumper is in place, the board will control the on-board relays. The relays are rated at 30 V @ 2Amp. When the jumper is removed, the relay is de-activated and the output pins may be used as voltage drivers ( 0 Vdc or 5 Vdc @ 100mA). The pins are marked with Plus (+) and Minus (-) for correct polarity connection. Use caution when connecting to the pins to observe correct polarity (+ / - )

Board holes **+ ( Plus )** and **- ( Minus )** connections
When powering the board from a battery supply, the wires can be soldered to these holes for a more permanent connection. Observe polarity + and - to prevent damaging the board.

**Examples**

1. ***A Short Recording - New program start***

Make sure that the EEprom E/D jumper is set at the (**E**) position and that the Record-E/D jumper is also set to the (**E**) position. The LOOP and the AUTO switch must be in the "**N**" position.

Power down the Wizard-IV controller and then hold down the record key and apply power back to the board, all memory will be erased (LED's will count down, approximately 20 sec.)

Select channel -1 by pressing NEXT-channel-key until the green number 1 - LED is ON.
Press and release the RECORD-key. (The red LED will turn ON, record mode is now active)
Press and hold the Digital - key for approximately 5 seconds, then release the Digital - key
( Note: Relay -1 or Channel -1 will turn on for approximately 5 seconds and then off )
Press and release the RECORD-key at the end of the 5 seconds to end recording.

Play back of recorded program channel -1.
Press and release the PLAY-key to review the recorded digital output sequence.
Relay 1 or Channel -1 will turn on for approximately 5 seconds and then off.

Select channel - 2 by pressing NEXT-channel-key until the green number 2 - LED is ON.
Press and release the RECORD-key. (The red LED will turn ON, record mode is now active)
Press and hold the Digital - key for approximately 3 seconds, and then release the Digital- key
( Note: Relay -1 or Channel -1 will turn on for approximately 5 seconds and then off )
The recording will end automatically after approximately 5 seconds ( established by channel - 1 setting )

**NOTE:** *The recording on channel - 1 will set the maximum available recording time for all other channels. Always record channel - 1 first, then the other channels. Recording periods for channels 2-4 cannot be longer than for channel - 1.*

**Examples**

1. ***A Short Recording Cont.***

Play back of recorded program channel - 1 and 2.
Press and release the PLAY-key to review the recorded relay output sequence.
Relay -1 (Ch1) and Relay - 2 (Ch2) will turn on for recorded times and then off.
For continuous playback, set the **Loop** switch to the "**Y**" position, press the PLAY-key to start sequence.
Turn the **Loop Delay** control counter clockwise (CCW) for the minimum delay (approximately 2 seconds and clockwise for the maximum delay (approximately 65 seconds).

**Examples**

2. ***A Full Channel 1-4 Recording***

Select channel -1 by pressing NEXT-channel-key until the green number -1 LED is ON.
Press and release the RECORD-key. (The red LED will turn ON, record mode is now active)
Activate the Digital- key ON and OFF as needed for10 minutes. During the long recording of a channel the LED's will form a bar-graph after several minutes have passed, indicating the amount of time being used. When all the LED's are ON and then turn OFF you will have reached the maximum time allowed for the recorded memory. Recording time can be from 1 sec to 25 minutes for the Wizard- IV Board.
Press and release the RECORD-key at the end of the required time needed for channel -1.

( Note: Relays previously recorded will come on to help in synchronization of the channel being recorded if the board memory was not first erased. You can select any channel to re-program at any time by using the Next- key to select that channel needed. Remember that Channel -1 sets the maximum time for all the channels. if you re-program channel -1 with less time then previously recorded, all the other channels 2-4 will also be adjusted to meet the length of channel -1 record time if longer times were originally recorded for them.

Select channel - 2 by pressing NEXT-channel-key until the green number -2 LED is ON.
Press and release the RECORD-key. (The red LED will turn ON, record mode is now active)
Activate the Digital- key ON and OFF as needed for approximately 5 minutes, and then release the Digital- key. ( Note that the other channels will activate on and off to help in sync. of channel - 2)
The recording will end automatically after approximately 10 minutes ( established by channel - 1 setting )
( Note that any previously recorded channels will also play back as programmed )

Select channel - 3 by pressing NEXT-channel-key until the green number 3 LED is ON.
Press and release the RECORD-key. (The red LED will turn ON, record mode is now active)
Activate the Digital- key ON and OFF as needed for approximately 3 minutes, and then release the Digital- key. ( Note that the other channels will activate on and off to help in sync. of channel -3)
The recording will end automatically after approximately 10 minutes ( established by channel - 1 setting )

Select channel - 4 by pressing NEXT-channel-key until the green number 4 LED is ON.
Press and release the RECORD-key. (The red LED will turn ON, record mode is now active)
Press and hold the Digital- key for approximately 8 minutes, and then release the Digital- key
( Note that the other channels will activate on and off to help in sync. of channel -4)
The recording will end automatically after approximately 10 minutes ( established by channel - 1 setting )

**Play back of recorded program channel - 1 through 4.**
Press and release the PLAY-key to review the recorded digital output sequence.

