

Animatronic Wizard - 3 Board

Version 3.0 2009

Controller

(BPE No. WAC-0030)

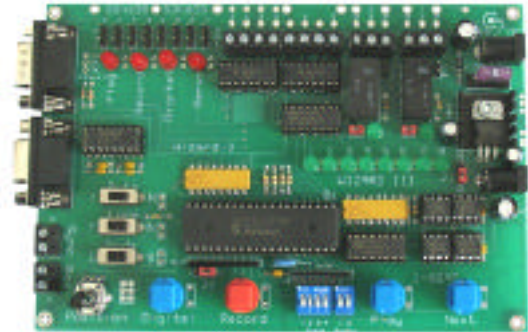
Page 1

The **Wizard 3 Board** will record and playback up to 4 separate tracks for up to 8 R/C type servo channels and 8 digital channels. The maximum recording time per track is 3 minutes for multiple track operation or 6 minutes for single track operation. The board may be connected to the optional Sound Board Pro Board to provide audio accompaniment to the tracks.

The board incorporates features such as looping action with variable delay between loop sequences, auto start-up on power up, a connection interface terminal for a PIR, remote switch or floor sensor pressure pad to initiate playback and the ability to daisy chain several boards together.

Recording sessions for servos and digital channels are easily programed through on-board program keys to build a track-by-track basis of servo motion and digital output action with no complex programming required. All previously recorded tracks are re-played to aid synchronization. Playback of recorded sessions are easily activated by an on-board button, or remote switch.

WIZARD - 3 BOARD



Board Size: 6-5/8" L x 4-1/2" W

*Wizard - 3 Board is pre-assembled and tested.
8-Bit Resolution on Servo Outputs.*

*Recommended regulated +9 Vdc @ 2 Amp Wall
power supply and regulated +6 Vdc @ 3 - 5 Amp
power supply.*

WIZARD - 3 BOARD FEATURES:

- 8 Servo output channels, each capable of recording and playback of up to 3-6 minutes of action.
- 8 Digital switched ON/ OFF channels capable of recording and playback of up to 3-6 minutes of action at +4.5 Volts dc @ 100 mA output.
- On board Potentiometer to adjust servo positions during recording or to determine the time delay between playback loops during automatic loop play - adjustable between 0 and 180 seconds.
- 2- digital channels configured with on-board selectable relays (30 Volt @ 2 Amp DC)
- On board NEXT, PLAY, DIGITAL and RECORD programming push buttons.
- Record enable / disable jumper block to help safe guard programmed actions.
- AUTO-PLAY, LOOP-PLAY and Servo Digital MODE selection switches for configuring board functions / operation.
- Remote activation switch connection.
- Programming and operation status Green and Red LED's
- The servo outputs provide standard pulse coded signals of between 1 msec and 2 msec duration repeated every 24 msec making it suitable for all standard hobby +5 Volt dc R/C type servos.
- EEPROM - containing the programmed data, can easily be removed and copied to other Wizard boards.
- On board support for other optional control boards (AC Controller, Motor Bridge, etc.).

Board Functions

NEXT-channel-key : Changes the current active channel for manual movement and recording.

Each key-press selects the next channel: 1 through 8

When the Servo option (**S** mode) is selected-servos 1 through 8.

When the Digital option (**D** mode) is selected-digital channels 1 through 8.

OPERATING / PLAYBACK : Set the Enable jumper block to the **(D)** disabled position.

(This will protect the recorded program from being cleared or accidentally erased).

Set the LOOP switch and the AUTO switch to the **"Y"** position.

Press the PLAY-key and watch your recorded programming sequence in action.

You can adjust the POSITION-control to set a delay between 0 sec. to 120 sec. for the looped playback.

(Your program will playback, stop-wait and restart automatically based on the time delay you set)

NOTE: you can also activate the playback sequence manually away from the Wizard - 3 board with the REMOTE option by moving the LOOP switch to the **"N"** position and then pressing the PLAY- key or activate the connected REMOTE switch to start playback. (Connected to **Rem** Terminal)

(Check out the playback options information drawing for various playback features available)

Last selected Channel LED will turn ON indicating a waiting status for the next switch activation between playback or recording modes.

Clearing Memory / Full Memory Erase to start a new program. (Note will wipe all moves recorded)

Note: is strongly recommended when changing from single track to multiple track operation or vice versa to do an all erase to prevent any shadow recorded routines showing up. (For a single track memory erase set the Track selector switch / jumper ON for the required track section hold down the Record button while applying power to the Wizard-3 Board, release the record button once the bar-graph LEDs start to light(See manual section on Track Selection for more details).

To Erase: Set all tracks to the ON position

The Enable jumper must be set at the **(E)** enabled 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 "1-8" will form a count down bar- graph indicating that current programmed EEPROM memory is being cleared. (This will takes approximately about 30 seconds).

After the initial 30 seconds all green LED's "1-8" will turn OFF and the current selected channel LED will turn ON, indicating the board is now ready for new programming.

SYNC Terminal : Synchronizing connection for multiple board module operation. 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. The Sync line signal is normally held high.

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- 3 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 pressed. There will be a pause at the end of playing (determine by the position of the Move control) after which the moves will start again. Turn the MOVE control counter clockwise (CCW) for the minimum delay (10 seconds and clockwise for the maximum delay (approx 120 seconds). The PLAY LED flashes during the pause periods set.
Note: to record new program moves, the LOOP switch must be set to the **"N"** position.

AUTO - slide switch : To make the Wizard- 3 board play the recorded moves repeatedly on power - ON or reset, move the switch to the **"Y"** position. The recorded moves will start to play on any power-up.
Note: to record new program moves, the AUTO switch must be set to the **"N"** position.

Pause between play loop option : When the Wizard- 3 board is set to the **LOOP "Y"** position, the length of the pause between repeated playing may be set by the MOVE-position-control. Turn the MOVE-position-control counter clockwise for the minimum delay (0 seconds) and clockwise for the maximum delay (approx. 120 seconds). The Play LED flashes during the pause period.

Servo Outputs : The servo outputs provide standard pulse coded signals of between 1msec and 2msec duration repeated every 24msecs making it suitable for all standard R/C type servos.

Digital Outputs : The digital outputs configured as: Output 1 - 2 Relay - 30 Volts @ 2 Amp with Common, N.O. and N.C contacts. (Jumper select Relay or Output Pins + / - 4.5 Volts DC @ 100 mA) (Digital 3-4 have +/- wire terminal connection blocks) (Outputs 3 - 8 do not have a relay / LED indicator option, 100 mA Output).

Track Selection Switch / Inputs : For single track record and playback mode (up to 6 minutes total record time) - set all track selectors to OFF. For multiple track recording (up to 3 minutes per track) set each track selected to the ON position. (See manual section on Track Selection for more details).

PLAY -key : Replays a set of recorded moves. During playback the channel LED's will form a bar-graph indicating the amount of time used. A switch may be connected to the remote connector (REM) and this will function in the same way as the play-key. When the moves have finished playing the bar-graph LED's will turn OFF, and LED number 1 will turn ON.

POSITION -control (On-board Potentiometer) : When not in Playback mode the Position control alters the motion of the servo on the current channel (if selected). **NOTE:** If the digital channels are selected (D Mode slide switch) the Move control is inoperative. You can adjust the POSITION-control to set a delay between 10 sec. to 120 sec. for the automatic looped playback mode. The D/S MODE slide switch must be in the S position to operate the 8 servos.

DIGITAL -key : When a digital channel is selected, pressing the DIGITAL- key will operate that particular digital channel, **ON** when pressed (Relay ON) and **OFF** when released (Relay OFF). The Digital Key can be Held Down or pulsed ON and OFF as needed.

MODE D / S - Slide Switch : When in the **S** mode the Servo option is selected -servos 1 through 8 are active in record mode. When in the "**D**" mode the Digital option is selected -digital channels 1 through 8 are active in record mode. When the LOOP play switch is in the "**Y**" mode, the D-S Mode switch determines whether the servos will move instantaneously back to their start position (D) at the end of the loop or will move back smoothly (S).

RECORD-Enable link : If the jumper is set at the "Enabled position, recording will be permitted. Remove to "Disable recordings

If the record key is held down during power up, all memory will be erased. During erase mode the green channel LED's will form a bar-graph indicating count down time till done. (approximately 20 seconds)

RECORD key : The RECORD-key has no effect unless enabled by using the RECORD-Enable jumper link. Press and release the RECORD key to **Start** recording. Press and release the RECORD key to **Stop** recording. During recording the green channel LED's will form a bar-graph indicating the amount of time used (up to 6 minutes in single track mode). When the recording mode has finished, or reached the max time allowed, the bar-graph LED's will turn Off. **NOTE: The recording on channel one will set the maximum available recording time for all other channels. Always record servo channel one first. Recording periods for further channels two through eight can not be longer than that set for channel one.**

NOTE: Record time for a single track is 6 minutes and for multiple track mode up to 3 minutes per track.

Examples

1. A Short Servo Motion Recording

Servo Channel Program

- Make sure that the MODE switch has been switched to the **S**, this puts the Wizard- 3 controller into the Servo Output Mode. The Enable jumper must be set at the (**E**) and the LOOP and the AUTO switch must be in the "**N**" position.
- Power Down the Wizard-3 controller and then hold down the record key during re-power up, all memory will be erased (LED's will count down, aprox 30 sec.)
- Select channel-1 by pressing NEXT-channel-key until the green number 1 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Rotate the Move-position-control for 4 seconds.
Servo number 1 will move depending on position of MOVE-position-control motion. Other Servos number 2-8 may move, following moves previously recorded.
- Press and release the RECORD-key at the end of the 4 seconds to end recording.
- Select channel- 2 by pressing NEXT-channel-key until the green number 2 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Rotate the MOVE-position-control.
The recording will end automatically after 4 seconds. (Set by Channel 1 Time)
- Select channel- 3 by pressing NEXT-channel-key until the green number 3 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Rotate the MOVE-position-control. The recording will end automatically after 4 seconds. (Set by Channel 1 Time)
- Select channel- 4 by pressing NEXT-channel-key until the green number 4 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Rotate the MOVE-position-control. The recording will end automatically after 4 seconds. (Set by Channel 1 Time)
- Press and release the PLAY-key to review sequence.

Examples**Digital
Channel
Program****2. A Short Digital Output Recording**

- Make sure that the MODE switch has been switched to the "D" this puts the Wizard-3 controller into the Digital Output Mode. The Enable jumper must be set at the (E) and the LOOP and the AUTO switch must be in the "N" position
- Select channel-1 by pressing NEXT-key until the green number 1 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Press and hold the Digital-key for 4 seconds.
Other Digital Channels may activate from previously recorded events.
- Release the Digital-key and then press and release the RECORD-key at the end of the 4 seconds to end recording.
- Select channel- 2 by pressing NEXT-key until the green number 2 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Press and release multiple times, or hold the Digital-key for 4 seconds.
The recording will end automatically after 4 seconds. (Set by Channel 1 Time)
- Select channel- 3 by pressing NEXT-key until the green number 3 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Press and release multiple times, or hold the Digital-key for 4 seconds.
The recording will end automatically after 4 seconds. (Set by Channel 1 Time)
- Select channel- 4 by pressing NEXT-key, repeat the record and activate sequence.
- Press and release the PLAY-key to review the recorded digital output sequence.

