

Animate Board

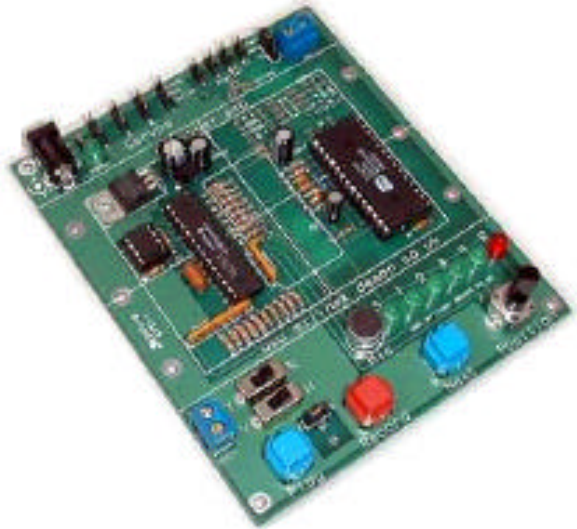
*Controller**(BPE No. ATC-0001)*

Introduction

The Animate Plus board will record and playback up to 40 seconds of action for up to 4 R/C type servos, and 4 digital output channels. The on-board sound chip will record 20 seconds of sound with built-in on-board microphone and speaker output.

The board also incorporates features such as looping action with variable delay between loops, auto start-up on power up and a connection interface for a PIR, remote switch or pressure pad to initiate playback.

Recording sessions are built up on a channel by channel method, no complex programming is required. During recording, all previously recorded channels are re-played to aid synchronization.



- 4 Servo output channels, each capable of recording and playback of up to 40 seconds of action
- 4 Digital channels outputs.
- Jumper to link together channel DE1 and DE2 or control the channels separately.
- 20 Second sound chip for recording messages with built in microphone.
- On-board potentiometer to adjust the servo positions during recording or to determine the time delay between play loops during automatic loop play- adjustable between 0 and 65 seconds.
- NEXT, PLAY and RECORD buttons.
- Record enable / disable jumper.
- Output drives 8-16 ohm speaker.
- AUTO-PLAY and LOOP-PLAY switches.

On Board Components

NEXT-channel-key

Changes the current active channel for manual movement and recording.

Each key-press selects the next channel: servos 1 through 4, the sound chip (S) and then the digital channels (indicated by the S LED being lit along with a further LED for that particular channel).

PLAY-key

Replays a set of recorded moves.

During playback the channel LED's will form a bargraph indicating the amount of time used.

Playback cannot be initiated when digital channels 1 through 4 are selected- at this time the PLAY button acts as the switch for the digital channel selected. Change the selected channel to servos 1-4 or the Sound channel to allow playback.

A switch may be connected to the REMOTE connector and this will function in the same as the PLAY-key.

When the moves have finished playing the bargraph-LED's will go OUT.

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MOVE-position-control

When not Playing, the Move control alters the position of the servo on the current channel. If the sound channel or digital channels are selected the Move control is inoperative. During Recording, moves for the current channel are recorded while the other channels are replayed.

RECORD-Enable link

If the jumper is set at the "E" enabled position, recording will be permitted. Remove to "D" disables recordings

RECORD-key

The RECORD-key has no effect unless enabled by using the RECORD-Enable link. If the RECORD-key is held down at switch-on any moves previously recorded will be erased. This will take about 8 seconds. Note that the speech chip is not erased by this action- old speech messages are removed by recording over the top of them. Press (and hold down), the RECORD-key to start a recording session- release to end the session. During recording the channel LED's will form a bargraph indicating the amount of time used. When the moves have finished playing the bargraph-LED's will go OUT. If the Sound channel is selected, pressing the RECORD-key will initiate the recording of sound using the on-card microphone and the red LED will light

Recording on servo channel 1(LED-1) or the sound channel (LED-S) will set the maximum available recording time for all other channels

Always record servo channel 1 or the sound channel first (LED 1 or S). Recording periods for Servo channels 2-4 and digital channels cannot be longer than that set for servo channel 1.

Examples

1. A Short recording

Select servo channel 1 by pressing NEXT-channel-key until the servo 1 LED is lit.
Press and hold the RECORD-key.
Adjust the Move-position-control for 4 seconds.
Servo 1 will move depending on position of MOVE-position-control.
Other Servos will move following moves previously recorded.
Release the RECORD-key at the end of the 4 seconds to end recording.
Select channel 2.
Press and hold the RECORD-key.
Adjust MOVE-position-control.
The recording will end automatically after 4 seconds.
Select channel 3 etc.

2. A Full-length recording

Select servo channel 1 using the NEXT-channel-key.
Press and hold the RECORD-key.
Adjust 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 memory is full.
Select channel 2.
Press RECORD-key.
Adjust MOVE-position-control.
Recording will end when memory is full.
Select channel 3 etc.

Due to the switch action, the Record key may append a click to the end of your sound recording. To eliminate this, connect a remote switch in parallel with the Record key- two holes are provided adjacent to the Record key on the PCB for this option.

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Recording the Digital Outputs

You must have first set the session recording length by either servo 1 or the sound chip before recording digital outputs.