**Examples**

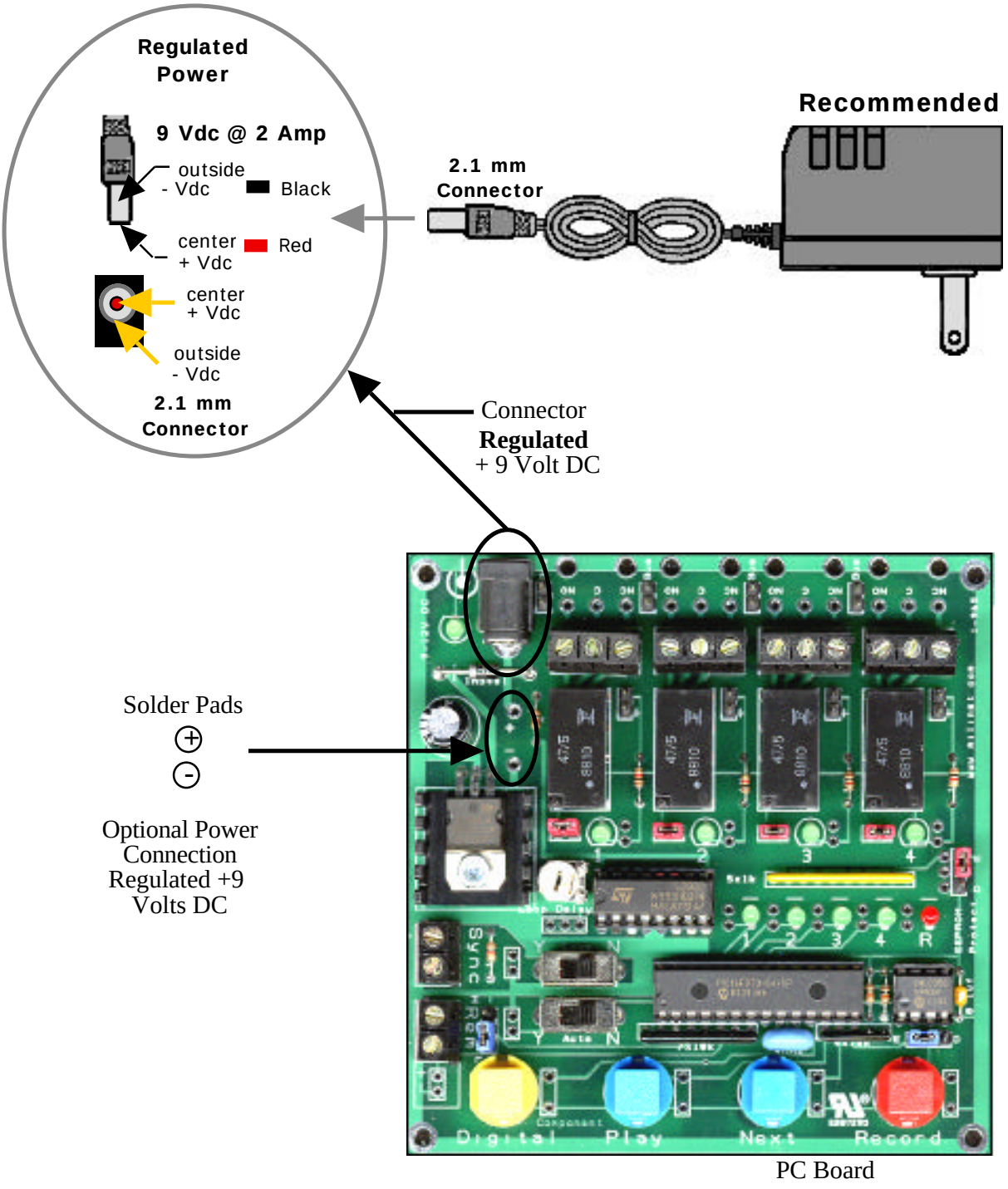
3. ***Editing a Channel***

You can re-program channels 2 to 4 that needs to be adjusted, by selecting that NEXT-channel-key until the channel needed green LED is ON.
Press and release the RECORD-key. (The red LED will turn ON, record mode is now active)
Activate the Digital-key ON and OFF as needed to make the changes.
The recording will end automatically based on channel -1 recorded time.
Remember that Channel -1 sets the maximum time for all the channels. if you re-program channel -1 with less time then previously recorded, all the other channels 2-4 will also be adjusted to meet the length of channel -1 record time if longer times were originally recorded for them.
If reprogramming channel -1, then you will need to always press and release the RECORD-key, a second time, when re-programming Channel - 1 to end the programming sequence.

## Power Supply

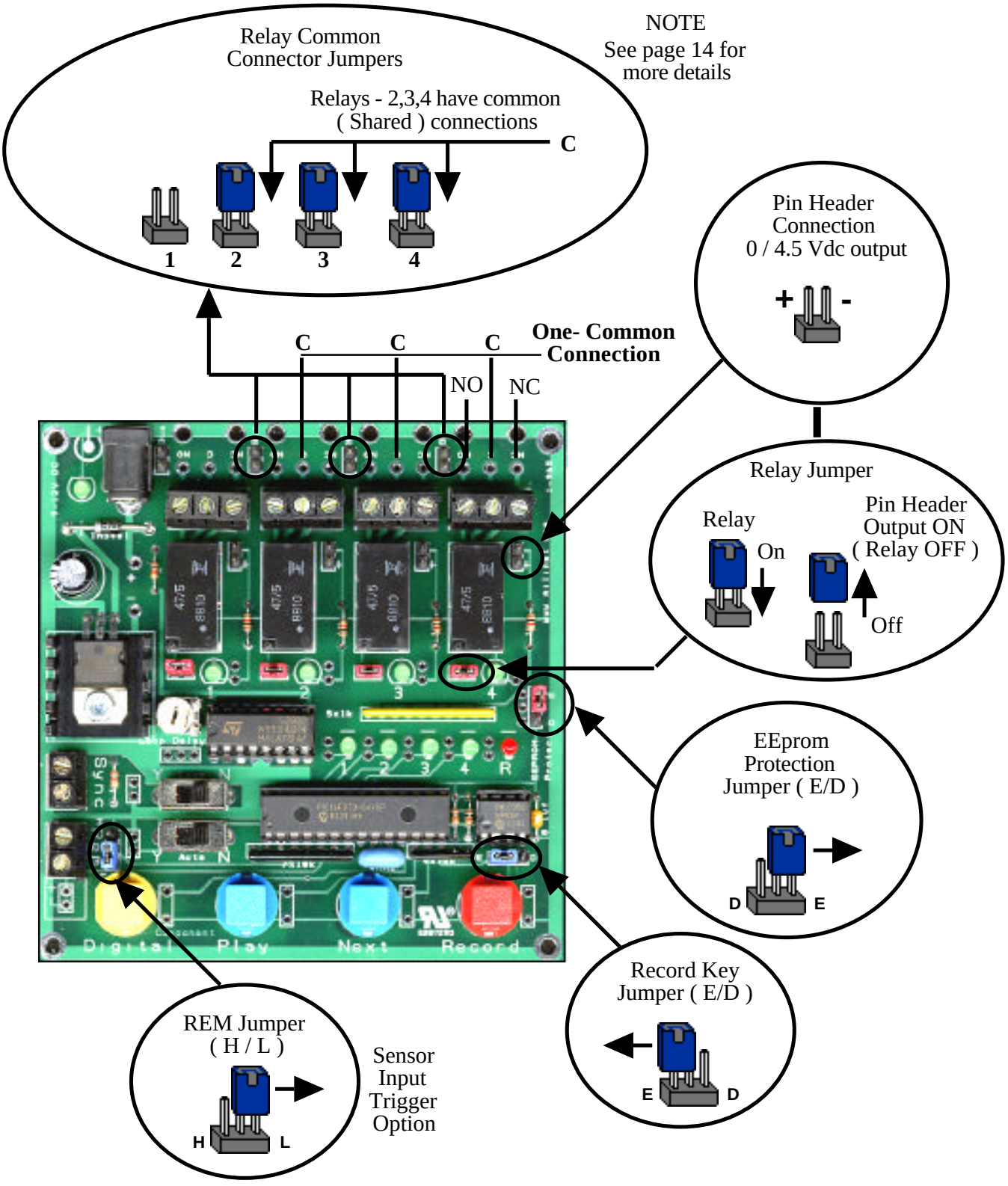
The Wizard - IV control board will work with power supplies between 9 and 12 Vdc @ 2Amp.
A small 2.1 mm socket with center positive is built-on board for quick power connection.