Examples**Servo
Channel
Program****3. A Full-length Recording with Servo and Digital**

- Make sure that the MODE switch has been switched to the S, this puts the Wizard-3 controller into the Servo Output Mode. The Enable jumper must be set at the (E) and the LOOP and the AUTO switch must be in the "N" position
- Power Down the Wizard-3I controller and then hold down the record key during re-power up, all memory will be erased (takes approximately 20 seconds)
- Select servo channel-1 by pressing NEXT-channel-key until the number 1 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Rotate the MOVE-position-control.
Servo 1 will move depending on position of MOVE-position-control.
Other Servos will move following moves previously recorded.
Recording will end when EEprom memory is full. (Aprox 6 minutes for single routine)
(During recording the green channel LED's will form a bar-graph indicating the amount of time being used.)
- Select channel- 2 by pressing NEXT-channel-key until the number 2 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Rotate MOVE-position-control.
Recording will end when EEprom memory is full.
(During recording the green channel LED's will form a bar-graph indicating the amount of time being used.)
- Select channel- 3 by pressing NEXT-channel-key until the number 3 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Rotate MOVE-position-control.
Recording will end when EEprom memory is full.
- Select channel- 4 by pressing NEXT-channel-key until the number 4 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Rotate MOVE-position-control.
Recording will end when EEprom memory is full, or you pressed record button- stop
- Channel- 1 through Channel- 4 Servos are now programmed.
- Press and release the PLAY-key to review the recorded servo sequence.

**Digital
Channel
Program**

- Make sure that the MODE switch has been switched to the D, this puts the Wizard-3 controller into the Digital Output Mode.
- Select channel-1 by pressing NEXT-channel-key until the number 1 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Press, Release or Hold the Digital-key as needed turning the Relay ON and OFF.
Recording will end when EEprom memory is full.

- Select channel-2 by pressing NEXT-channel-key until the number 2 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Press, Release or Hold the Digital-key as needed.
Other Digital, Servo Channels may activate from previously recorded events.
Recording will end when EEprom memory is full.
(During recording the green channel LED's will form a bar-graph indicating the amount of time being used.)
- Select channel-3 by pressing NEXT-channel-key until the number 3 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Press, Release or Hold the Digital-key as needed.
Recording will end when EEprom memory is full.
- Select channel-4 by pressing NEXT-channel-key until the number 4 LED is lit.
- Press and release the RECORD-key. (Record LED will turn ON)
- Press, Release or Hold the Digital-key as needed.
Recording will end when EEprom memory is full.
- Press and release the PLAY-key to review the recorded Digital output sequence.
Recorded Servos and Digital channels will activate.

MAKING A PROGRAM CHANGE TO A SINGLE SERVO CHANNEL

Examples

4. Making a Programming change for Servo Channel 4

Make sure that the MODE slide switch has been switched to the S, this puts the

- Wizard-3 controller into the Servo Output Mode. The Enable jumper must be set at the (E) and the LOOP and the AUTO switch must be in the "N" position .
- Select Servo channel "4" by pressing NEXT-key until green LED "4" is ON.
- Press and release the RECORD-key. (The red LED will light, indicating record mode is active)
- Rotate MOVE-position-control.
Recording will end when EEprom memory is full.
(During recording the green channel LED's may form a bar-graph indicating the amount of time being used automatically).
- Press and release the PLAY-key to review the recorded sequence.
Recorded Servos and Digital channels will activate

Note: Servo "1, 2, 3, 5, 6, 7 and 8" and Digital outputs "1-8" will be active from previous recorded positions to aid in synchronization, and servo "4" will move as POSITION- control is rotated.)

(The selected channel (4) recording will end automatically based on the Start to Stop recorded time entered for servo channel "1" initially).

(Channel -1 sets the time available for each channel)

Servo
Channel
Editing

MAKING A PROGRAM CHANGE TO A SINGLE DIGITAL CHANNEL

Examples

5. Making a Programming change for Digital Channel 2

Make sure that the MODE slide switch has been switched to the "D" this puts the

- Wizard-3 controller into the Digital Output Mode. The Enable jumper must be set at the (E) and the LOOP and the AUTO switch must be in the "N" position .
- Select Servo channel "2" by pressing NEXT-key until green LED "2" is ON.
- Press and release the RECORD-key. (The red LED will light, indicating record mode is active)
- Press, Release or Hold the Digital-key as needed.
- Recording will end when EEprom memory is full.
(During recording the green channel LED's will form a bar-graph indicating the amount of time being used.)
- Press and release the PLAY-key to review the recorded sequence.
Recorded Servos and Digital channels will activate

Digital
Channel
Editing

Power Supply

The Wizard - 3 board incorporates several power supply options:

Standard method - Common Power Supply: (Wall / Battery Power Supply)

Set the jumper B-R jumper to the **B** position. In this configuration, the board control electronics, servos, relays and digital outputs use the same common regulated +5/6 Volt DC power supply together.

Connect a **REGULATED +5/6V DC** supply @ 3-5 Amps rating to the 2.1 mm socket at **Connector A**, marked +5V DC (center contact positive voltage, outer negative voltage) or connect to the adjacent optional plus (+) and minus (-) solder connection pads near Connector A,

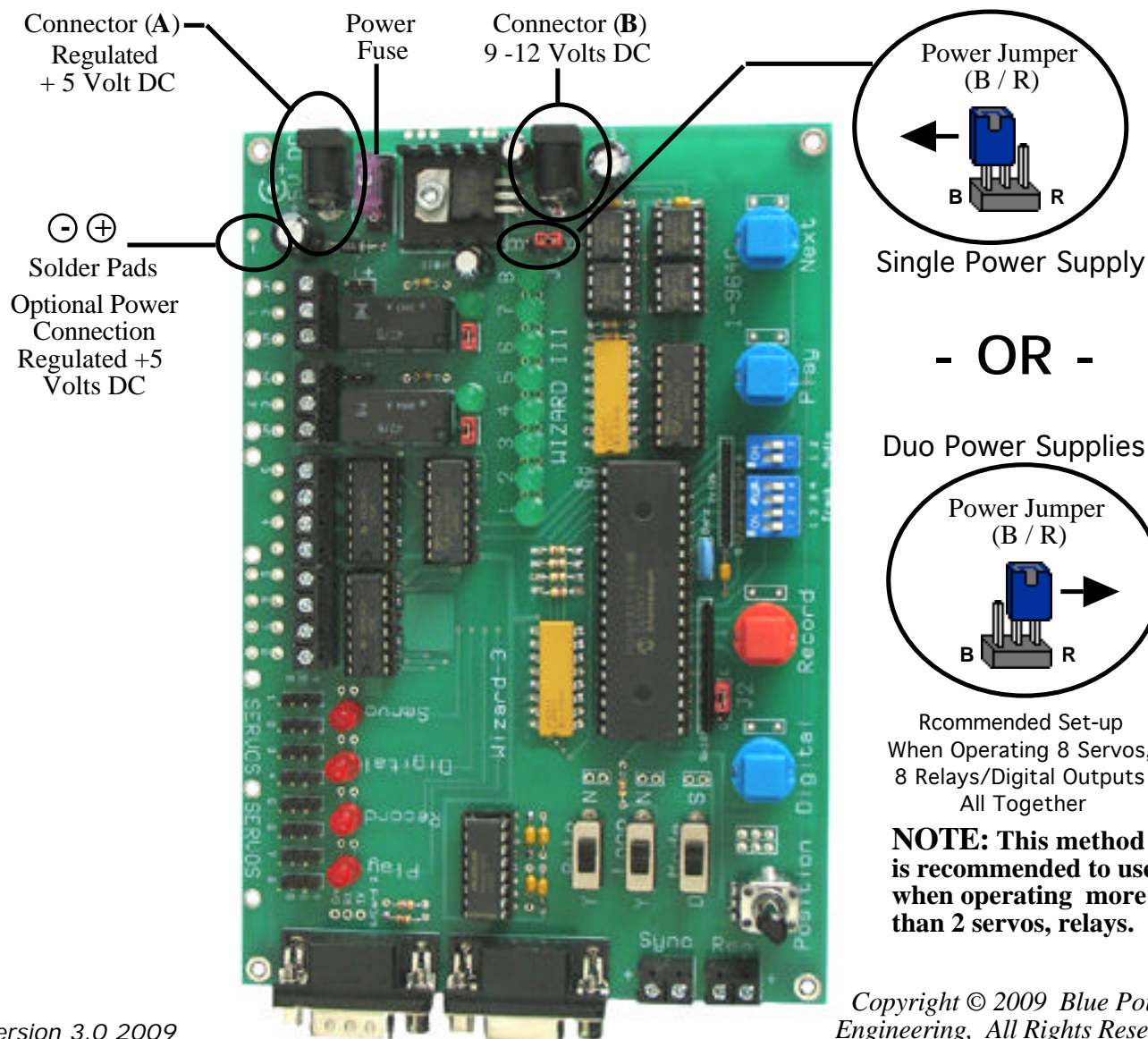
Alternative method - Duo Power Supplies: (Wall / Battery Power Supply)

Set the B-R jumper to the **R** position. Connect a stable **REGULATED 5 - 6 Volt DC @ 3-5 Amp** supply to the **Connector A** or to the adjacent optional plus (+) and minus (-) solder connection pads near Connector A, This power connection supplies the servos, relays and digital outputs power only.

Connect a **9-12 Volt DC supply (or 9 Volt battery)** to the second **Connector B**. This supplies power to the board control electronics only, via the on-board power regulator component.

(Recommend this option when operating all 8 servos with high loads, relays and digital outputs all together).

NOTE: This method is recommended to use when operating more than 2 servos, relays.