Keep pressing the NEXT button key until the sound LED (S) and servo LED (1) are lit- digital output 1 is now active. Pressing the PLAY button key will toggle digital output 1 ON and OFF. Press the RECORD Button key to begin recording session. Press the PLAY Button key whenever you wish the digital output 1 to be turned on (+ 5Vdc).

Select the next digital channel by pressing the NEXT button key and record that channel. Note: Digital Channel 1 and 2 (E1, E2) may be grouped together for easier programming. To activate this feature, simply place jumper **J1** (next to speaker connector) in the **C** position. During playback, digital channel 1 and 2 outputs are controlled the same by the digital 1 recording. Place the jumper in the **S** position for separate channel output actions.

NOTE: The PLAY button key will not activate the playback when one of the digital channel is selected. To initiate playback you must be in the servo or sound settings.

LOOP-Play-switch

To make the Animate Card play the recorded moves repeatedly, move the switch to 'Y'. The moves will start to play when the PLAY-key is pressed. There will be a pause at the end of playing (determined by the position of the Move control) after which the moves will start again, etc. To record moves this switch must be set to 'N'.

AUTO-Play- switch

If switched to 'Y' then the moves and sound will be replayed automatically on power-on or Reset. To record moves this switch must be set to 'N'.

Pause between play loops

When the Animate Card is set to looping play, the length of the pause between repeated playing may be set by the MOVE-position-control. Turn the MOVE-position-control anti-clockwise for the minimum delay (2 seconds) and clockwise for the maximum delay (approx. 65 seconds).

Maximum Recording time

The sound chip limits most recording sessions to approximately 20 seconds. The EE-PROM, which stores the servo moves, will store approximately 45 seconds of servo and digital actions. If you don't need the sound chip then go ahead and use the whole servo recording space.

Recommended order of recording

Recordings should normally be started by recording the Sound channel or Channel 1 first.

Power Supply

The Animate Plus board will work with power supplies between 6 and 12 Vdc. It is recommended to use a regulated 9 Vdc @ 2Amp supply. If you use a power supply larger than 9 Vdc, and you find the PCB becoming too hot, reduce the incoming voltage or use smaller servos- the board has been designed for standard R/C servos.

Digital Outputs

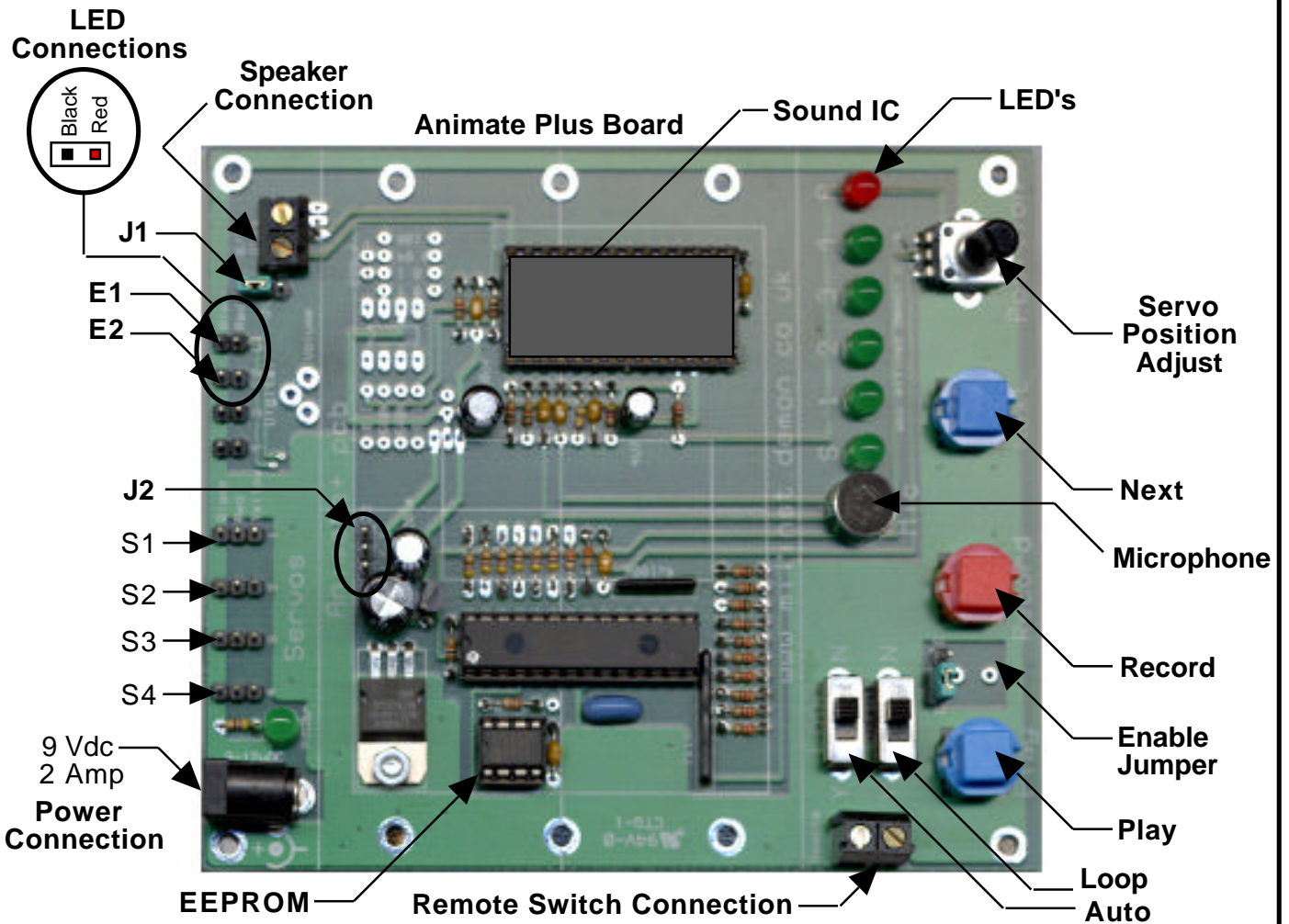
E1 and **E2** are designed for use with LED's. The output line includes a 33 ohm resistor to limit the current to approx 10mA when used with LED's.