### Wizard - IV Controller Board
#### Power Supply Overview



# Wizard - IV Controller Board

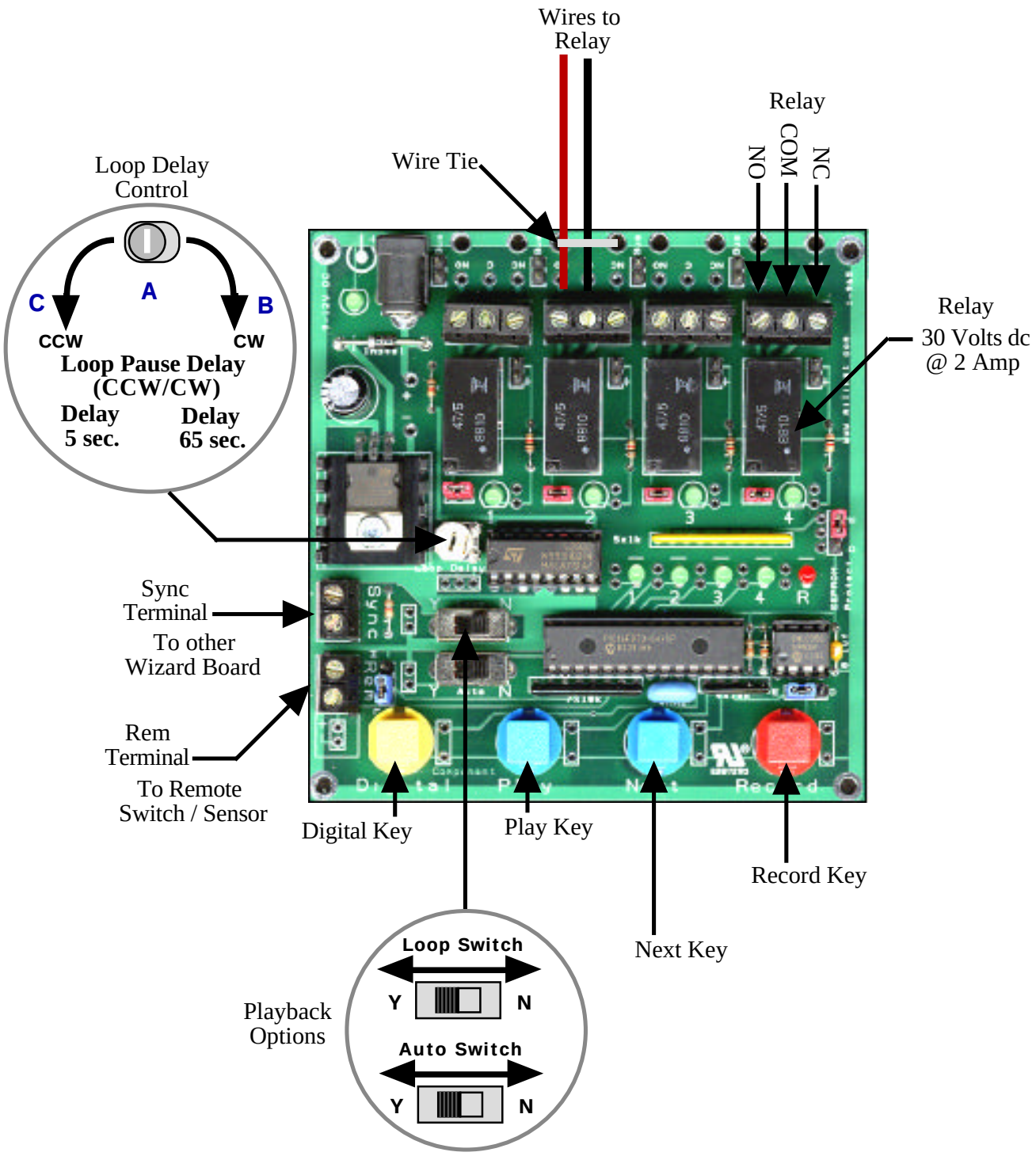
## Jumper Overview






*Version 1.0*

# Wizard - IV Controller Board
## Overview

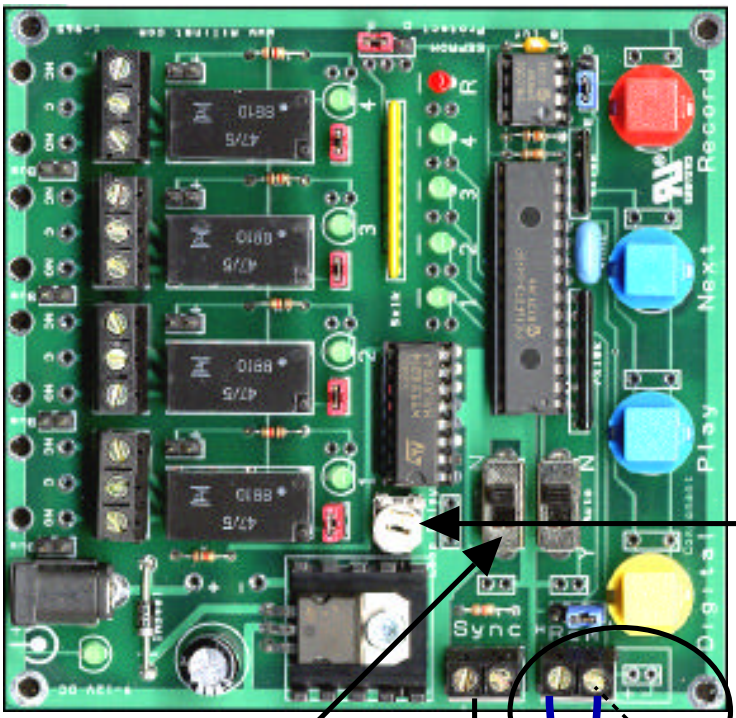


# Wizard - IV Controller Board

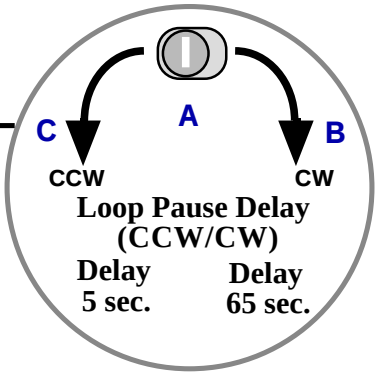
## Remote Activation / Auto-Playback

## Playback Option Modes

**REMOTE SWITCH**
- Floor Mat Switch.
- PIR Sensor.
- Manual Operated Switch.
- Relay Contact Switch, etc.

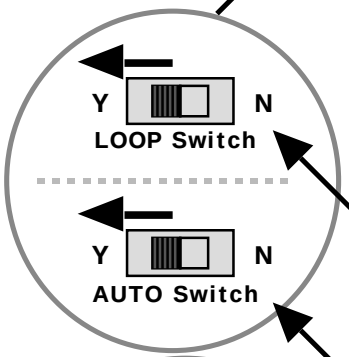



Loop Delay Control

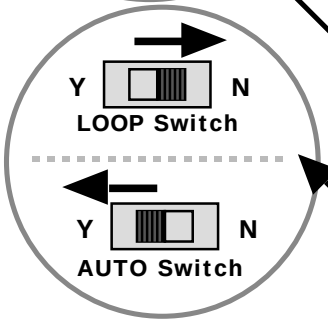



**Remote (Rem) Switch Connection**
**OR**
**Jumper Wire**

**Sync Terminal**
**( Output to other Wizard Boards (Multiple boards)**




**To replay the recorded action repeatedly, the LOOP selection switch must be in the "Y" position. The length of the pause between repeated playback is set by the Delay control, CCW (5 sec.) or CW (65 sec.).**




**The PLAY key or REMOTE switch must be pressed once to start the playback action or if The AUTO selection switch is set to the "Y" position, then the recorded playback action will begin automatically each time on power-up.**

**Note: For a "0" pause delay between playback, set the LOOP selection switch to "N" and the AUTO selection switch to "Y". Place a jumper wire across the Remote Switch connection.**

# Wizard - IV Controller Board

## Multiple Board Connection

Example:
Floor Mat Switch

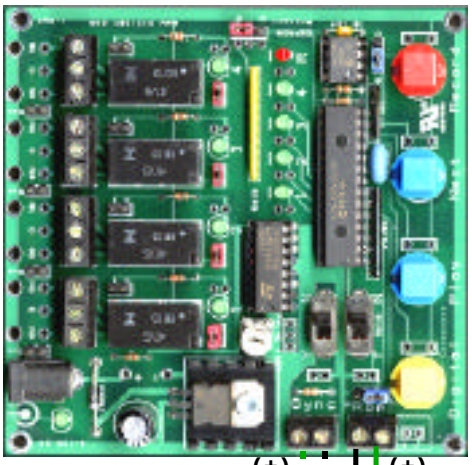
**REMOTE SWITCH**
- Floor Mat Switch.
- PIR Sensor.
- Manual Operated Switch.
- Relay Contact Switch, etc.

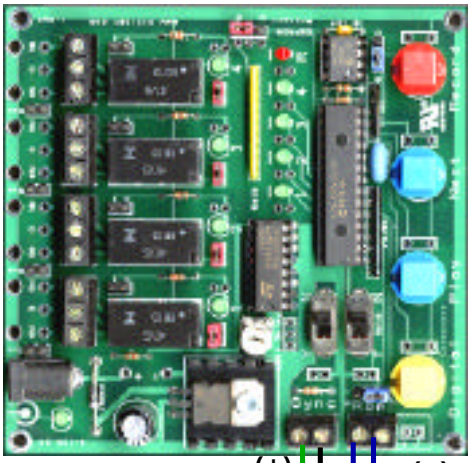
**Remote Switch / Sensor**

**Push Buttons (Momentary)**

**Wizard Board - Two** ← **Wizard Board - One**

**Wizard Board Three .....**





(+) (+) (+) (+) (+)

(-) (-) (-)