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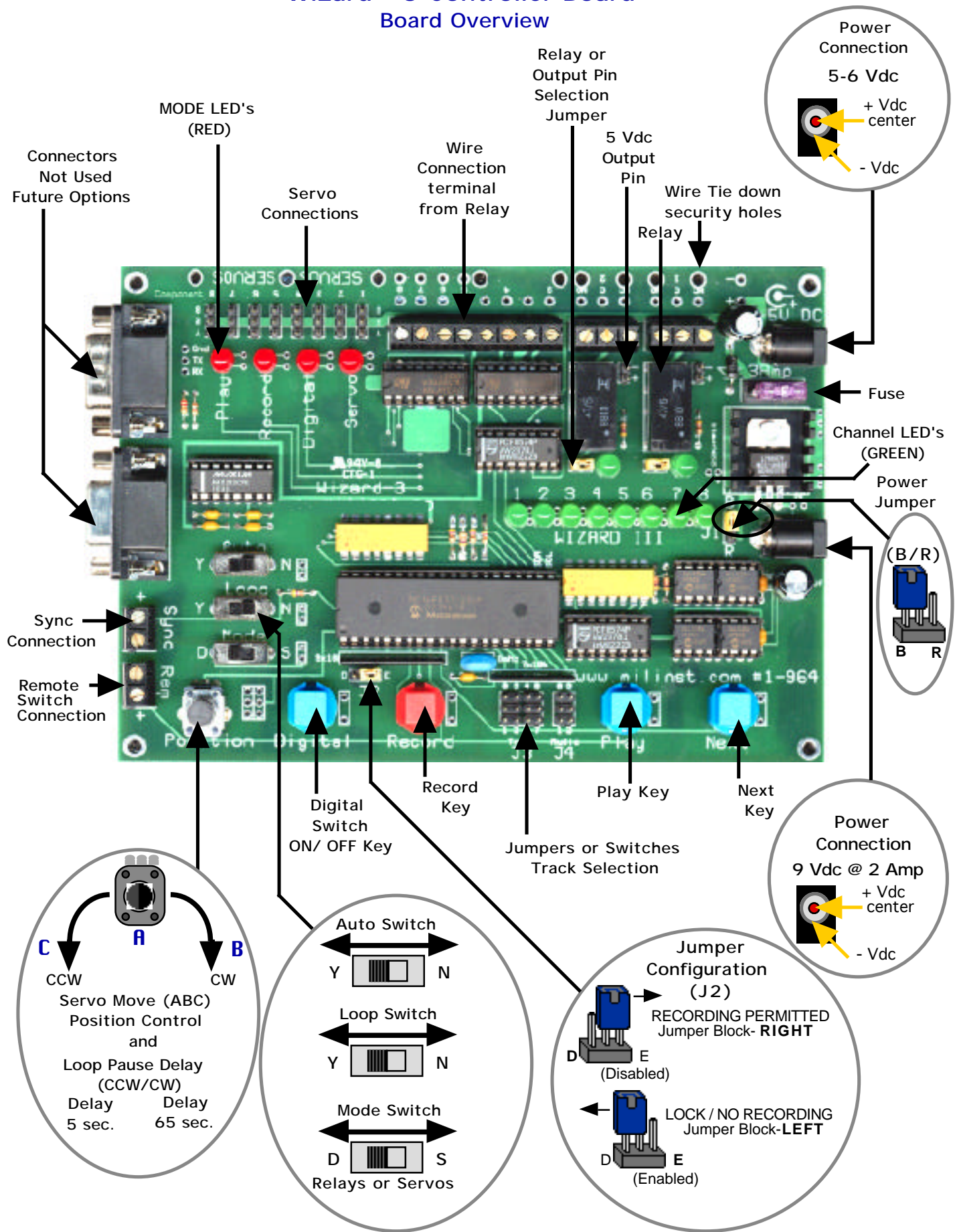
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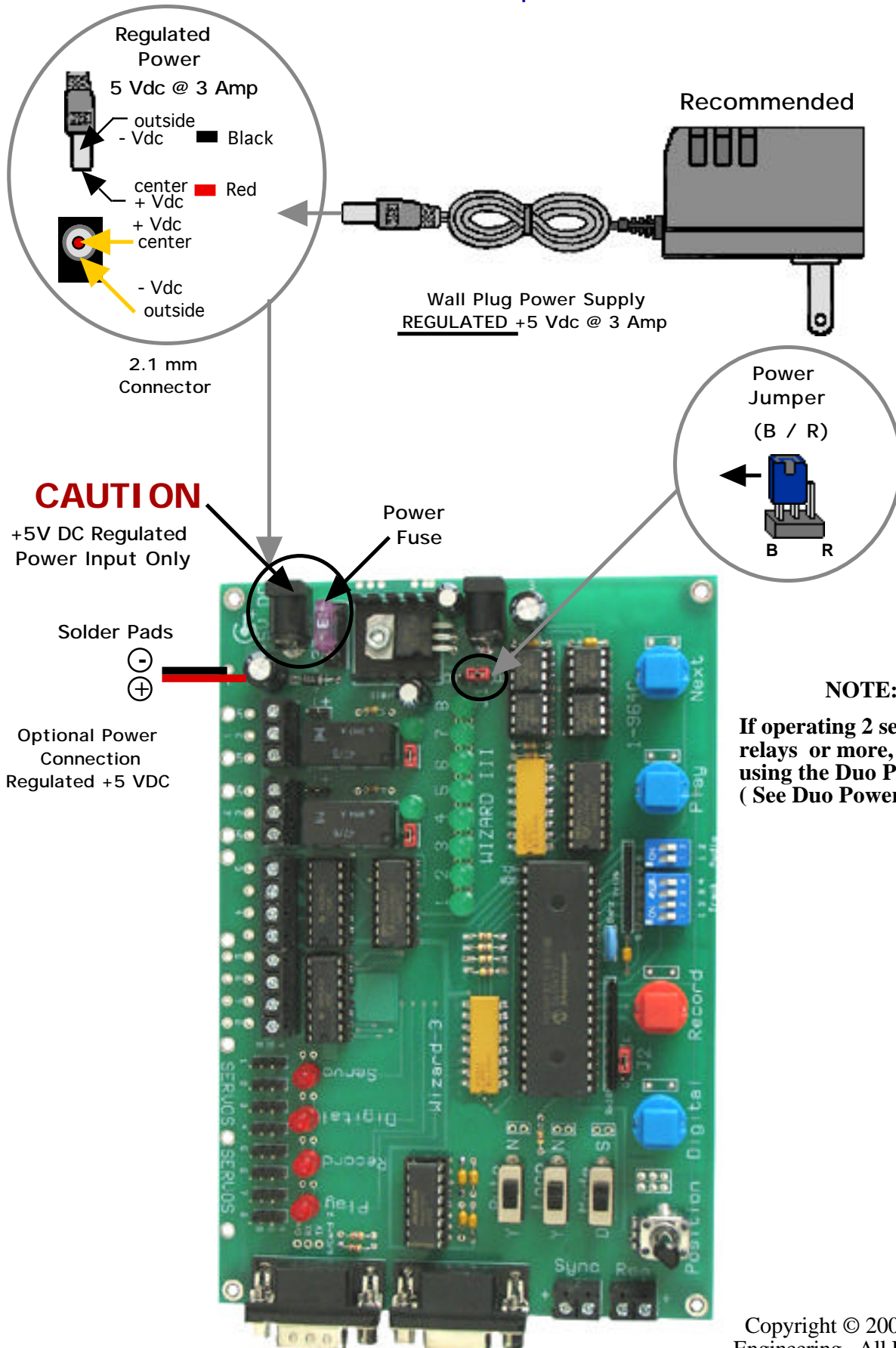
Wizard - 3 Controller Board Board Overview

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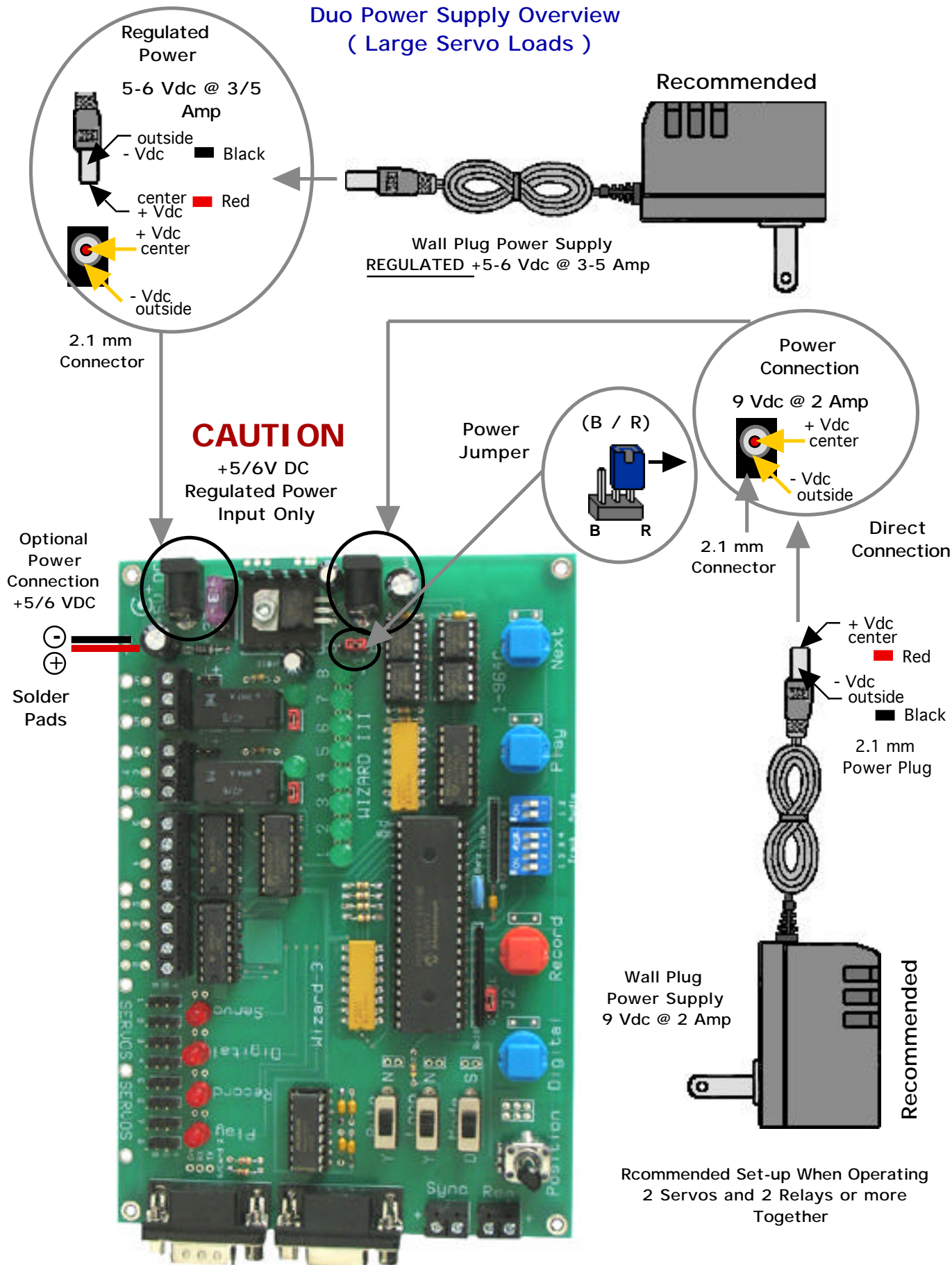


Wizard - 3 Controller Board

Power Set-up Overview



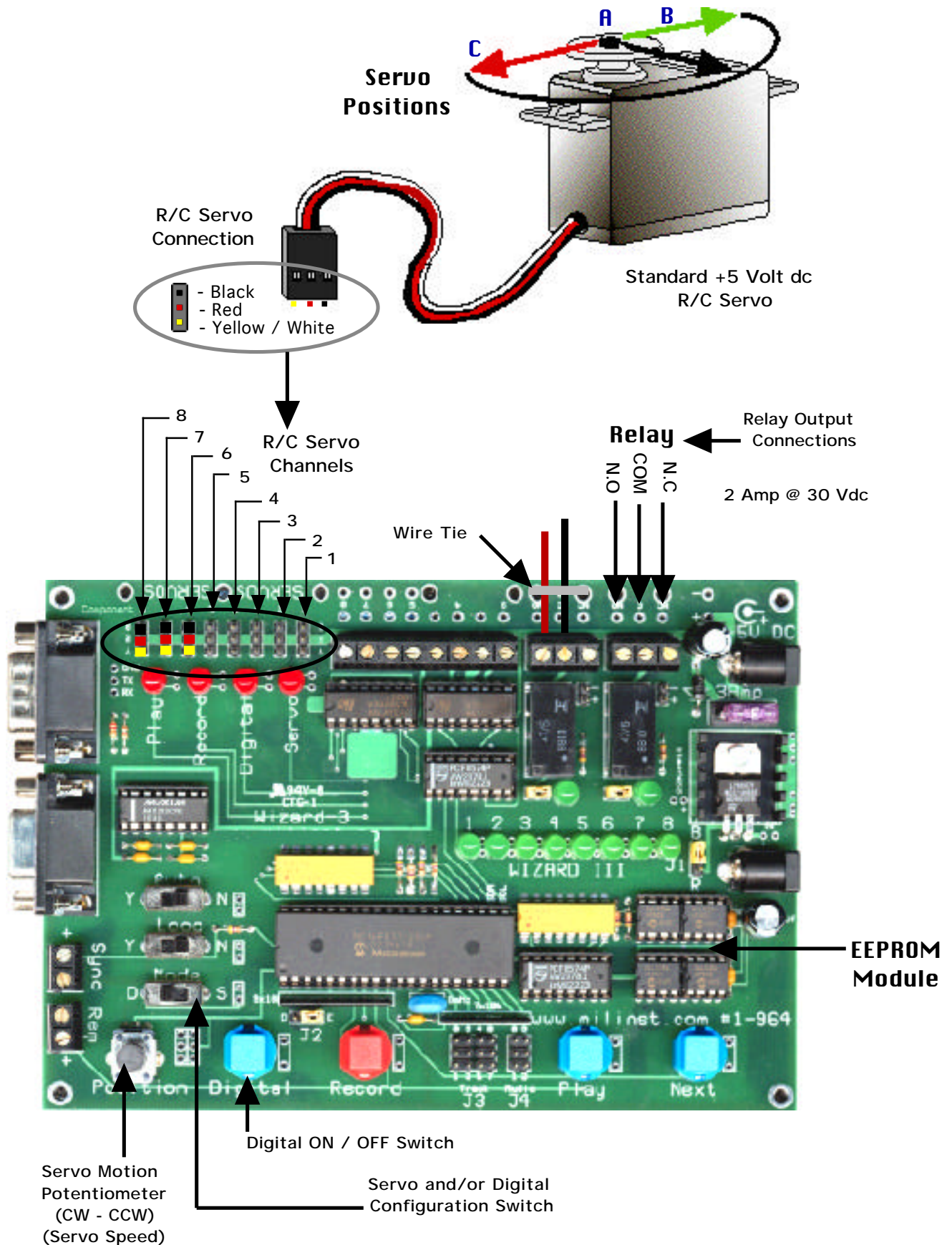
Wizard - 3 Controller Board Duo Power Supply Overview (Large Servo Loads)