Note: If you use E1 and E2 to drive other outputs, make sure the current does not exceed 20mA or you will damage the controller.

Digital outputs D3 and D4 are fitted with a serial resistor or 470 ohms to limit the current to approx 10mA.

Power Supply

The Animate board will work with power supplies between 6 and 12 Vdc. Recommended is 9Vdc @ 2Amp. If you find the PCB becoming too hot, and you are using a power supply larger than 9 Vdc, reduce the incoming voltage or use smaller servos- the board has been designed for standard R/C type servomotors.



NOTE: J2 & S4 - Same Servo Channel Output
NOTE: J1 - Group E1 and E2 (both outputs controlled by the digital 1 channel)

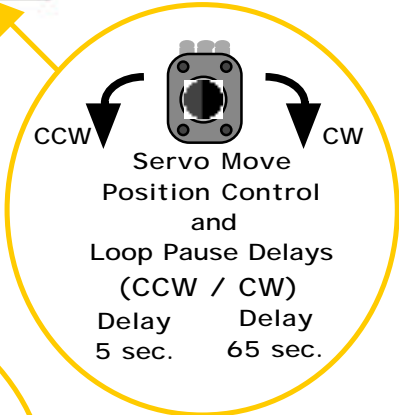
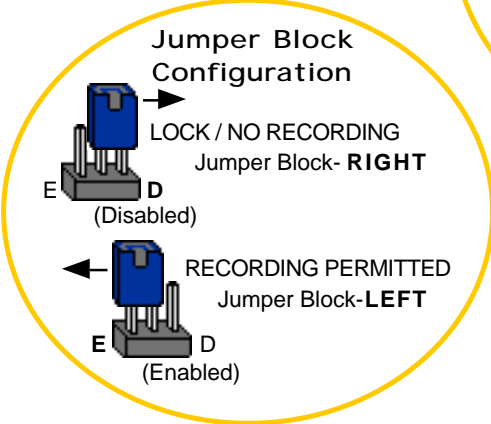
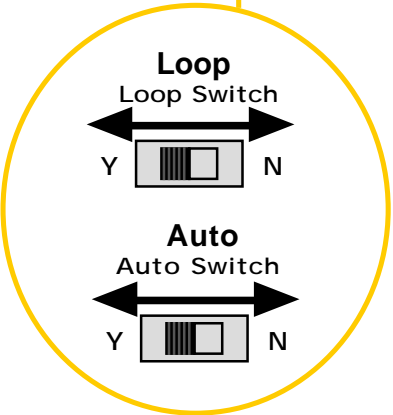
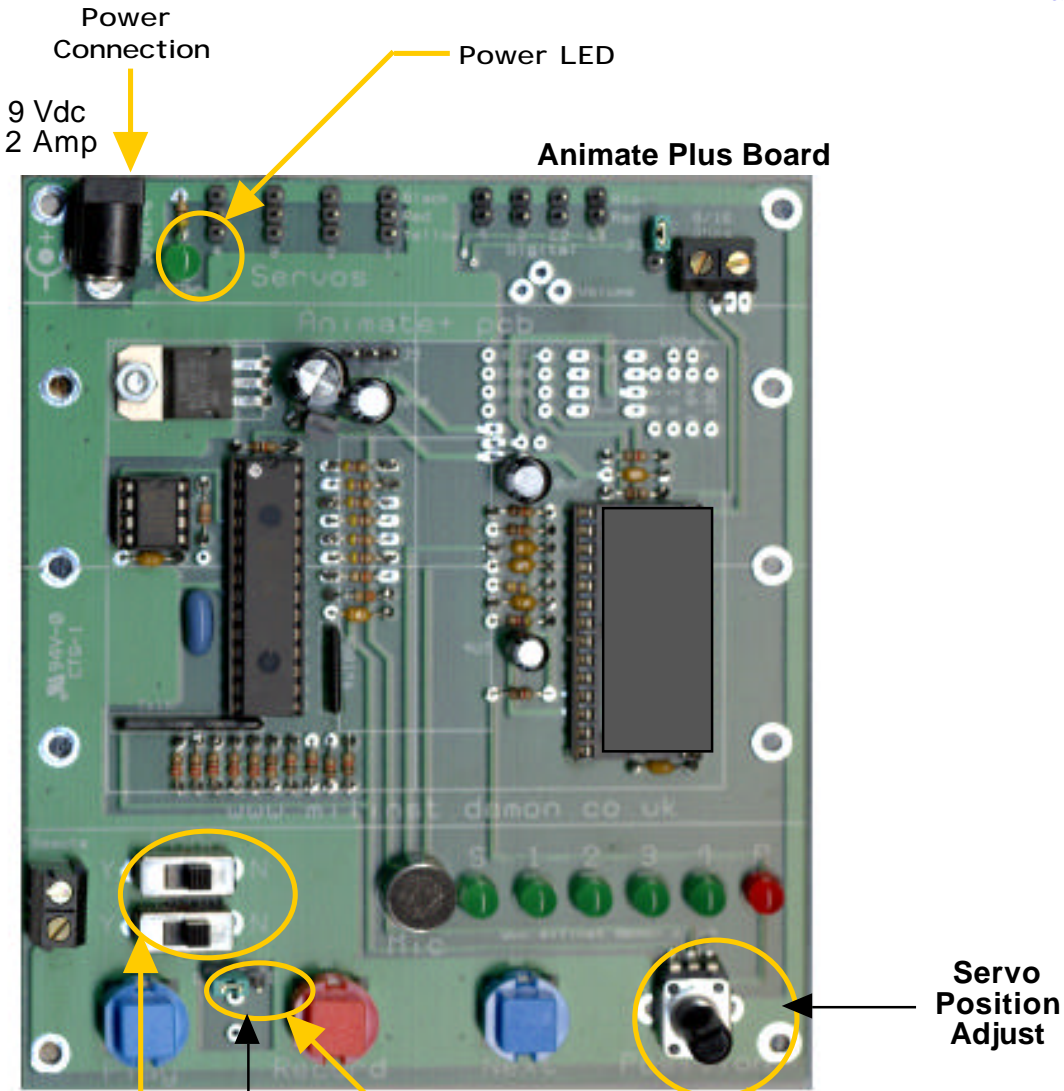
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Custom Equipment, Unique Electronic Products