**Wizard Board Connections**

**( Rem ) Terminal Connection ( Board-2 )**

**( Sync ) Terminal Connection ( Board-1 )**

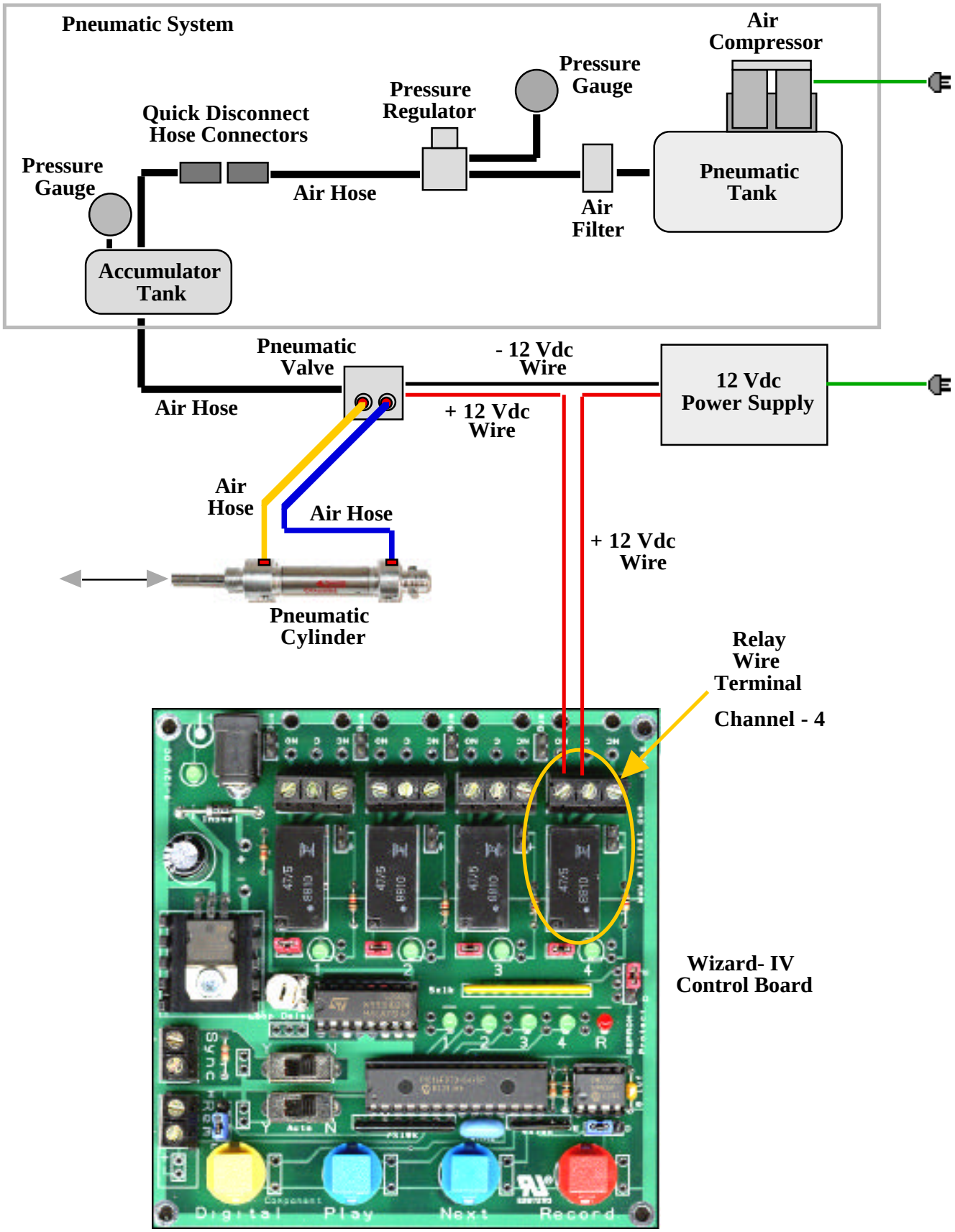
**Remote Switch ( Rem ) Terminal Connection ( Board-1 )**

**The REMOTE switch on board One (Rem) when pressed will start board One (Sync) and Trigger board Two (Rem) and board Three ( Rem ) ..... etc, activating automatic program playback actions for all boards connected.**

# Wizard - IV Controller Board

## Pneumatic Output Mode

## Electrical Pneumatic Valve

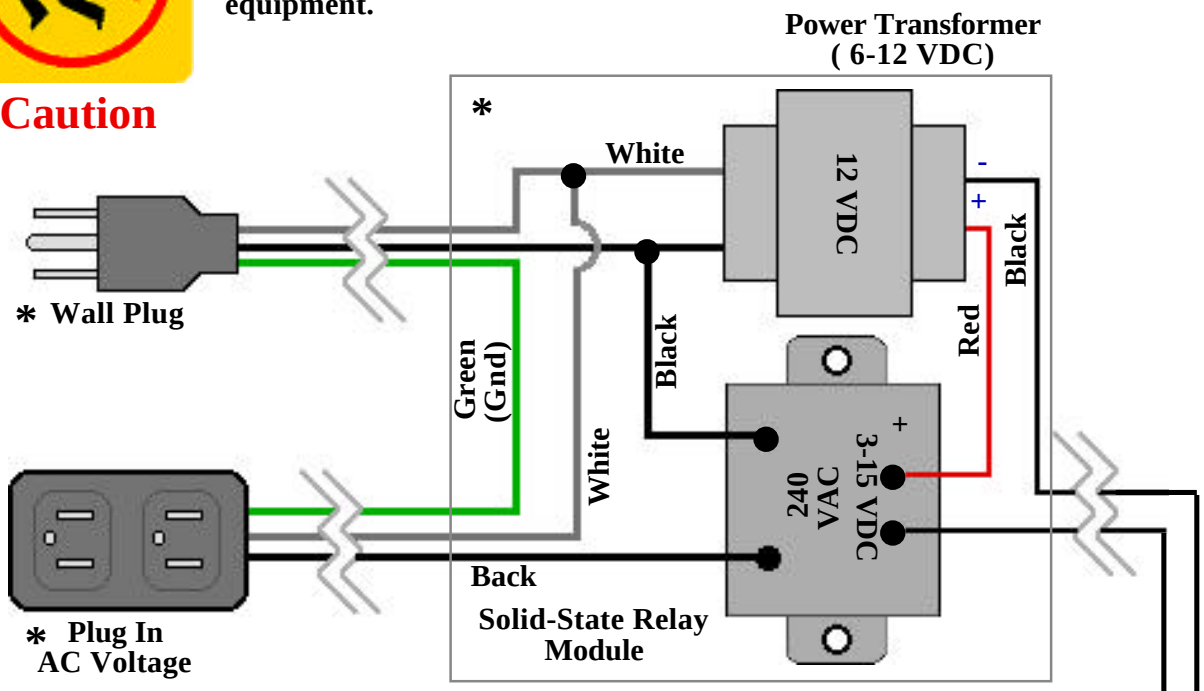


# Wizard - IV Controller Board

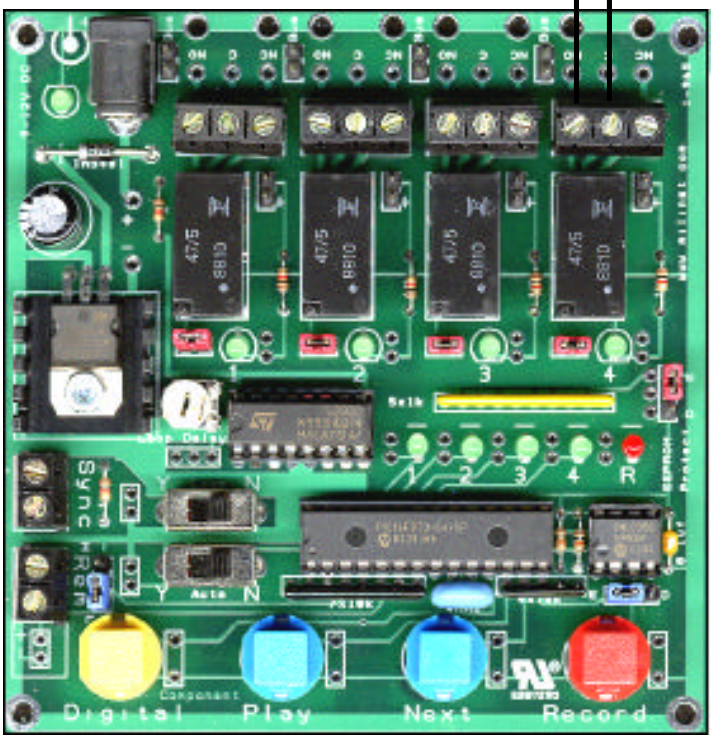
## Relay to AC Voltage Output Mode

**Caution**

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




**Relay Contacts**




**Wizard- IV Control Board**

# Wizard - IV Controller Board

Wizard - IV Controller Board
Water Valve Overview

Lawn Water Valve
(12 Volts dc)