Wizard - 3 Controller Board

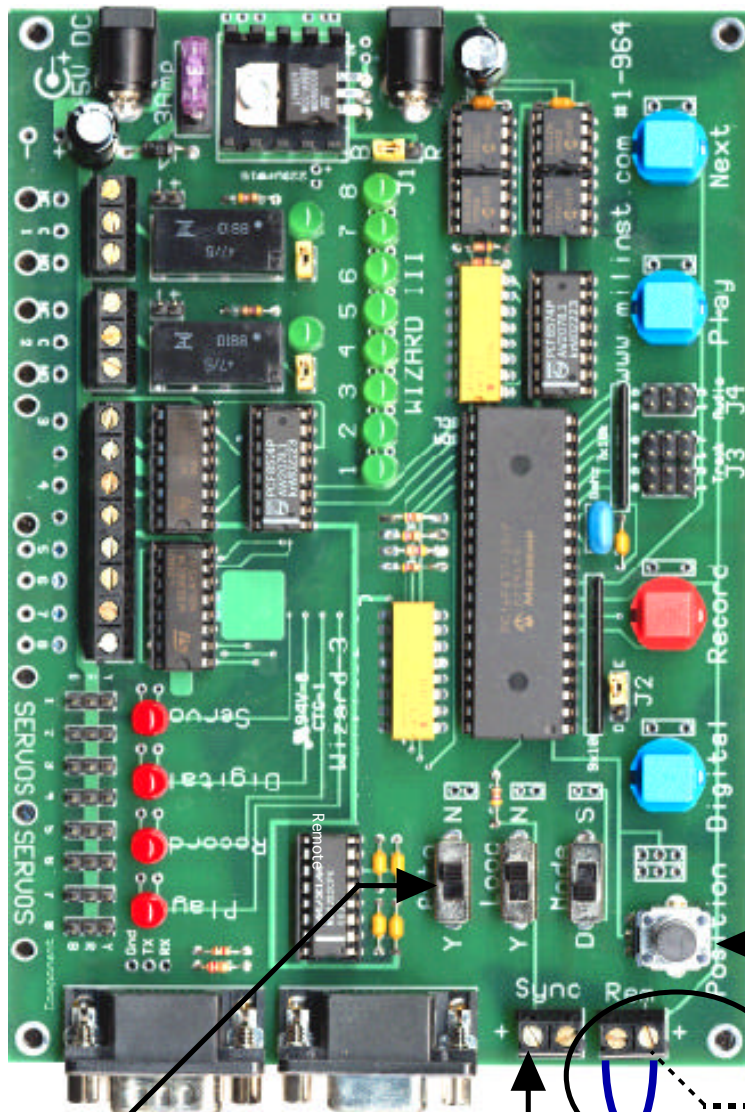
Servo Overview

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Wizard - 3 Controller Board Playback Option Modes

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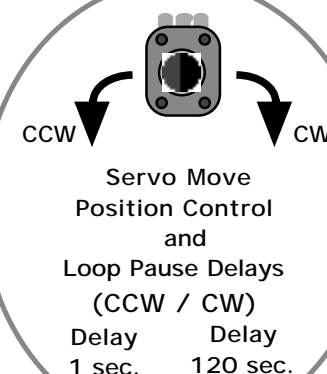


REMOTE SWITCH

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



The length of the pause between repeated playback is set by the Move POSITION control, CCW (1 sec.) or CW (120 sec.) in rotation and LOOP switch set to "Y".



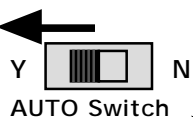
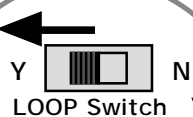
OR

Remote (Rem) Switch Connection

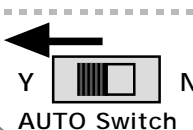
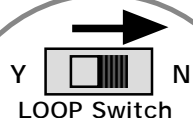
OR

Jumper Wire

SYNC Output to other Wizard Boards (Multiple board ability)



To replay the recorded moves/action repeatedly, the LOOP selection switch must be in the "Y" position. The length of the pause between repeated playback is set by the Move POSITION control, CCW (1 sec.) or CW (120 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.

Sync Mode

Multiple Board Connection

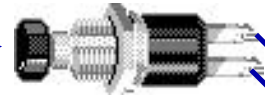


Example:
Floor Mat Switch

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

**Remote
Switch / Sensor**

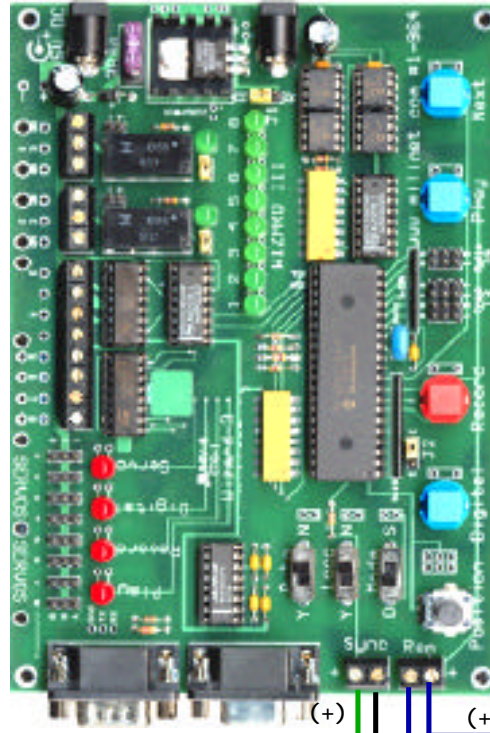
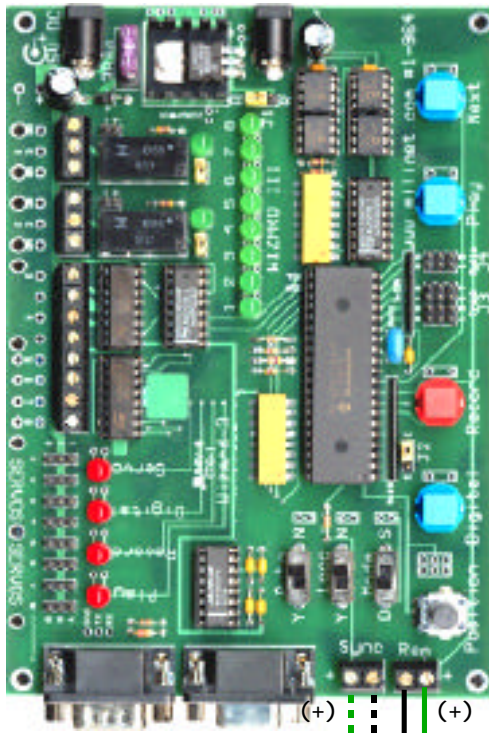
**Push Buttons
(Momentary)**



← Wizard Board - Two

← Wizard Board - One

Wizard Board Three.....



Wizard Board Connections

(+)

(-)

(+)

(-)

(Rem)
Terminal
Connection
(Board-2)

(Sync)
Terminal
Connection
(Board-1)

(+)

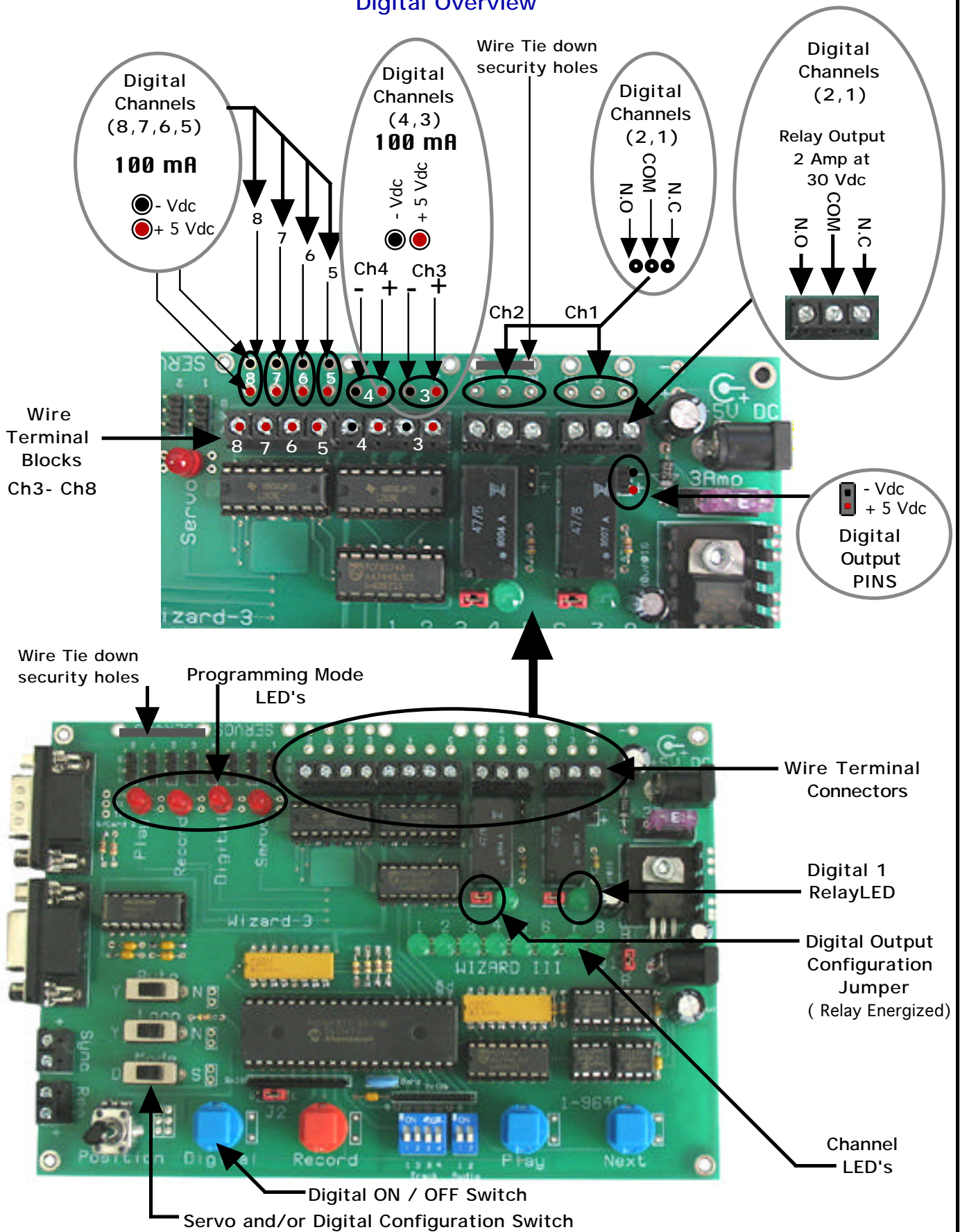
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Remote Switch
(Rem) Terminal
Connection
(Board-1)

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.