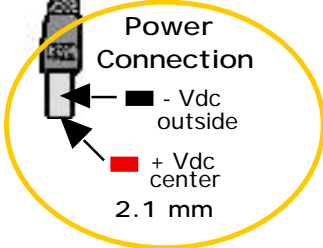
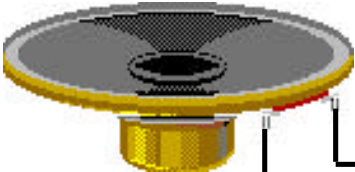
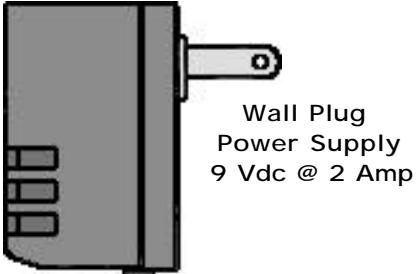
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Controls



Power Input
Sensor Input



Power LED

Animate Plus Board

Sensors



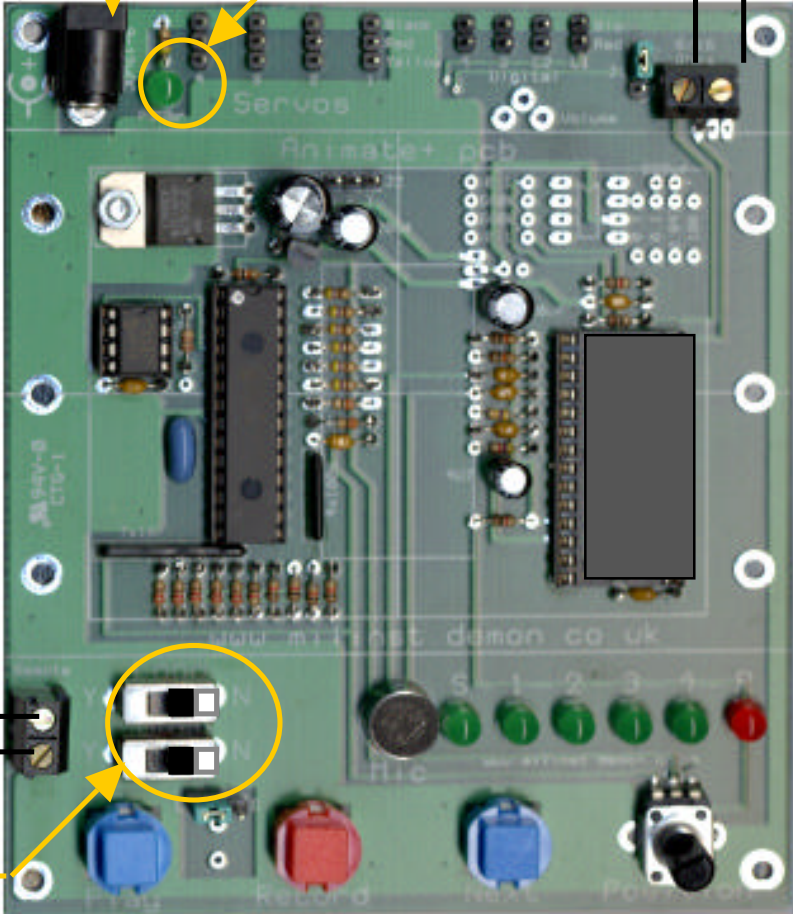
Mat Switch



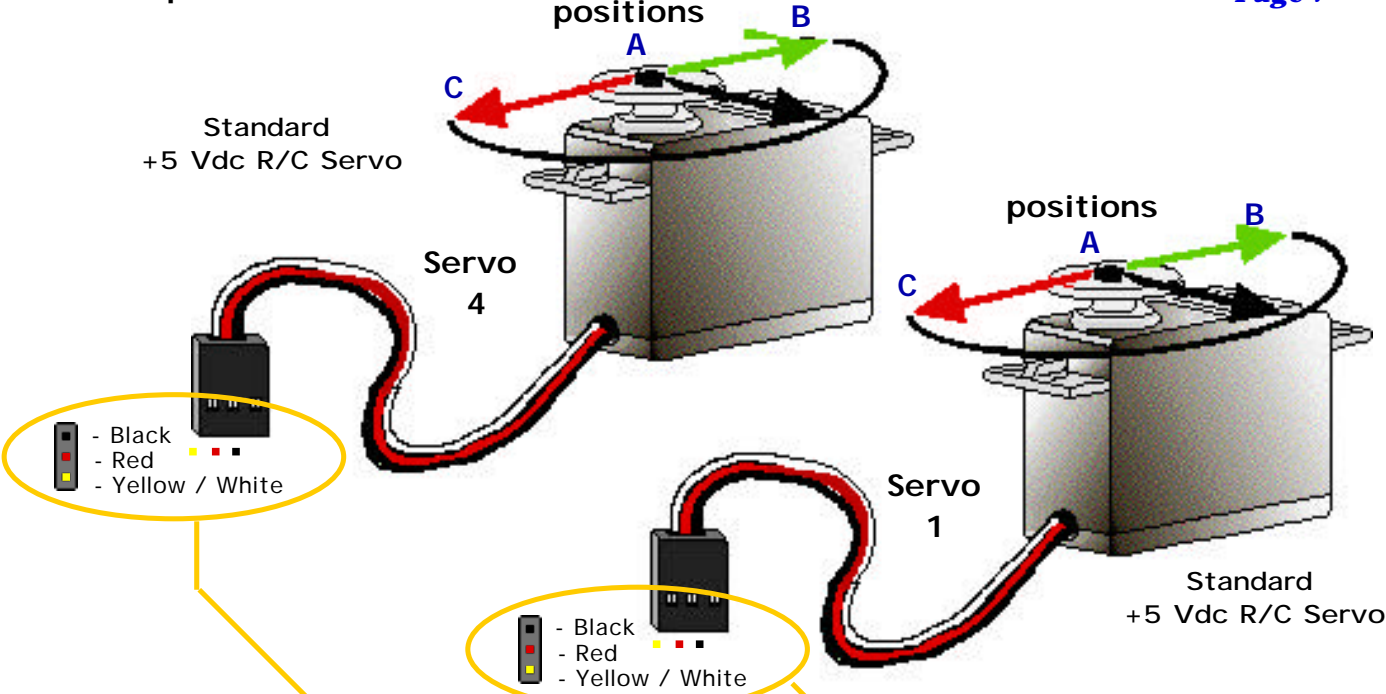