Water
Source
IN

Water Valve
Channel - 3

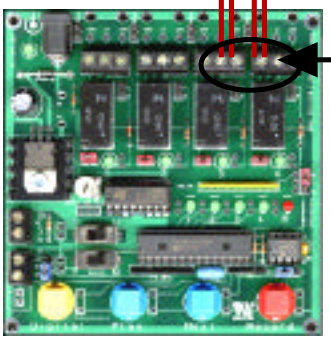
Water Valve
Channel - 4

Fountain
Heads

Fountain
Heads

Black Wire

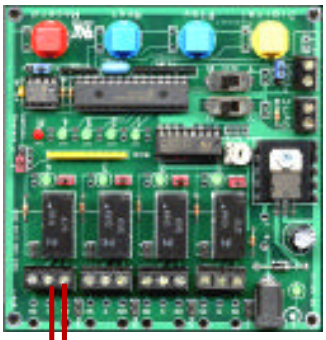
Red Wire



Channel
3 and 4

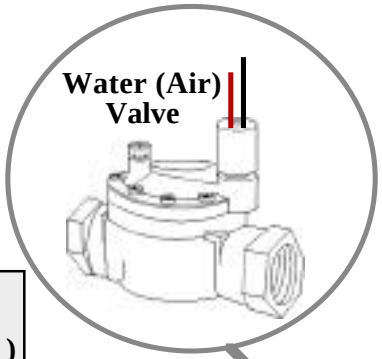
Wizard - IV
Controller Board

Power Supply
(12 Vdc @ 3 Amp )



Wizard - IV
Controller Board

Power Supply
(12 Vdc @ 3 Amp )