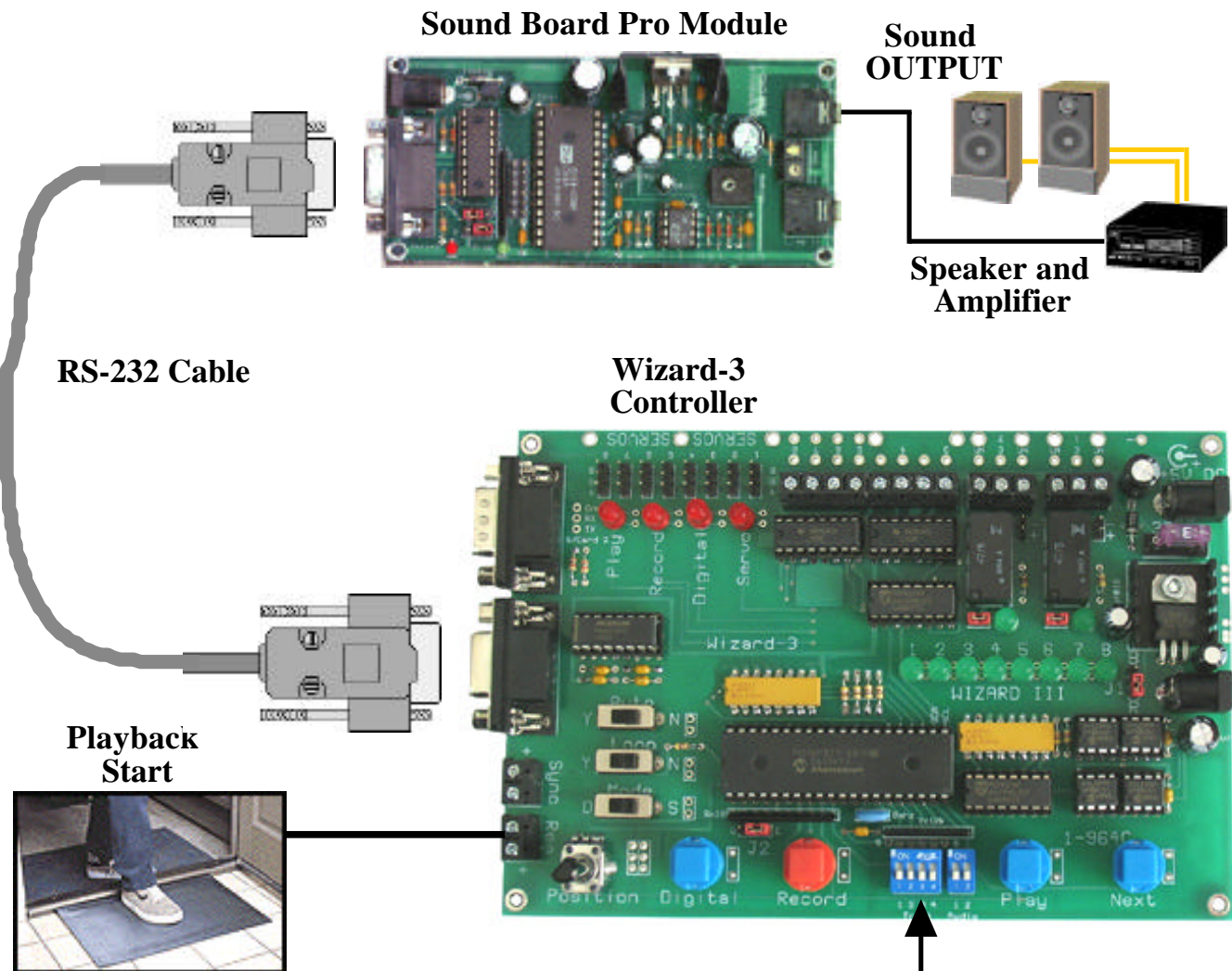
Wizard - 3 Controller Board Digital Overview

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Wizard - 3 Controller Board **Optional Digital Sound Board Pro Setup**

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Cable Configuration		
DB-9 M = *DB-9 M/F		
Pin 1	⬮	Pin 1
Pin 2	⬮	Pin 2
Pin 3	⬮	Pin 3
Pins 4-9	Pins 4-9

- Playback Track Selection 1-4**
- Routine 1**
 - Routine 2**
 - Routine 3**
 - Routine 4**

Audio Cueing

The module provides serial (8-N-1 format at 9600 baud) playback cues via the DB-9 male connector. These are suitable for cueing the playback of recorded audio tracks from the Sound Board Pro module to accompany an animation track. Connection between the 2 boards is by standard 9-way modem lead (pin connected to pin 1 to 1, 2 to 2, 3 to 3, 4 to 4, 5 to 5, etc). Data is sent on pin 3. The ASCII track number is sent to commence playback (ie 1 to 4) and ASCII "s" sent to stop playback at the end of a session. If single track mode is currently selected, then ASCII 1 is sent.

Track Select Switch / Jumper - Set-up

The **Wizard 3 Board** will record and playback up to 4 separate tracks for up to 8 R/C type servo channels and 8 digital channels. The maximum recording time per track is 3 minutes for multiple track operation or 6 minutes for single track operation. The card may be connected to the optional Sound Board Pro Board to provide audio accompaniment to the tracks if needed.

Audio Cueing

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Track Memory Erase: this will ONLY wipe the moves stored for that particular track. All other tracks will be unaffected. Set the Track select switch to ON for the required track. Hold down the Record button whilst applying power to the board- release the Record switch once the bar-graph leds start to light

Track Select Switch

For single track record and playback mode (recording time up to 6 minutes)- set all track select switches to OFF
Multiple track record: (up to 3 minutes recording time per track)

Track 1: Set track switch 1 to ON, all other track switches to OFF

Track 2: Set track switch 2 to ON, all other track switches to OFF

Track 3: Set track switch 3 to ON, all other track switches to OFF

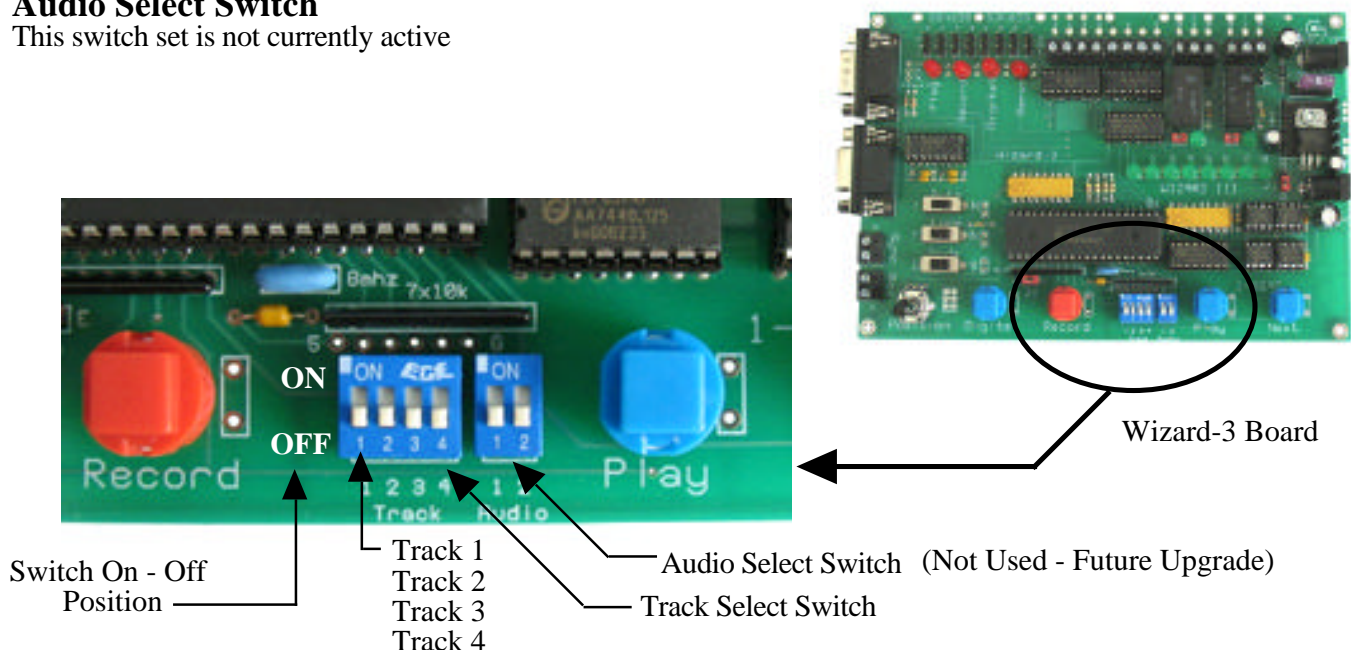
Track 4: Set track switch 4 to ON, all other track switches to OFF

If you are changing from multiple to single track mode (or vice versa) it is strongly recommended that you perform a FULL memory erase.

In multiple track mode, all the control of servos / relay actions used will only affect the currently selected track.

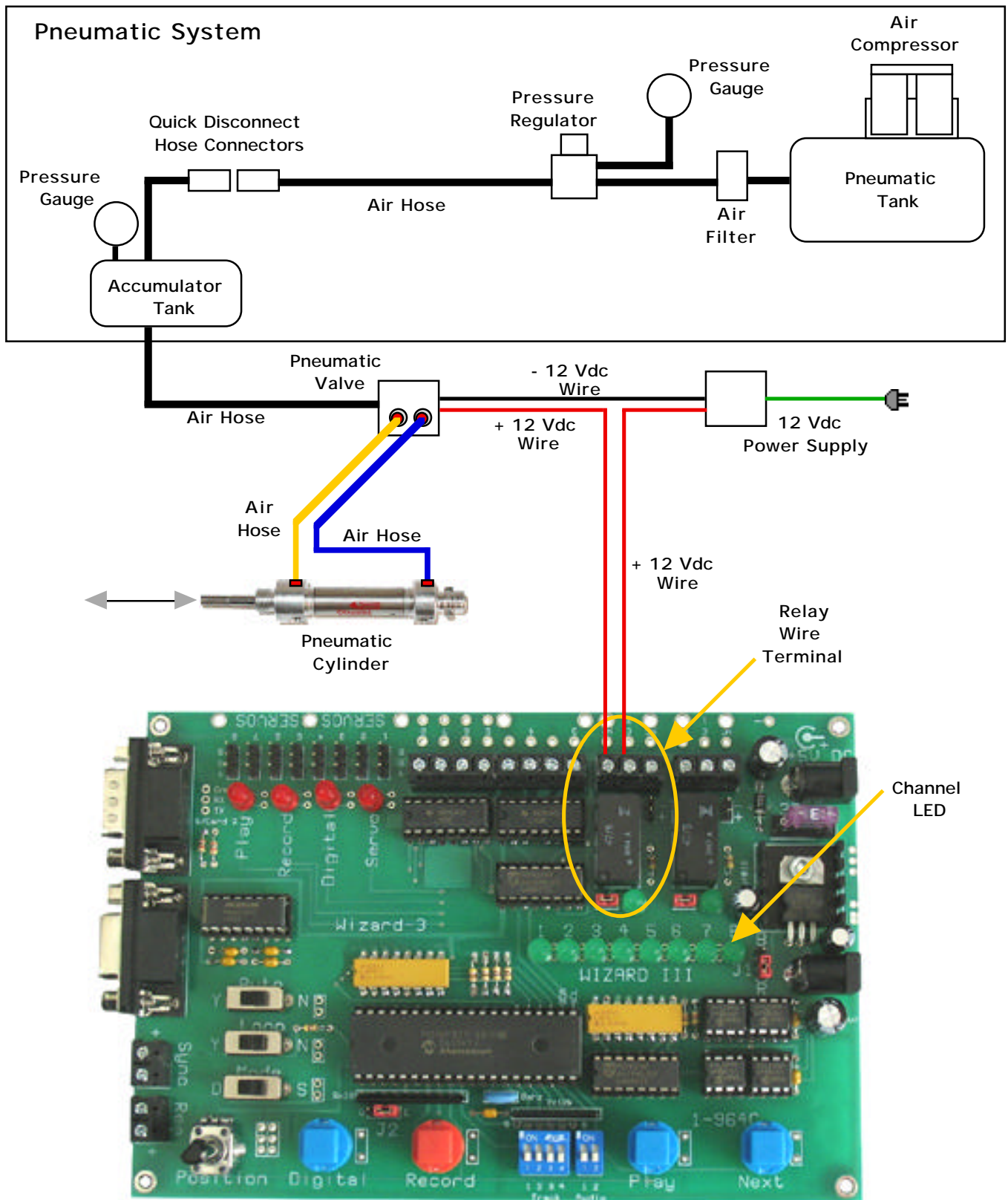
Audio Select Switch

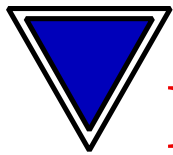
This switch set is not currently active



Wizard - 3 Controller Board
Optional Pneumatic Output Mode
Electrical Pneumatic Valve Example