Remote Activation Switch

OR

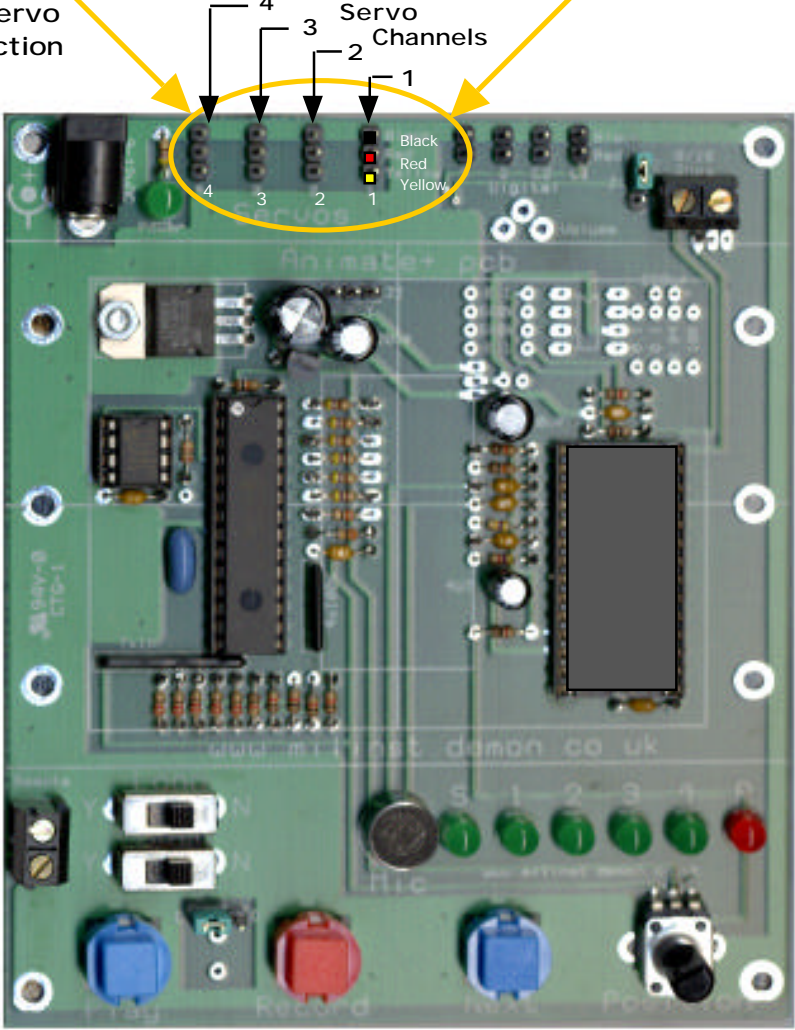
Y Position Loop Auto



Servo Outputs



R/C Servo Connection



Animate Plus Board

Digital Outputs

D1 and **D2** are designed for use with LED's. These output line includes a 33 ohm resistor to limit the current to approx **10mA** for special use with LED's.