Water (Air)
Valve

Black Wire

Red Wire

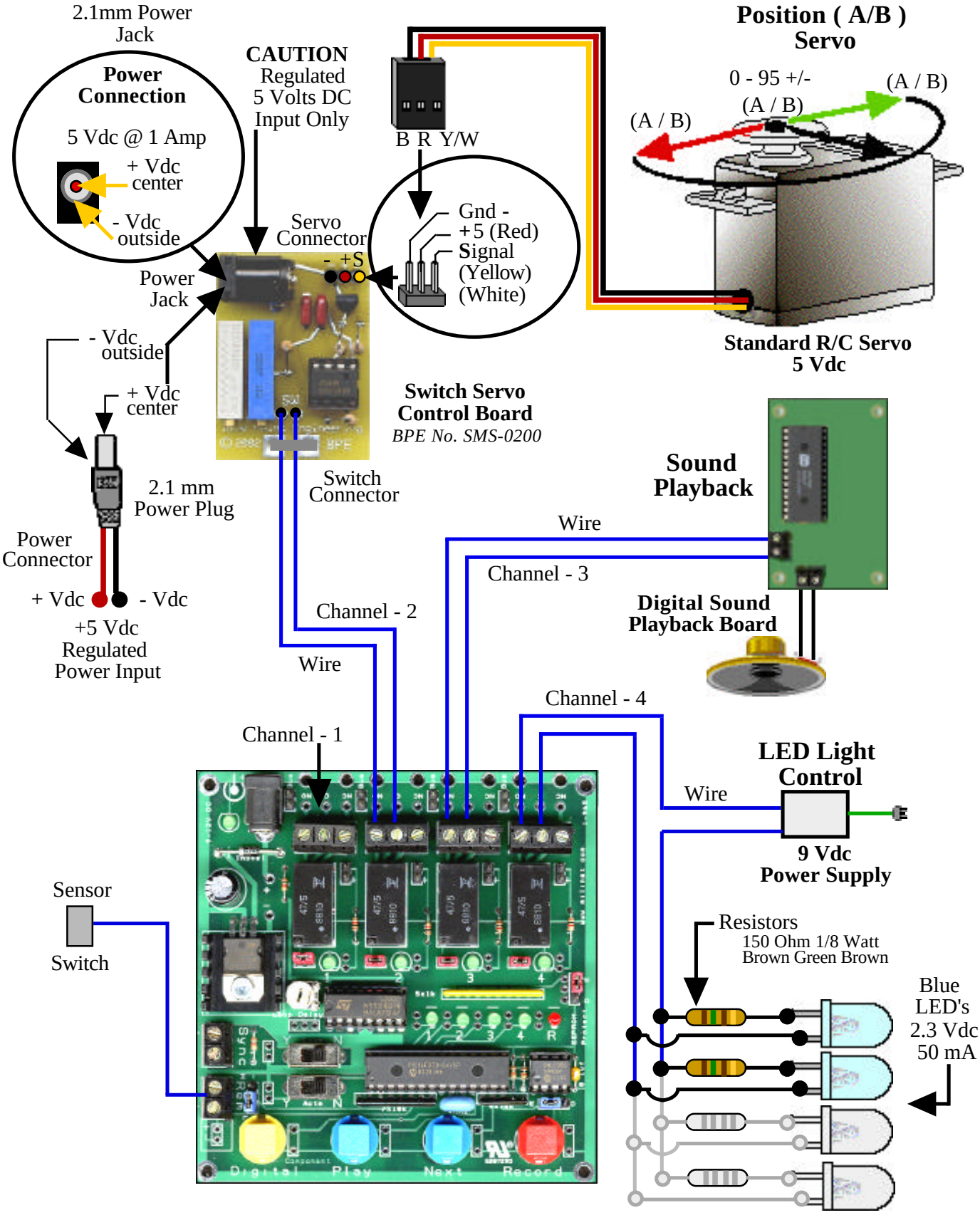
Air Tank

Confetti
Cannon



*Version 1.0*

# Wizard - IV Controller Board
## Servo / Sound / Light Effects

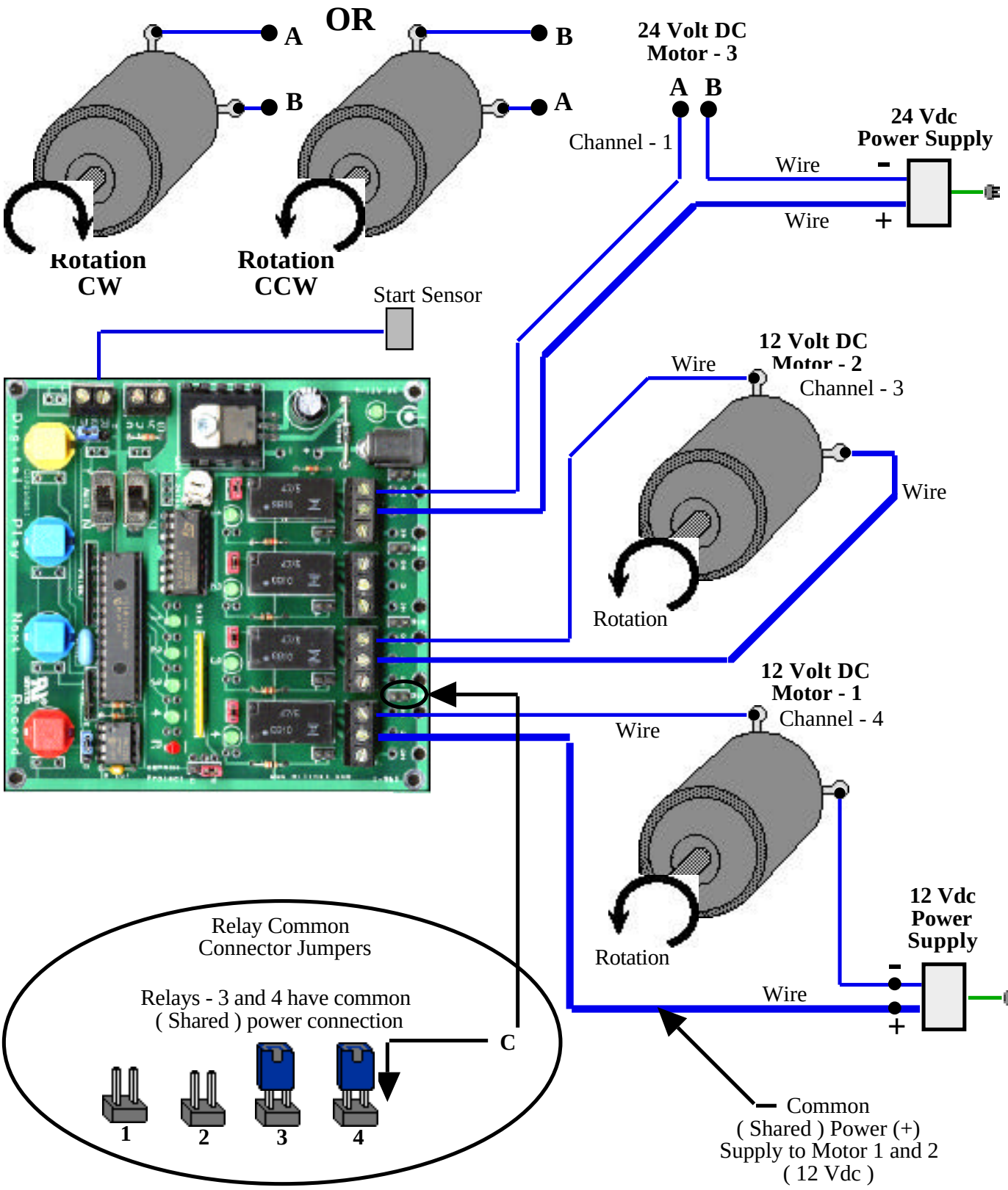





*Version 1.0*

# Wizard - IV Controller Board

## Common Power Connector / Different Supply Voltages

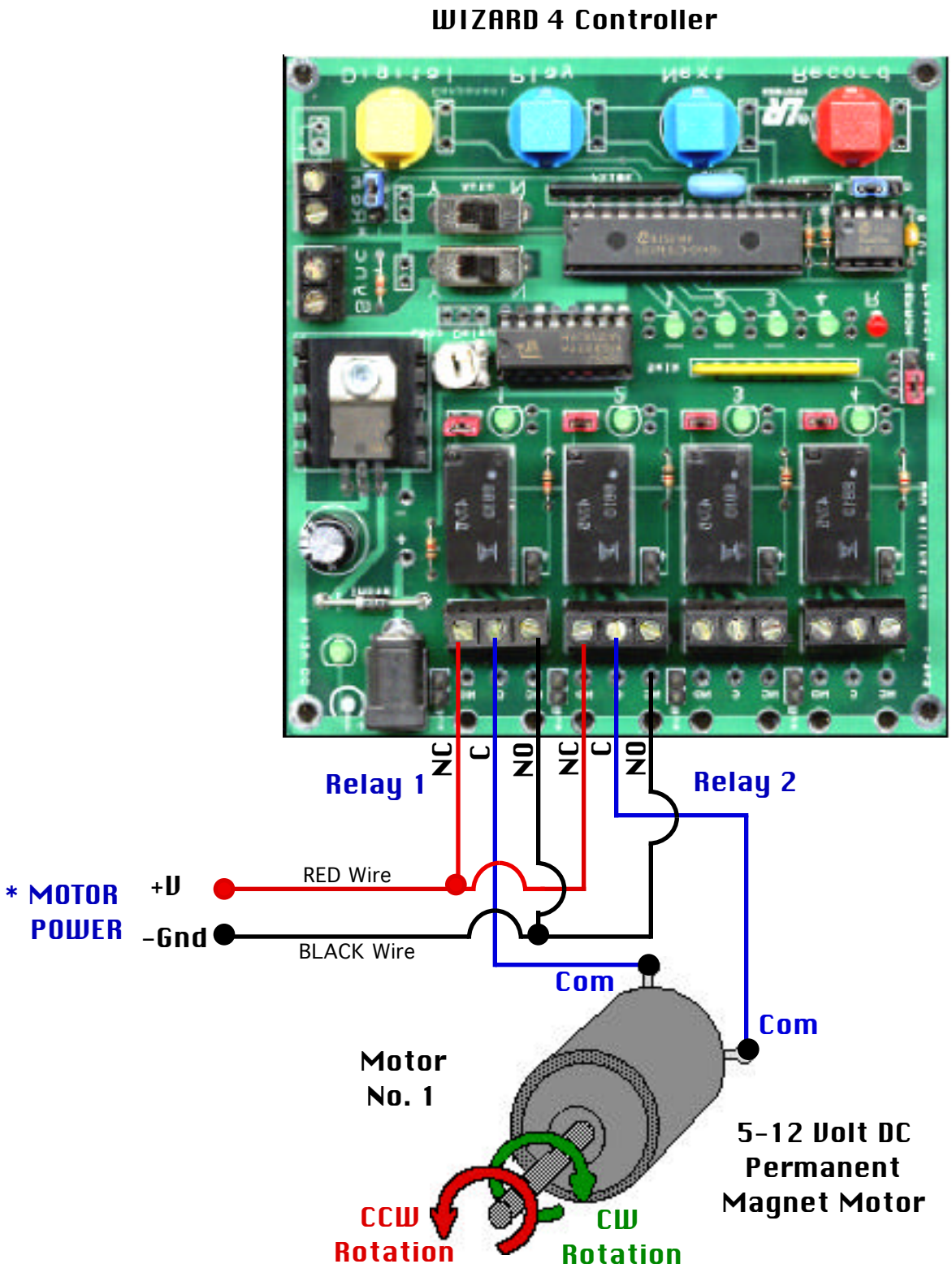





*Version 2.0*

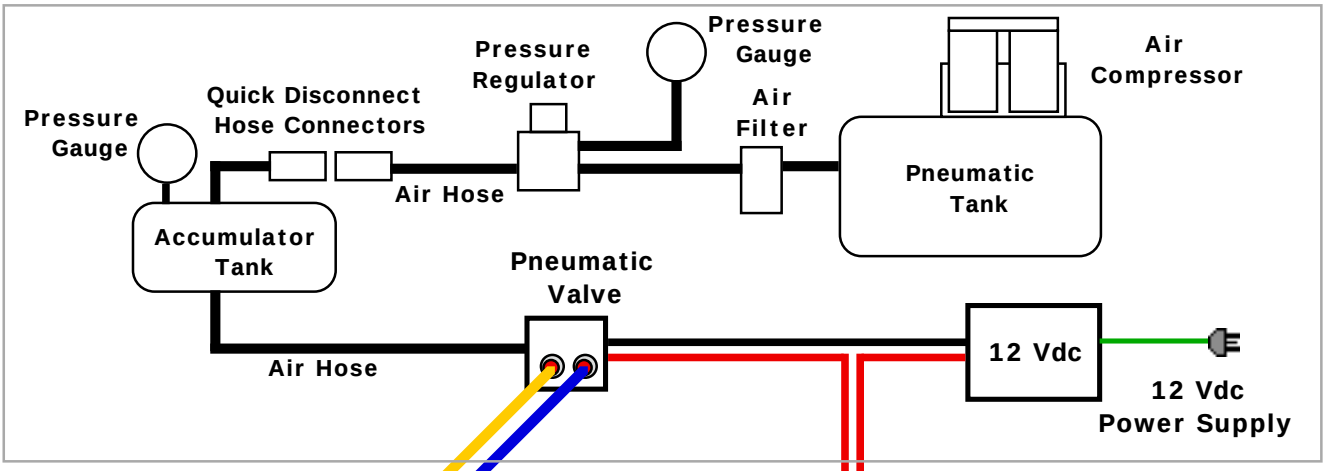