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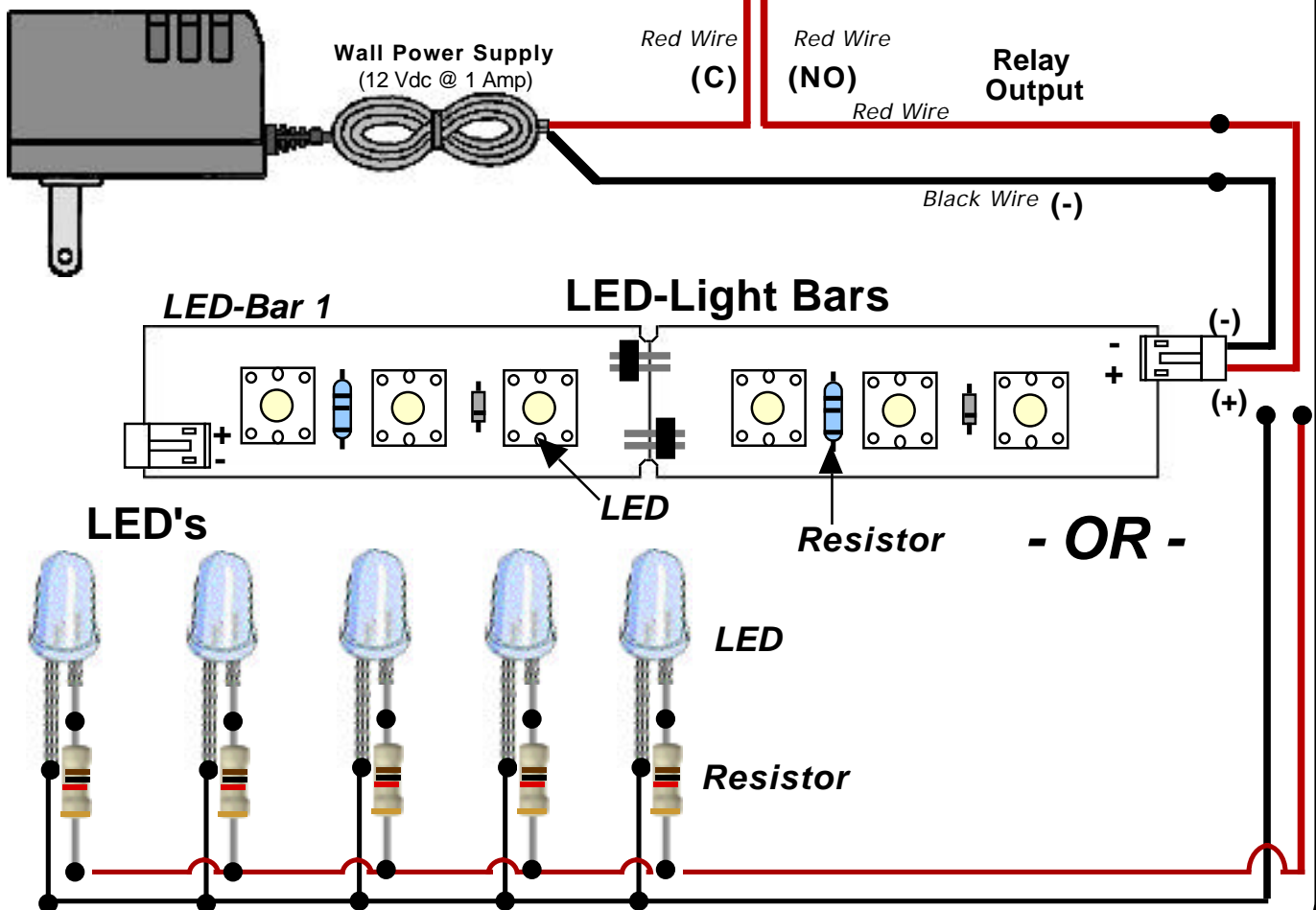
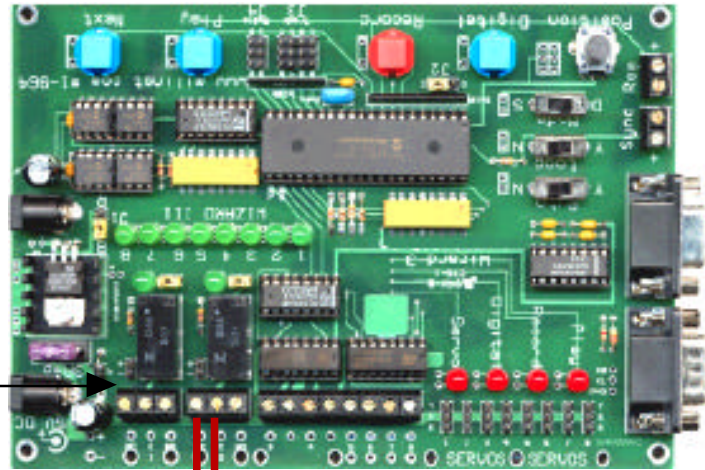


Controlling Devices by Wizard-3 Relays

Wizard - 3
Controller

*Relay to LED Bar,
and Single LED's*

Relay
Output



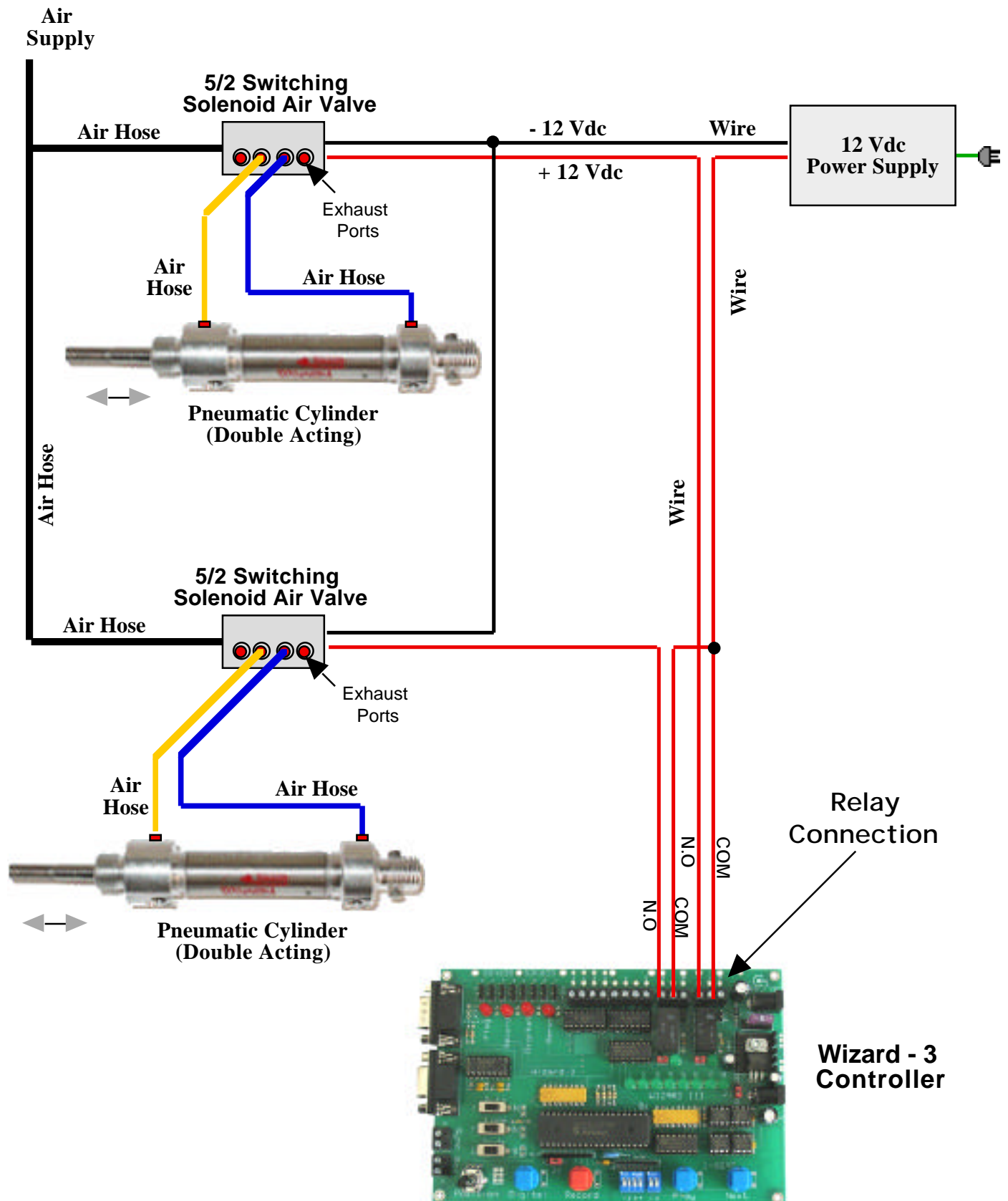
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Wizard-3 Controller

Relay to Pneumatic Valves

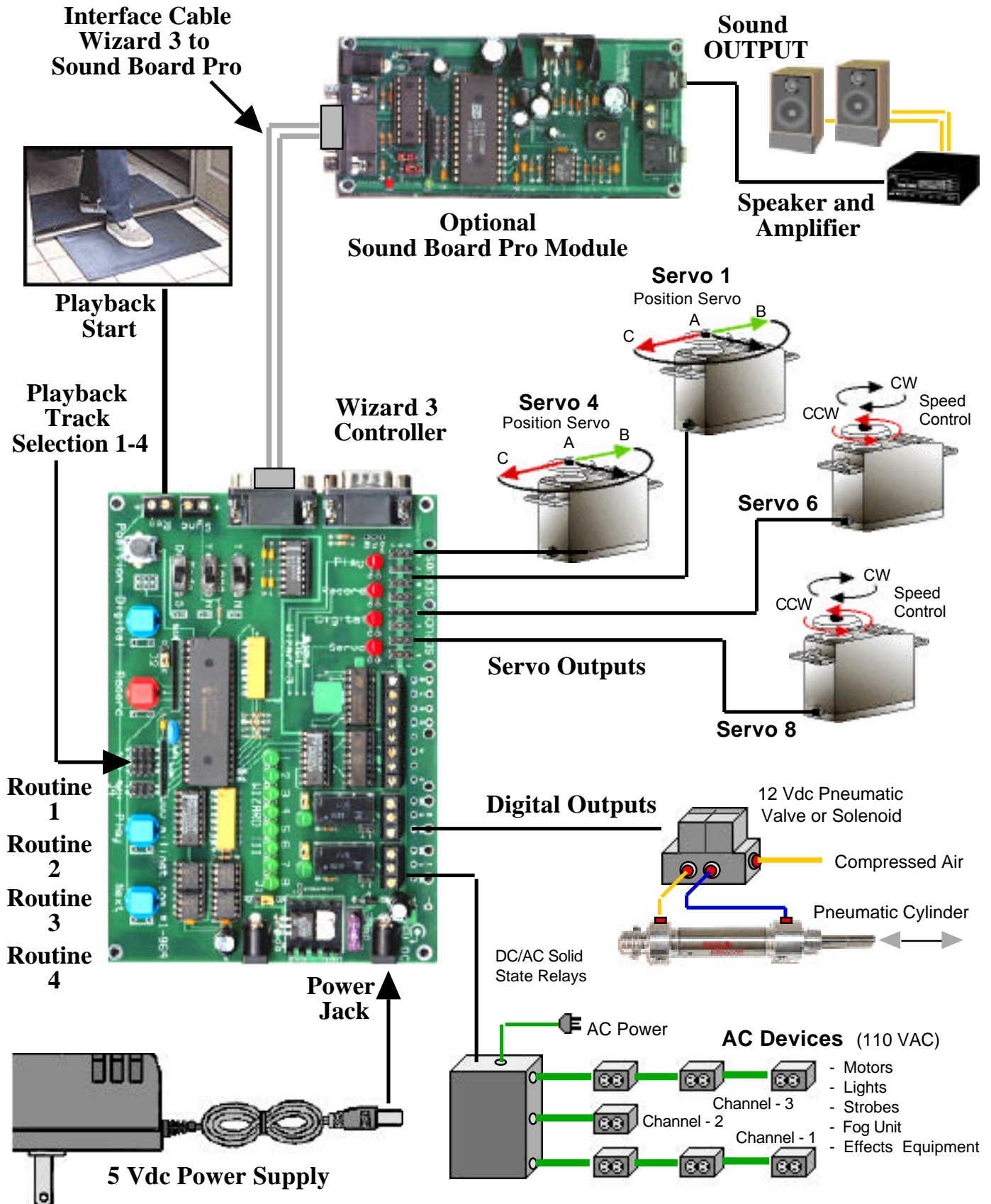


Caution:



Wizard-3 Controller

Example Setup



Wizard-3 Controller

Relay to Control Motor Rotation

Programmable
Controller Board

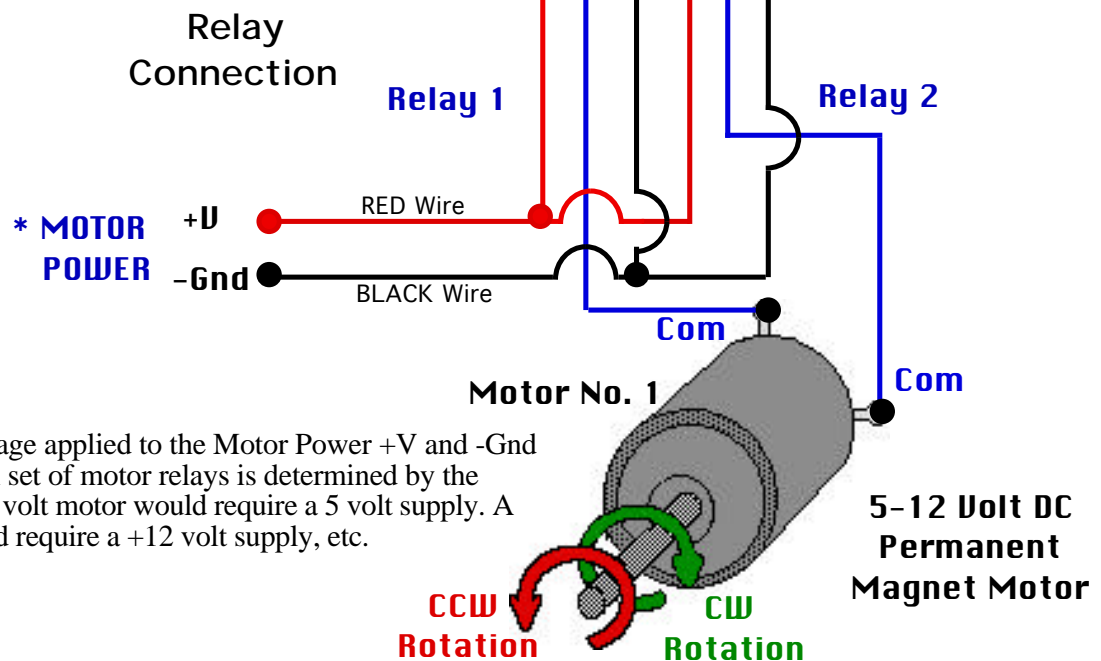
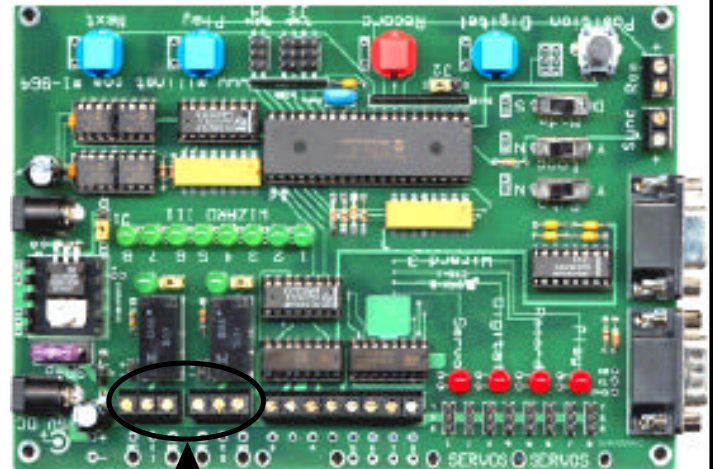
Wizard - 3
Controller

Motor Logic

Relay 1 ON
Relay 2 OFF = Motor CCW Rotation

Relay 1 OFF
Relay 2 ON = Motor CW Rotation

Relay 1 and 2 ON = Motor All Stop
Relay 1 and 2 OFF = Motor All Stop



* NOTE:

The amount of voltage applied to the Motor Power +V and -Gnd connection for each set of motor relays is determined by the motor voltage. A 5 volt motor would require a 5 volt supply. A 12 volt motor would require a +12 volt supply, etc.

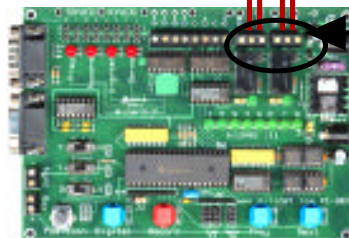
Relay Controlled Water Valve -Effect

Wizard - II Controller Board
Water Valve Overview



Lawn Water Valve
(12 Volts dc)

Wizard - 3
Controller



Relay
Connection

Water
Source
IN

Water Valve
Channel 2

Water Valve
Channel 1

Black Wire

Red Wire

Fountain Heads

Fountain Heads

Power Supply
(12 Vdc @ 10 Amp)

Wizard - 3 Controller Board
Air Valve Overview



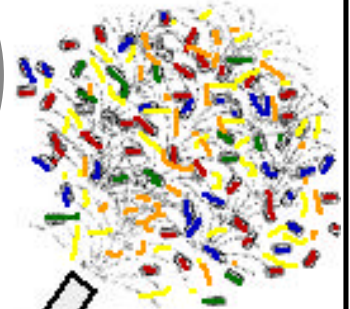
Relay
Connection

Power Supply
(12 Vdc @ 10 Amp)



Black Wire

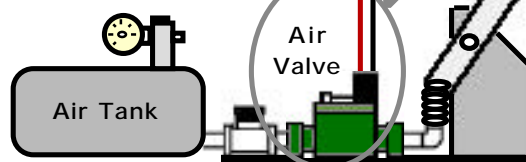
Water (Air)
Valve



Confetti
Cannon

Wizard - 3
Controller Board

Red Wire



Air
Valve

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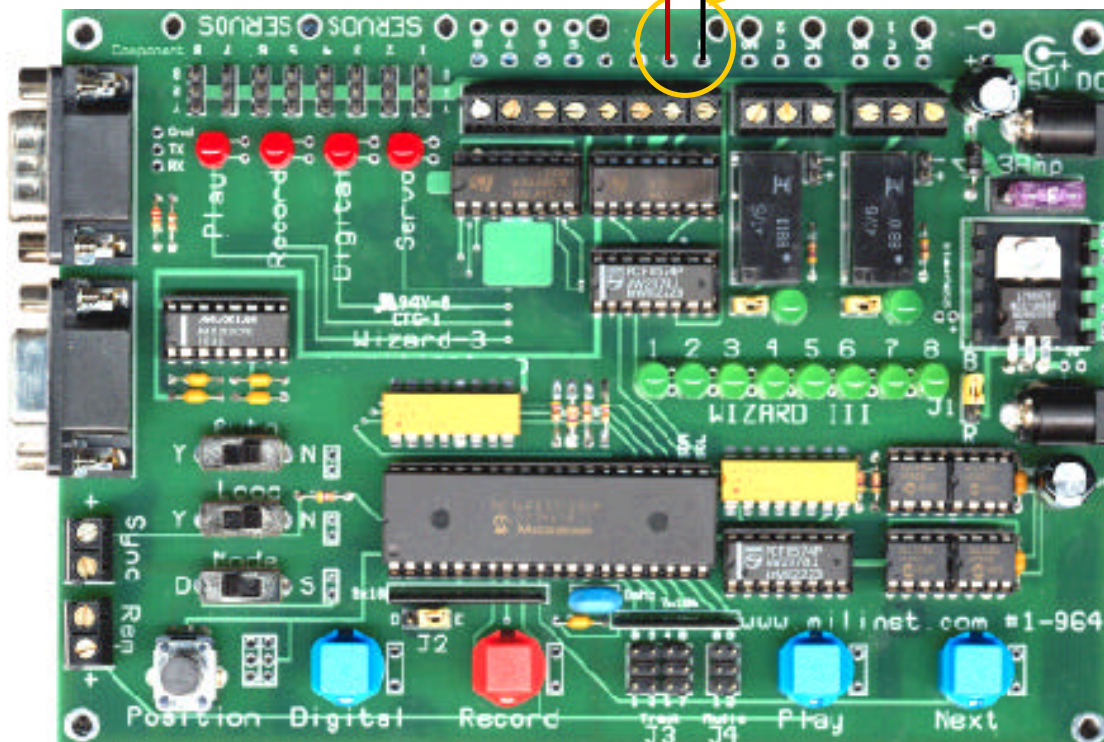
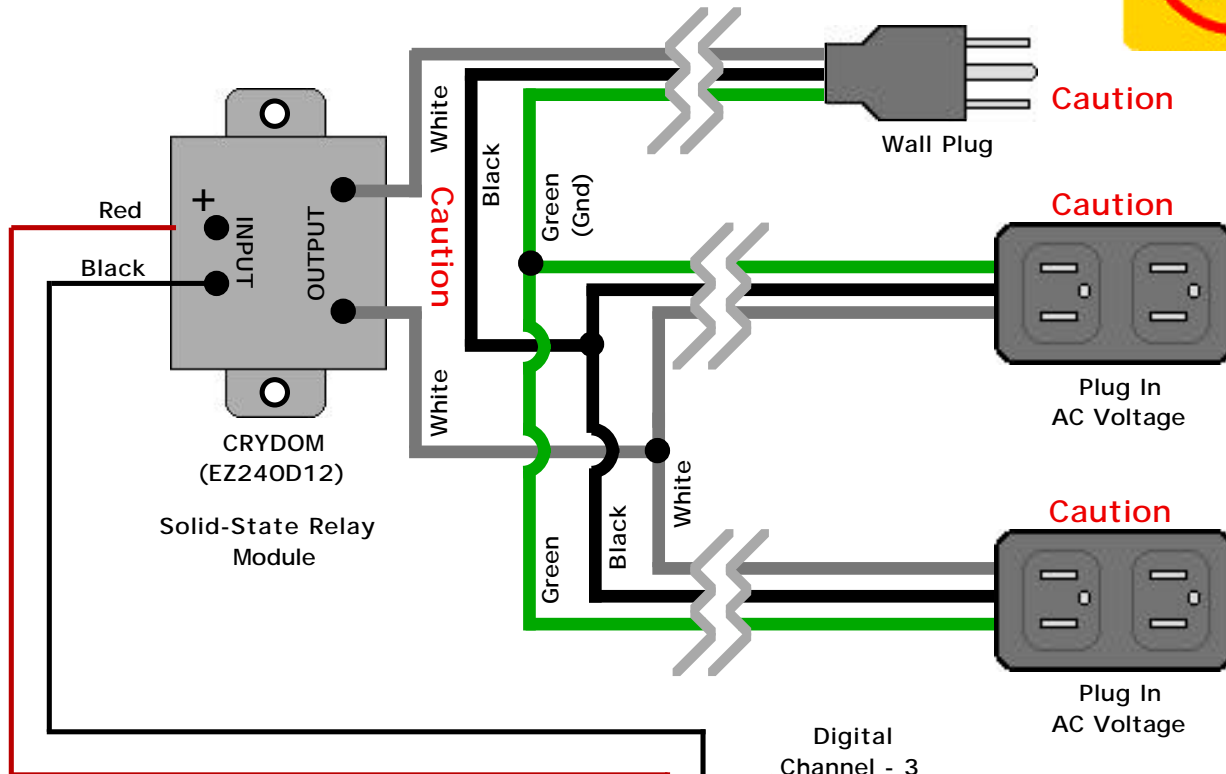
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Wizard - 3 Controller Board Optional Digital to AC Output Mode

Caution:

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



Wizard - 3 Controller Board

Troubleshooting Hints

- **Servos Channel 2-8 not programming correctly on Wizard Board - 3.**

The recording on channel one will set the maximum available recording time for all other channels. Always record servo channel one first. Recording periods for further channels two through eight cannot be longer than that set for channel one.