Note: If you use **D1 and D2** together to drive other outputs, make sure the current does not exceed **20mA** or you will damage the Animate controller board.

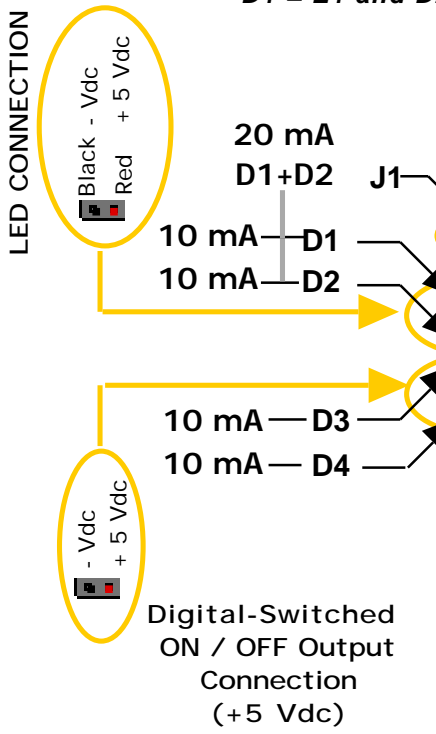
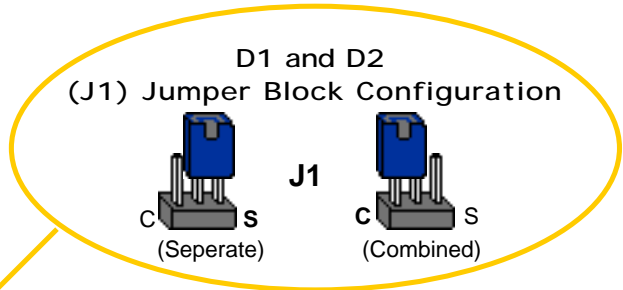
Digital outputs **D3** and **D4** are fitted with a serial resistor or 470 ohms to limit the current to approx **10mA**.

Digital Channel 1 and 2 (**D1** and **D2**) may be grouped together for easier programming. To activate this feature, simply place jumper J1 (next to speaker output connector) in the **C** position. During playback, digital channel 1 and 2 outputs are controlled the same by the digital 1 recording. Place the jumper in the **S** position for separate channel output actions.

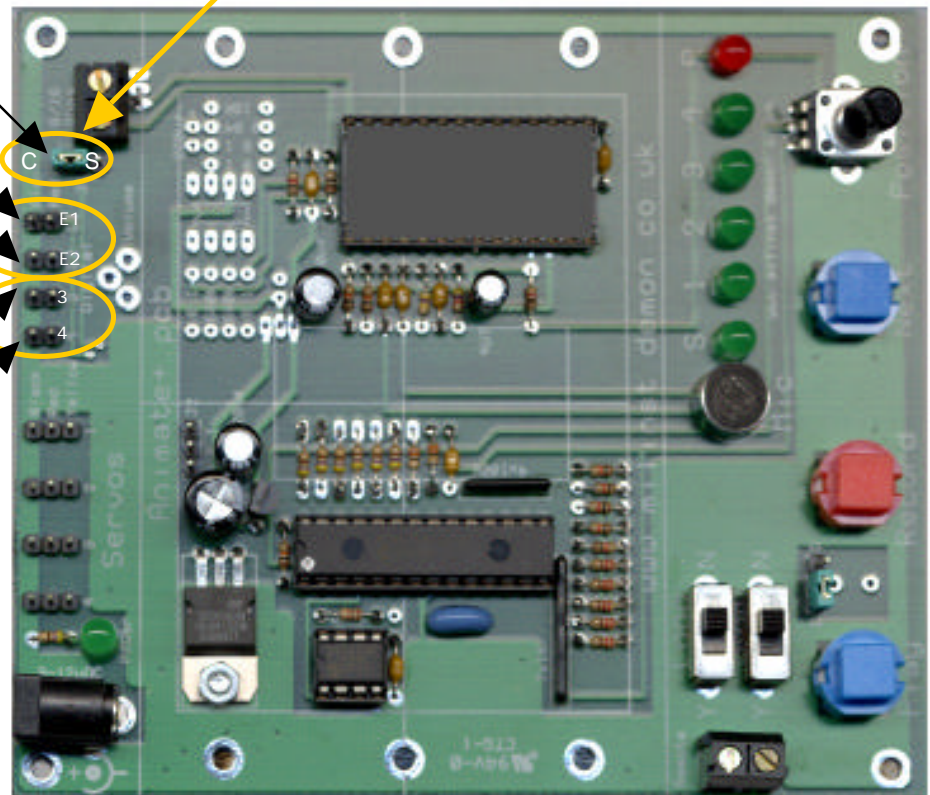
Digital Outputs

- D1 = 10 mA (33 ohm resistor in line)
- D2 = 10 mA (33 ohm resistor in line)
- D1 + D2 = 20 mA (33 ohm resistor in line)
- D3 = 10 mA (470 ohm resistor in line)
- D4 = 10 mA (470 ohm resistor in line)