# Relay Motor Control

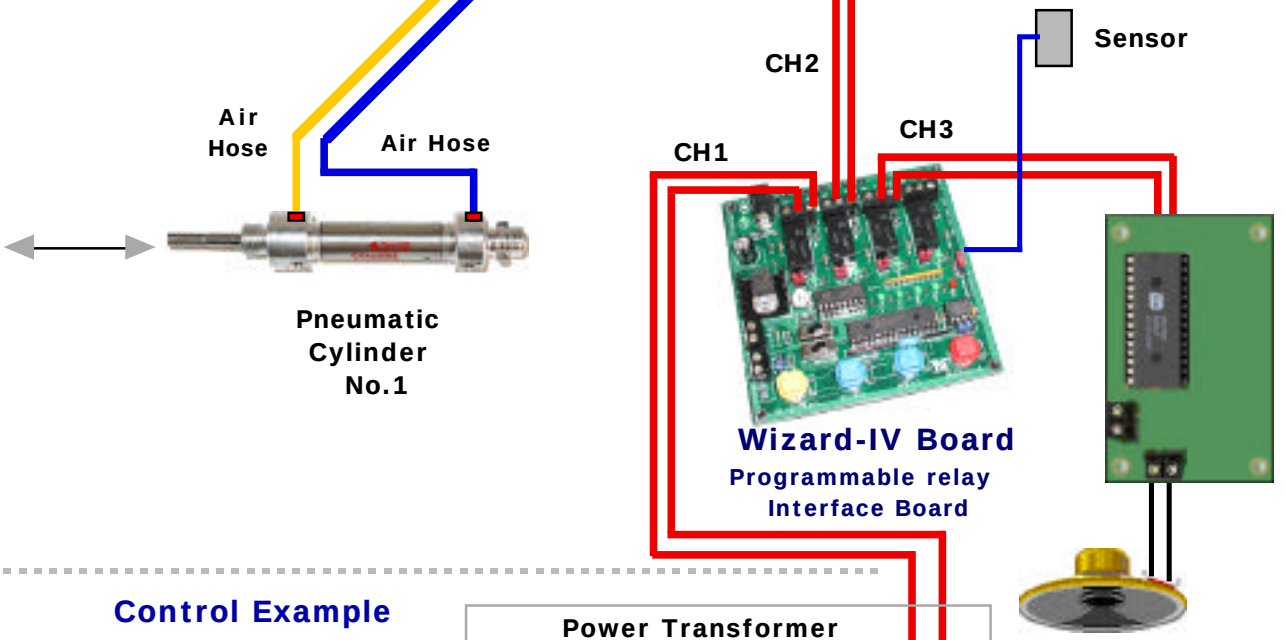
Technical T



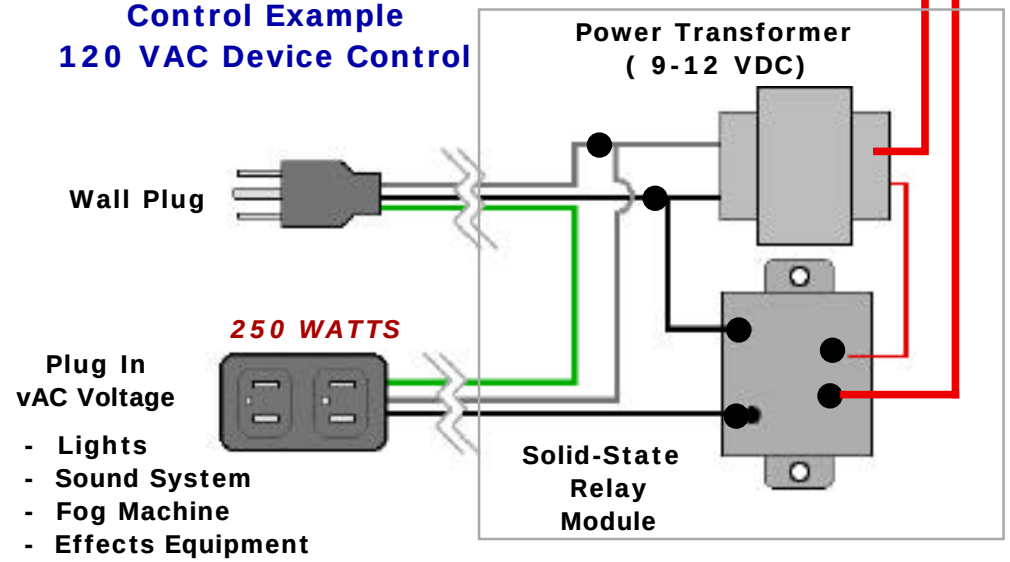
# Wizard- IV Board ( Programmable Relay Board )

## Control Example
## Electrical Pneumatic Valve




## Control Example
## 120 VAC Device Control




- Lights
- Sound System
- Fog Machine
- Effects Equipment
- Motors, other vAC Devices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12 Volt DC
Power Supply