- **Servos shake, or will not operate correctly when connected to Wizard Board - 3**

Use a power supply with more current. The servos may be using more amperage than the power supply can handle. You can also split the power supply needs, by using 2 different supplies. One for the electronics and one for the Servo Motors (See manual on setting up board for using 2- power supplies)

- **Can't get the servos or the digital output to operate**

When in the **S** mode the Servo option is selected -servos 1 through 8 are active in record mode.

When in the **"D"** mode the Digital option is selected -digital channels 1 through 8 are active in record mode.

When the LOOP play switch is in the **"Y"** mode, the D-S Mode switch determines whether the servos will move instantaneously back to their start position (D) at the end of the loop or will move back smoothly (S).

- **How do I clear Memory to start a new program?**

The Enable jumper must be set at the **(E)** enabled 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 "1-8" will form a count down bar- graph indicating that current programmed EEPROM memory is being cleared. (This will take approximately about 30 seconds).

After the initial 30 seconds all green LED's "1-8" will turn OFF and the current selected Channel LED will turn ON, indicating the board is now ready for new programming.

- **How do I protect a recorded program that I like?**

If the jumper is set at the "Enabled position, recording will be permitted. Remove to" Disable recordings and protect the EEPROM memory.

- **How do I apply correct power to the Wizard- 3 board?**

Standard method- Common Power Supply: (Wall / Battery Power Supply)

Set the jumper B-R jumper to the **B** position. In this configuration, the board control electronics, servos, relays and digital outputs use the same common regulated +5 Volt DC power supply together.

Connect a **REGULATED +5-6V DC** supply @ 3-5 Amps rating to the 2.1 mm socket at **Connector A**, marked +5V DC (center contact positive voltage, outer negative voltage) or connect to the adjacent optional plus (+) and minus (-) solder connection pads / holes near Connector A,

***** **BEST POWER METHOD OVERALL**

Alternative method- Separate Duo Power Supplies: (Wall / Battery Power Supply)

Set the B-R jumper to the **R** position. Connect a stable **REGULATED 5 - 6 Volt DC @ 3-5 Amp** supply to the **Connector A** or to the adjacent optional plus (+) and minus (-) solder connection pads / holes near Connector A, This power connection supplies the servos, relays and digital outputs power only.

Connect a **9-12 Volt DC supply (or 9 Volt battery)** to the second **Connector B**. This supplies power to the board control electronics only, via the on-board power regulator component.

(Recommend this option when operating all 8 servos with high loads, relays and digital outputs all together).

- **Why is the servo returning to a starting position at the end of playback, I need it to stay at the last position programmed before re-starting.**

When the LOOP play switch is in the **"Y"** mode, the D-S Mode switch determines whether the servos will stay at the last position or move back smoothly (S) to the start position.

The Mode switch for Servo and Digital needs to be in the D mode position. This will hold all the servos at position, and will not allow the servos to move to home position.

When the Mode slide switch is in the S position, a end of routine command is sent from the on-board firmware to home the servos at the end of each looping playback routine. Note: the servos will home first, before starting the loop - wait countdown mode.

Wizard - 3 Controller Board

Troubleshooting Hints Cont.

- **How do I set-up the Wizard- 3 board for the different playback options.**

LOOP - slide switch

To make the Wizard- 3 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 pressed. There will be a pause at the end of playing (determine by the position of the Move control) after which the moves will start again. Turn the MOVE control counter clockwise (CCW) for the minimum delay (0 seconds and clockwise for the maximum delay (approx 120 seconds). The PLAY LED flashes during the pause periods set.

Note: to record new program moves, the LOOP switch must be set to the "N" position.

AUTO - slide switch

To make the Wizard- 3 board play the recorded moves repeatedly on power - ON or reset, move the switch to the "Y" position. The recorded moves will start to play on any power-up.

Note: to record new program moves, the AUTO switch must be set to the "N" position.

Pause between play loop option

When the Wizard- 3 board is set to the **LOOP "Y"** position, the length of the pause between repeated playing may be set by the MOVE-position-control.

Turn the MOVE-position-control counter clockwise for the minimum delay (0 seconds) and clockwise for the maximum delay (approx.120 seconds).

- **The voltage regulator on the Wizard Board - 3 is very hot**

The regulator will get hot as it applied power; this is somewhat common, if the regulator is extremely hot, try using a power supply with more current. The servos may be using more amperage than the power regulator can handle.

- **I am very frustrated, I can't seem to get the Wizard - 3 board to work correctly.**

Check all your connections and review the jumper settings to see that everything is correctly set.

Try using a power supply with larger current (amp) to the board.

Check your servos to see that they are operating correctly, by using a servo checker; you may have a bad servo that is drawing large currents.

Try clearing memory and start from the beginning. Keep in-mind that you need to start with channel -1 to set the proper time for all the other channels.

Re-read the user instruction manual again.

Check the user instruction manual drawings to make sure you have things set up properly.

Try a simple program routine first, and then work toward a complex routine once you have things working.

- **I am having trouble getting the board to trigger by a remote sensor.**

Check to see that you have the sensor connected to the REM terminal and not the Sync terminal. The Sync terminal is used to activate other Wizard Boards connected to the Wizard- 3 board.

- **How do I clear Track Memory to start a new program?**

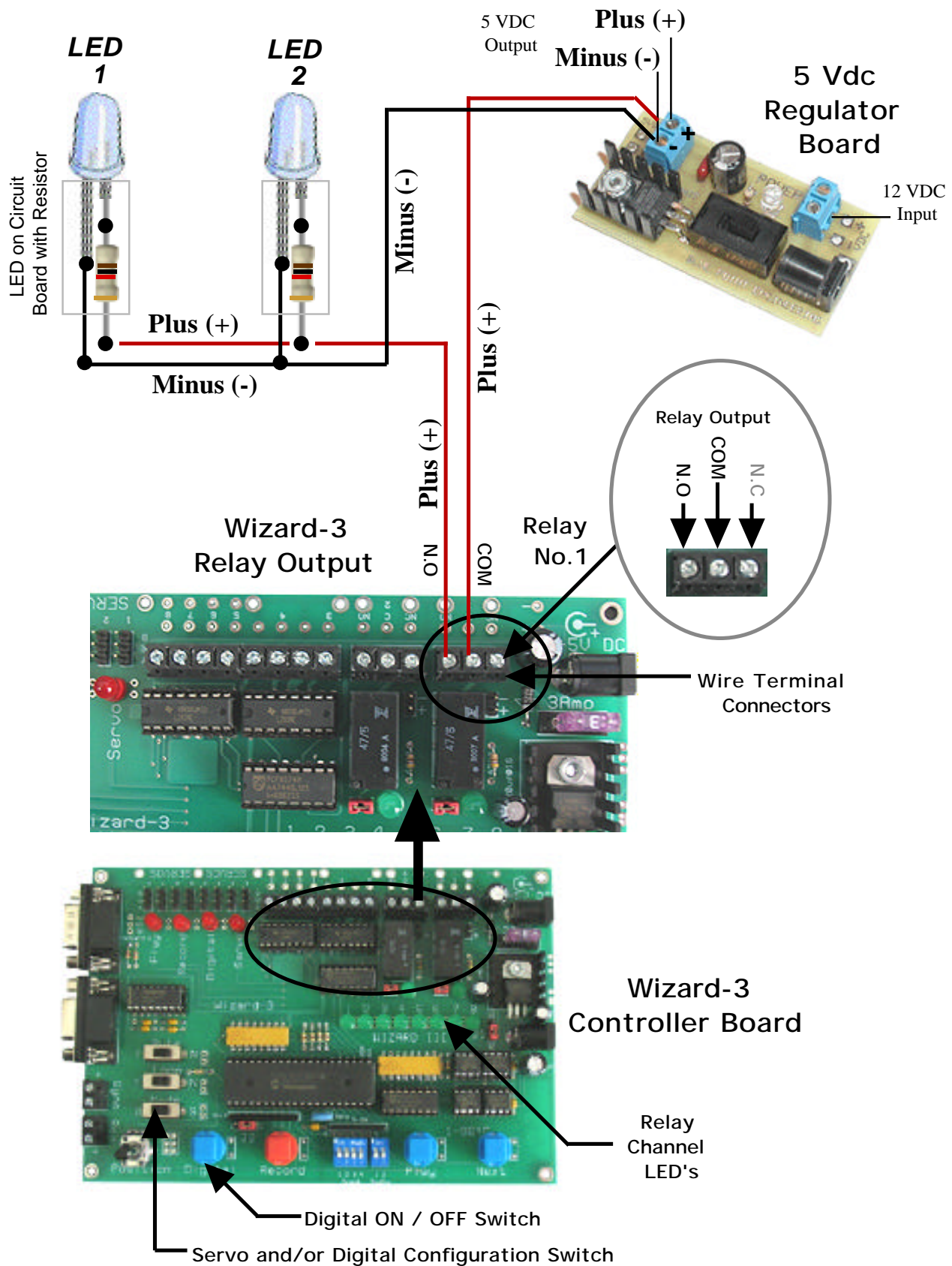
Track Memory Erase- this will ONLY wipe the moves stored for that particular track. All other tracks will be unaffected. Set the Track select switch to ON for the required track. Hold down the Record button while applying power to the board- release the Record switch once the bar-graph leds start to light.

- **What R/C Servos can I use?**

The servo outputs provide standard pulse coded signals of between 1 msec and 2 msec duration repeated every 24 msecs making it suitable for all standard R/C type servos. Large 12 Vdc servos can be used but require modification to the large servo power connection (Contact BPE for details)

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Wizard - 3 Controller Board to LED Setup



POWER SUPPLY

6-12 VDC
5 Amp

■ - Black (-)

■ - Red (+)

Fuse

Clip
Connector

■ - Red (+)

■ - Black (-)

CUT

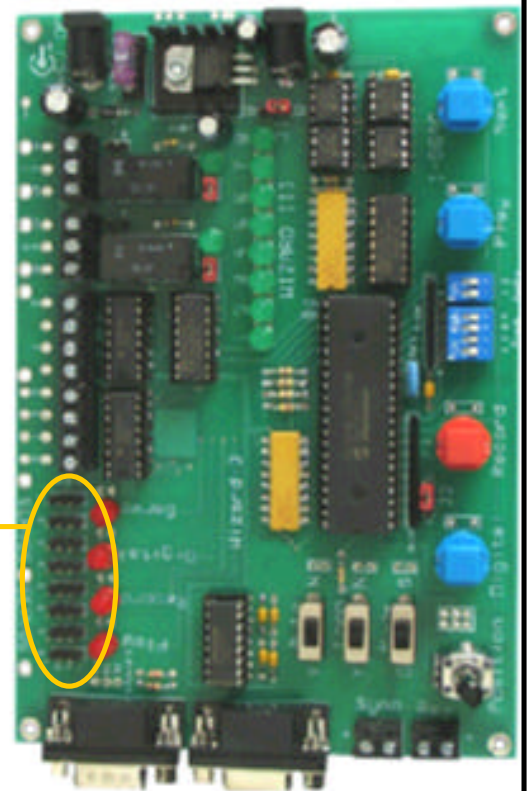
Optional
Servo Power
Connection

Red
No Connection

■ - Black (-) ■ - White / Yellow

*Optional Power Set-up
Large Servo Motors
6-12 Vdc*

Wizard - 3
Interface Board



Wizard 3 Board