NOTE:
D1 = E1 and D2 = E2 on board



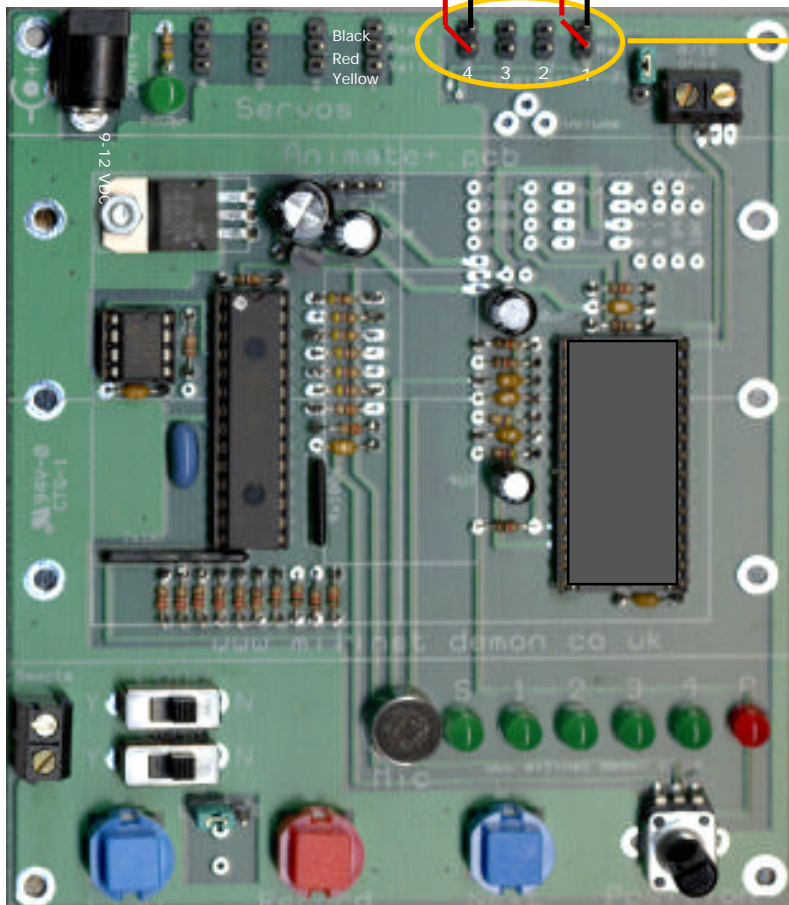
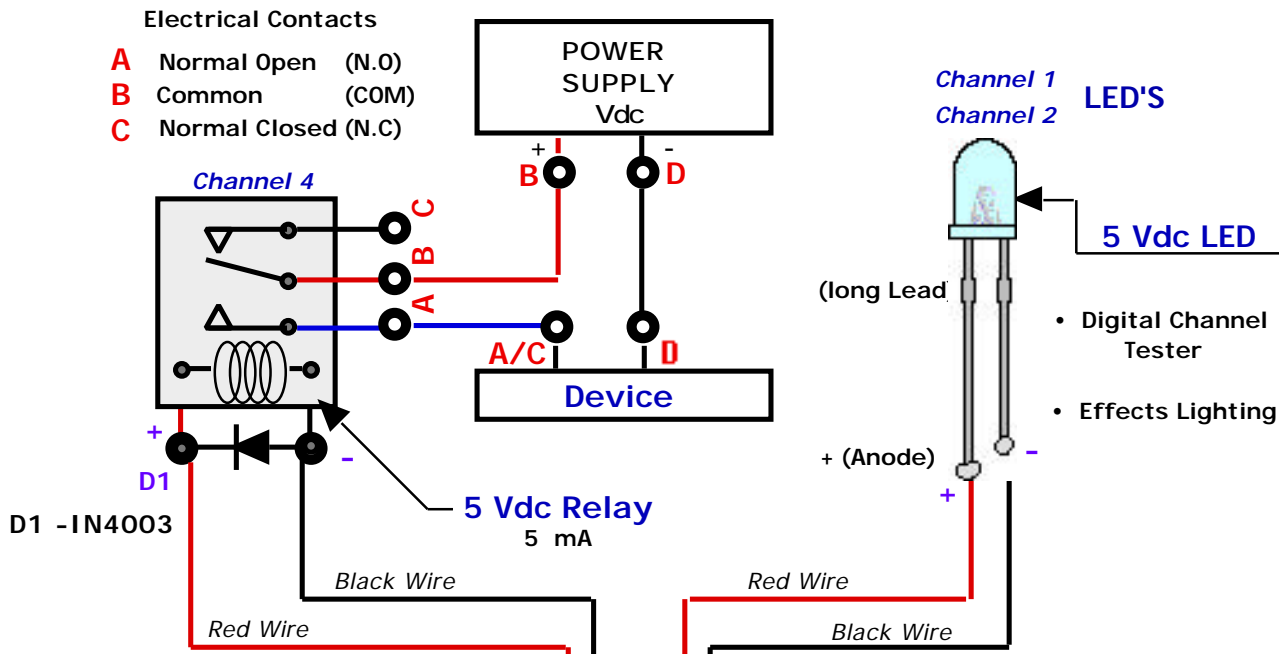
Animate Plus Board