## Control Example
## DC Motor Control

Wire

12 Volt DC
Permanent
Magnet Motor

MOTOR
POWER

12 Vdc
Power Supply

Wire

Rotation

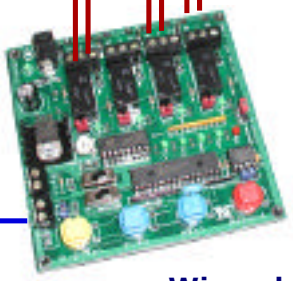
CH3

Other
Devices
Controlled
ON / OFF

CH1

## Control Example
## Water Valve Effects

Wire



Wizard-IV Board

Programmable relay
Interface Board

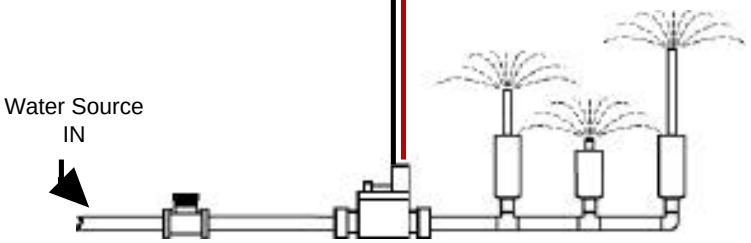
12 Vdc
Power Supply

Wire

Water Valve
Application

Sensor

Fountain Heads




Water Valve
Channel 1

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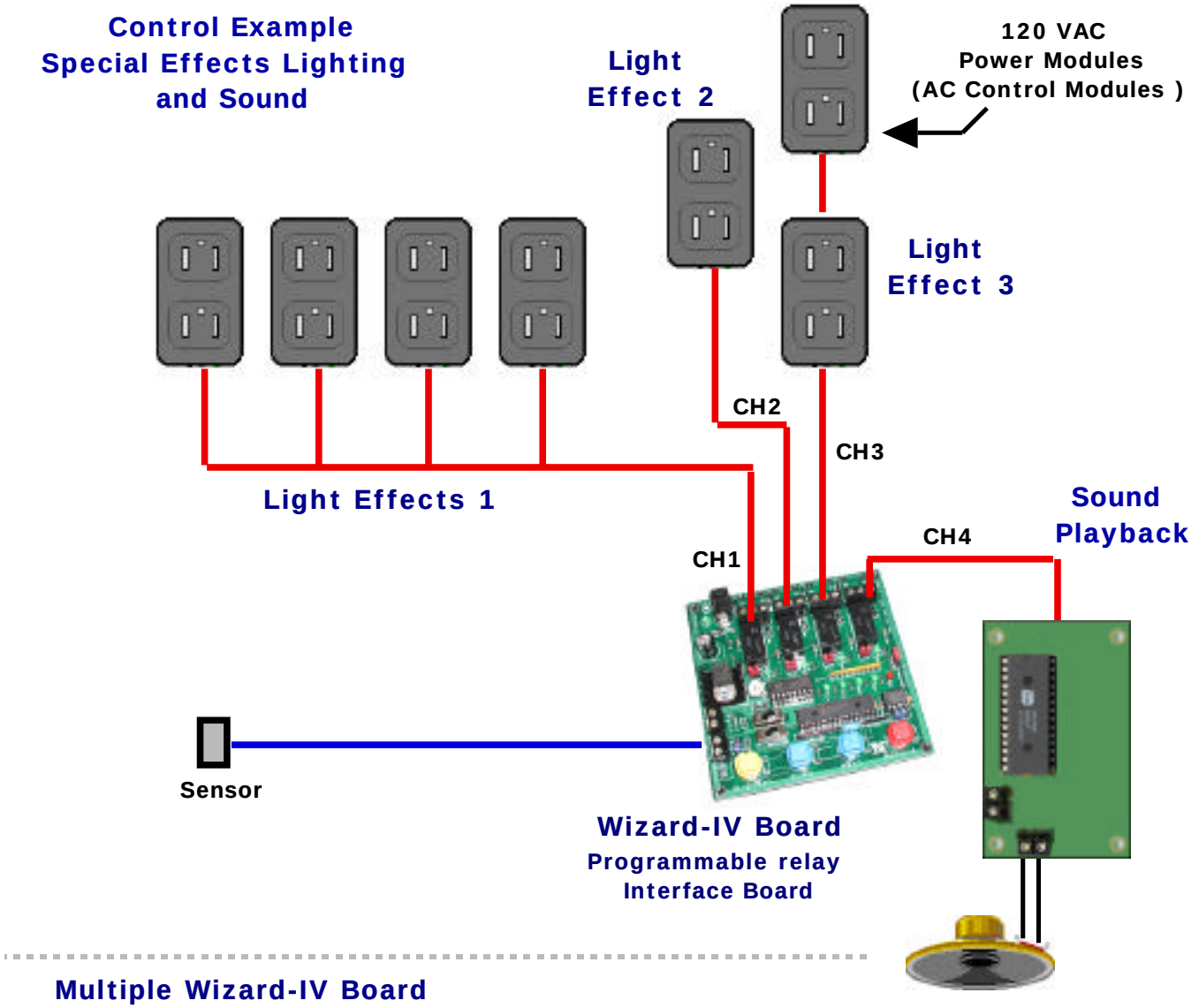
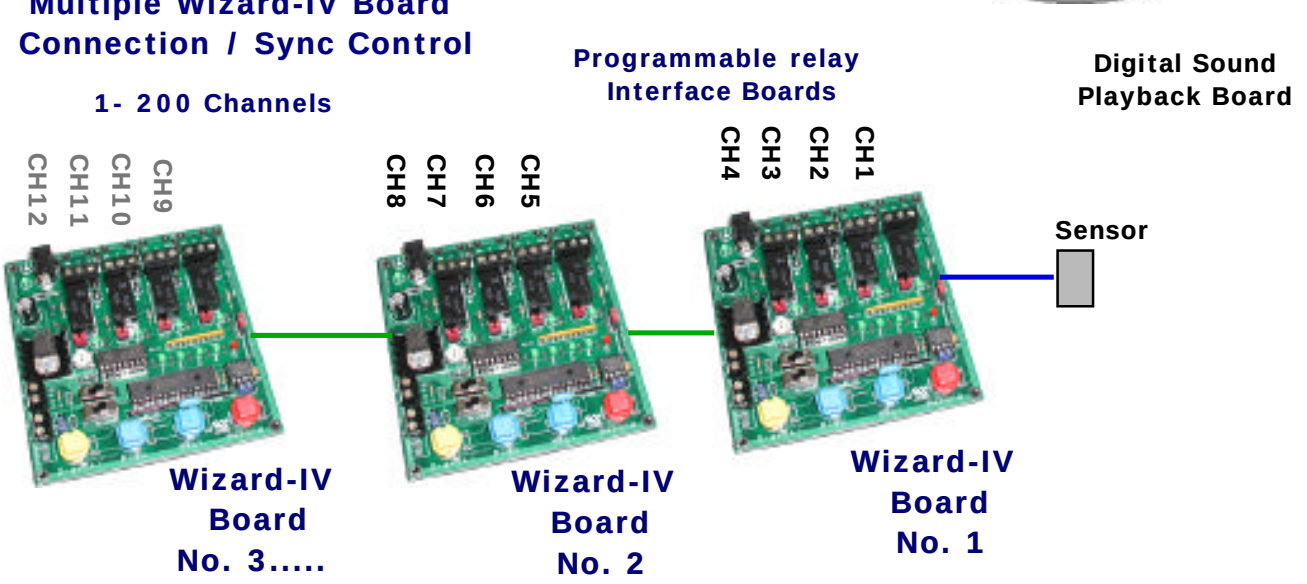
## Control Example
## Special Effects Lighting and Sound




## Multiple Wizard-IV Board Connection / Sync Control



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Controllers C

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**Pointing the Way to Solutions!**

# *Wizard- IV Board*

## *4- Channel Program Relay*

## *General Description*

The **Wizard- IV Controller Board** or Programmable 4 - Channel Relay interface board will record and playback up to 25 minutes of programmed ON and OFF action for 1 - 4 digital outputs / Relays.

The board incorporates such features as looping playback, variable delay between programmed routines, auto loop, auto start-up on power up, a connection terminal for remote switch activation by manual switch, PIR sensor, pressure pad, etc, to activate playback routines.

Recording sessions are built up on a channel-by-channel basis - no complex programming needed or connection to a host computer to program routines. All programming is easily done on-board the controller through switches and LED status indicators.

Board has many other features including on-board programming directly to the EEPROM for storage of the programmed routine and function selection switches for various board operation modes, Sync output to activate other boards, EEPROM protection, direct digital output pins for connection to the 0-4.5 Volt output. Optional user selected jumper relay activation or power down set options.

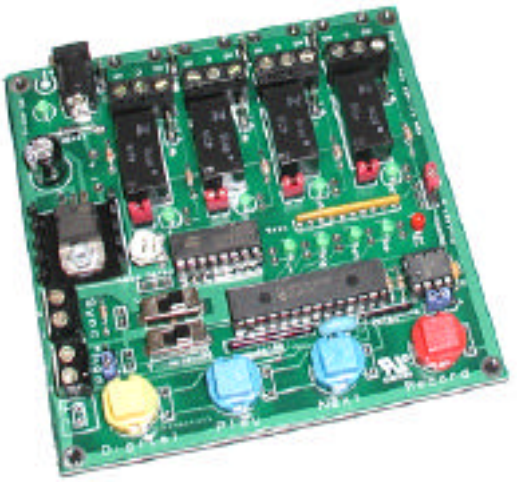
The relay contacts are rated at 30 Volt DC @ 2 Amps. Quick wire terminal blocks with wire tie down holes are built on-board for each relay. Board even has a common connector jumper option for each relay to make a single common wire connecting to the relays, eliminating extra wiring.

On-board EEPROM can also be easily duplicated for multiple board use.
Board is powered by a 9 Volt regulated power supply connected to the on-board 2.1mm socket.

(Regulated 9 Volts dc power supply not included)

## *Applications*

- Security
- Animatronics
- Haunted Attractions
- Robotics
- Media Arts
- Technology
- Lighting Effects
- Other



Controller is pre-assembled and tested
Board Size: 4" L x 4" W x 1/2" H
Power Requirements: 9Volts dc @ 1 Amp

## *Features*

- 4 selectable onboard relays ( 2 Amp @ 30 Volts dc ).
- Relays have insert wire terminal connection blocks.
- 4 direct Digital control signal 0-4.5 Volts dc -100 mA connection pads, for hard wiring to board outputs.
- On board Potentiometer to determine the time delay between play loops during automatic loop play, fully adjustable between 0 and 65 seconds.
- On board NEXT, PLAY and RECORD buttons.
- Record enable / disable jumper to protect programming.
- On board AUTO-PLAY and LOOP-PLAY switches.
- On board Status LED's (Green and Red).
- Battery remote operation or wall power operation.
- Remote terminal block activation switch connection.
- Programming and operation green and red LED's.
- EEPROM - containing the programmed data, can easily be removed and copied to other Wizard boards.
- Synchronization signal to activate other Wizard boards.
- Board is powered from regulated 9 Volts dc power supply or can be run from optional Remote Battery operation for mobile setup.
- Many more unique features.

## *Ordering Information*

**Catalog Number:**
**WAC-0040**

**For more information on this product or to place an order**

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