NOTE: J1 - Group E1 and E2 (both outputs controlled by the digital 1 channel)

Animate Interface Board

Example - LED & Relay Control



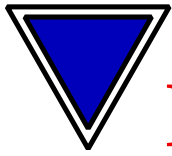
Digital-Switched
ON / OFF Output
Connection

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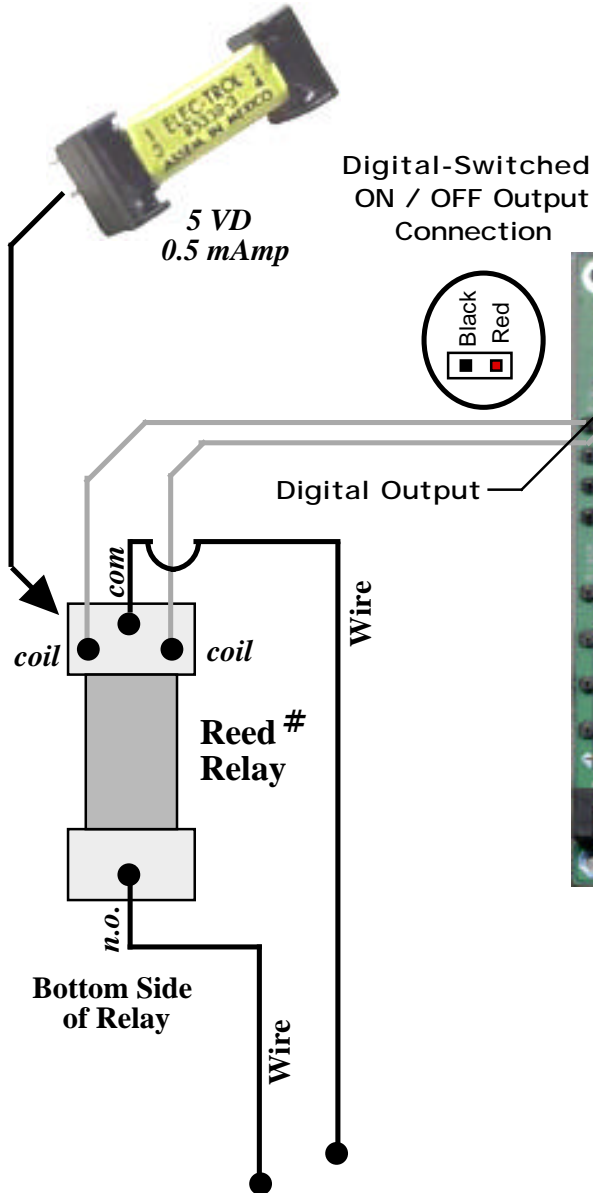
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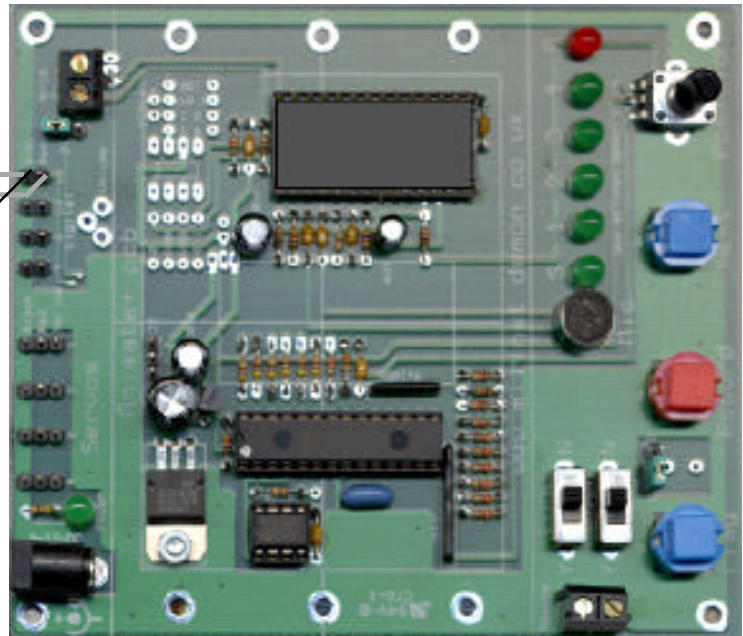
Animate Relay Booster

Controller

Reed Relay
Radio Shack - 275-232



Animate Board

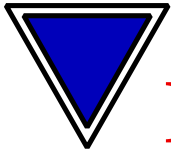


Reed Relay
Radio Shack - 275-232

- # Maximum switching power of 10 (watt/VA)
- # Maximum switching voltage of 60 VDC, 120VAC
- # Maximum switching current of 0.5 A
- # Maximum initial contact resistance of 150m ohms

To Secondary Power Relay
or
Device to be switched

Maximum switching current of 0.5 A



Animate Relay Booster

Controller

Animate Interface Board
Example - Relay Control
Boosted Relay Output Option

Power supply voltage determined by relay voltage requirements

